REPUBLIC OF GHANA

GULF OF GUINEA NORTHERN REGIONS SOCIAL COHESION PROJECT (SOCO)

-FINAL VERSION-
Environmental and Social Management Framework (ESMF)

DECEMBER 2021

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

AEA	-	Agricultural Extension Agents
CBD	-	Convention on Biological Diversity
CDD	-	Community Development Approach
CERC	-	Contingent Emergency Response Component
CF	-	Community Facilitator
CMU	-	Country Management Unit
CPS	-	Country Partnership Strategy
CRAN	-	Christian Rural Aid Network
CSOs	-	Civil Society Organizations
DA	-	District Assembly
DFR	-	Department of Feeder Roads
DUR	-	Department of Urban Roads
E&S	-	Environmental and Social
EA	-	Environmental Assessment
EHS	-	Environmental, Health and Safety
EHSG	-	Environment, Health and Safety Guidelines
EHSG	-	Environmental, Health and Safety Guidelines
EPA	-	Environmental Protection Agency
ESIA	-	Environmental Social Impact Assessment
ESMF	-	Environment and Social Management Framework
ESSS	-	Environmental and Social Safeguards Specialists
FCV	-	Fragility, Conflict and Violence
FM	-	Financial Management
FMCs	-	Facility Management Committeees
GIS	-	Ghana Immigration Service
GoG	-	Government of Ghana
GOG	-	Gulf of Guinea
GPSNP	-	Ghana Productive Safety Net Project
GSS	-	Ghana Statistical Service
IBRD	-	International Bank for Reconstruction and Development
ICSID	-	International Centre for Settlement of Investment Disputes
ICT	-	Information and Communication Technology
IDA	-	International Development Association
IFC	-	International Finance Corporation
ILO	-	International Labour Organisation
IPF	-	Investment Project Financing
LI	-	Legislative Instrument
LIPW	-	Labour-Intensive Public Works
LUSPA	-	Land Use and Spatial Planning Authority
LVD	-	Land Valuation Division
M&E	-	Monitoring and Evaluation

MIGA	-	Multilateral Investment Guarantee Agency
MIS	-	Management Information System
MLGDRD	-	Ministry of Local Government, Decentralisation and Rural Development
MMDAs	-	Metropolitan, Municipal and District Assemblies
MoE	-	Ministry of Education
MoFA	-	Ministry of Food and Agriculture
MOGCSP	-	Ministry of Gender, Children and Social Protection
MoI	-	Ministry of Interior
MoYS	-	Ministry of Youth and Sports
MTDPs	-	Medium-Term Development Plans
NCCP	-	National Climate Change Policy
NDA	-	Northern Development Authority
NEAP	-	National Environmental Action Plan
NEP	-	National Environment Policy
NGOs	-	Non-Governmental Organisations
NTC	-	National Technical Committee
NVTI	-	National Vocational Technical Institute
NWP	-	National Water Policy
OSHP	-	Occupational Safety and Health Policy
PAD	-	Project Appraisal Document
PIU	-	Project Implementation Unit
NOC	-	National Oversight Committee
RCC	-	Regional Co-ordinating Council
RCP	-	Regional Cooperation Platform
RO	-	Project Regional Office
RPF	-	Resettlement Policy Framework
SMD	-	Survey and Mapping Division
SOCO	-	Gulf of Guinea Northern Regions Social Cohesion Project
SP	-	Social Protection
SWCES	-	Single Window Citizen Engagement Service System
TABS	-	Transparency and Accountability Boards
TWG	-	Technical Working Group
UCMS	-	Unified Case Management System
UN	-	United Nations
VSB	-	Voltaian Sandstone Basin
WASH	-	Water, Sanitation and Hygiene
WBG	-	World Bank Group

EXECUTIVE SUMMARY

Introduction

The Government of Ghana (GoG) through the Ministry of Finance (MoF)is to receive a grant of USD 150 million facility from the International Development Association/International Bank for Reconstruction and Development of the World Bank Group (WBG) towards the implementation of the Gulf of Guinea Northern Regions Social Cohesion Project (SOCO, P175043). The Project is international in nature and covers the northern geographic sections of Benin, Cote d'Ivoire and Togo as while the Ghana Project implementation will be led by the Ministry of Local Government Decentralisation and Rural Development in close collaboration with sixty-three beneficiary Districts Assemblies located in six Regions (namely Northern, North East, Upper East, Upper West, Savannah and Oti regions. The Project will follow Community Development Approach (CDD) in the selection and implementation of Project interventions.

Objective of ESMF

The project will have several sub-projects which are yet to be determined and their location defined by the new World Bank Environment and Social Framework requirements, this ESMF is therefore the appropriate instrument for the project preparatory stage in terms of managing potential environmental and social risks and impacts. The ESMF defines the procedures for screening and further environmental assessment of these sub-projects as they become known during Project implementation. The ESMF provides the framework of principles as well as regulatory and institutional arrangements within which to mitigate negative environmental and social impacts of the project.

The Environmental and social risk rating for the project is substantial. This rating is based on the nature of the activities and the environment in which project activities will take place and the capacity of the implementing agencies. The project will be implemented in a very fragile environment with annual droughts, floods and high incidences of poverty. The implementing agencies' experience with ESF is limited and their capacity will be further strengthened in line with Bank's ESS during project implementation.

Based on the risk presented by the proposed project, eight environmental and social standards (ESS) under the ESF will be relevant in the safeguards sound running of the project activities. These are:

ESS1 – Assessment and Management of Environmental and Social Risks and Impacts
ESS 2 – Labor and Working Conditions
ESS 3 – Resource Efficiency and Pollution Prevention and Management
ESS 4 – Community Health and Safety
ESS 5 – Land Acquisitions, Restrictions on Land Use, and Involuntary Resettlement
ESS 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources
ESS 8 – Cultural Heritage
ESS 10 – Stakeholder Engagement and Information Disclosure.

Consequently, the Ghanaian government has prepared the following environmental and social documents: (i) an Environmental and Social Management Framework (ESMF) which includes a Pest Management Plan (PMP); (ii) a Resettlement Framework (RF); (iii) an Environmental and Social Commitment Plan (ESCP); (iv) a Labor Management Procedures (LMP) ;(v) a Stakeholder Engagement Plan (SEP), a Security Risk Assessment (SRA); and a Security Management (SMP). These instruments must be established, reviewed and validated by both the World Bank and the government of Ghana.

Approach for Preparation of ESMF

Environmental Assessment is multifaceted and a multidisciplinary activity, requiring many methods and approaches and expertise. Therefore, in addition to the literature reviews, desk studies and stakeholder consultations, this ESMF study has benefitted greatly from the earlier ESMF report prepared and being implemented under the on-going Ghana Productive Safety Net Project (GPSNP). Various key stakeholders have been actively consulted including the relevant government ministries and agencies, targeted District Assemblies and some affected communities to learn lessons to prepare this report.

Project Development Objectives and Components

The project development objective is to improve regional collaboration and the socioeconomic and climate resilience of border-zone communities in the target northern regions of the Gulf of Guinea countries exposed to conflict and climate risks The proposed project, which will be carried out over a period of five (5) years. The proposed Project is structured into the following five (5) main components:

i) Component 1: Community Resiliency and Inclusion

The objective of this component is to create community resilience and cohesion for preventing Fragility, Conflict and Violence (FCV) risks This component will finance local-level investments to promote community resilience and inclusion in border areas, based on a territorial medium-term vision that is shared across the four countries The approach to be use in promoting interventions will include assisting communities to identify and prioritize their most pressing socioeconomic infrastructure needs

ii) Component 2: Building foundation and capacity for inclusive and resilient communities

This component will finance various training and capacity building activities that can build the foundation and capacity of local stakeholders across the GoG countries, especially in key four dimensions: (a) identify and implement subprojects under Component 1, (b) create a base for local economic ecosystem with cross-border vision that can lead to medium- to long-term territorial development in the target northern region, (c) equip targeted youth in border communities with skills to engage in project's activities, and (d) promote better understanding and practice of social inclusion and cohesion. The beneficiaries of this component will be the communities, LGs, community facilitators, local technical staff of line ministries and partners, as well as certain critical national-level stakeholders.

iii) Component 3: Regional Coordination Platform and Dialogue

This component aims to strengthen regional collaboration across the four target countries to support a coherent response to prevent FCV risks in the Gulf of Guinea (GoG). Specifically, it will finance the establishment of a Regional Cooperation Platform (RCP) under the project, structured around three key pillars: (a) data collection and analysis, (b) knowledge generation, and (c) dialogue building. Data collection activities aim to enhance access to quality data and information to better understand complex regional and national FCV and climate dynamics.

iv) Component 4: Project Management

This component will support project management and coordination at the regional, national, and subnational levels for the effective implementation of project activities. Project management areas to be covered by the component include planning, implementation, and technical oversight of program activities; social and environmental safeguards management and monitoring; overall FM and procurement activities

v) Component 5: Contingent Emergency Response Component (CERC)

This zero-budget component will serve as a contingent emergency funding mechanism that could be triggered in the event of a natural or man-made disaster and/or health crisis such as pandemics through

formal declaration of a national emergency, or upon a formal request from one of the Governments. In the event of such a disaster/crisis, funds from the unallocated expenditure category or from other project components could be reallocated to finance emergency response expenditures to meet urgent needs.

Project Implementation Arrangements

Ministry of Local Government Decentralisation and Rural Development will be the lead Ministry in the implementation of the Project. This will be done through the setting-up of a Project Implementation Unit (PIU). However, the MLGDRD will collaborate closely with the Ministry of Food and Agriculture, Ministry of Youth and Sports, Ministry of Interior among others in the execution of interventions under the Project. At the Field level the sixty-three beneficiary District Assemblies in the six regional administrative areas in the northern areas of the country will be the main channels for providing financial and technical support to the frontline implementing communities.

Description of Project Area

The Project focus area is the 63 Districts in the lagging regions of the northern sections of the country geographically covering the Northern, North East, Upper East, Upper West, Savannah and Oti Regions of Ghana. The area covers a diverse topographic, vegetation and water resource formations. For instance, the area in terms of physiography shows Forest Dissected Plateau, the Savannah High Plains, Voltaian Sandstone Basin (VSB) and the ridges and escarpments.

For drainage and water resources, all the three major drainage systems run through the area. These are the Volta River System, South Western River System and Coastal River System (EPA, 2005). A major part of the Volta River Basin which is nearly three-fourth of the total land surface area of Ghana lies within the target project area. The Volta River basin can be subdivided into smaller basins – the Black Volta, the White Volta, the Oti and the Volta. The Volta River system basin includes the Oti, Daka, Pru, Sene and Afram Rivers. Many of the streams and tributaries of the major rivers in northern Ghana, all of which are tributaries of the Volta System, dwindle in the dry season and flood in the rainy season (Dickson and Benneh, 1988). This worsens the climatic fragility of the area.

Project Component	**Proposed Subproject Activities**
Component1:	
Subcomponent 1.1	**Connectivity**: Upgrading, rehabilitation, and/or expansion of rural roads; cleaning, construction, or repair of culverts and other structures; cross-border security infrastructure (small lights, electricity, bridge, ***WASH: (Water supply, sanitation and hygiene)***: Climate-resilient water and sanitation structures, including water reservoirs and water sources, supply pipes, ponds, community water supply system, pump houses and deep tube wells, drainage lines, waste disposal and composting plants, simple hygiene and sanitation systems (for example, latrines) ***Natural resource management and climate adaptation:*** Small irrigation canals, soil and water conservation measures, flood control structures, community pond, tree nurseries, afforestation, soil preservation to improve soil fertility, restoration works, and regeneration of pasture lands to improve carbon stocks.

Project Component	Proposed Subproject Activities
	Energy and ICT: Energy-efficient off-grid electrification; information and communication technology (ICT)-based installations at the community; community-run radio, and communication system ***Social:*** Rehabilitation or extension of pre-schools, primary school, literacy centers, and social centers, including accompanying furniture and equipment; rehabilitation or expansion of basic health care centers or other common health services
Subcomponent 1.2	Targeted local markets. EG: market infrastructural facilities, storage, sanitation, skill training, security infrastructure
Subcomponent 1.3	a) Social cohesion activities and events that include, Organization of sports and/or cultural events (potentially inter-village and/or cross-border), inter-generational/inter-group dialogues and collaboration events (for example, water forum), community volunteering activities, and community awareness raising activities b) Cluster-level community infrastructure including Upgrading, rehabilitation, expansion, or repurposing of existing land/facilities for cross-village youth-friendly recreational spaces, parks, community gathering spaces, sports facilities, and youth centers.
Component 2	Training and capacity building activities that can build the foundation and capacity of local stakeholders across the GoG countries
Component 3	Establishment of a Regional Cooperation Platform (RCP) under the project, structured around three key pillars: (a) data collection and analysis, (b) knowledge generation, and (c) dialogue building.
Component 4	Activities include Planning, implementation, and technical oversight of program activities; social and environmental safeguards management and monitoring;
Component 5	Emergency activities requiring contingent emergency funding arising from an emergency event of a natural or man-made disaster and/or health crisis such as pandemics through formal declaration of a national emergency, or upon a formal request from one of the Governments

Potential environmental and social risks/impacts issues/concerns likely to be encountered during implementation of project interventions (particularly Components 1 and 2 activities) are shown in the table below:

Activity	Potential Impacts	Potential Mitigation Measures
Construction of rural roads; cleaning, construction, or repair of culverts and other structures, Climate-resilient water and sanitation structures, including water reservoirs and water sources, supply pipes, small irrigation canals, soil and water conservation	• Negative social and economic effects on local people and communities, such as: • Unplanned commercial development • Demand for local public infrastructure and services increases beyond existing capacities • Disruption of traditional lifestyles • Induced population movements	• Work with affected communities to anticipate and plan for enhanced access to and demand on local public infrastructure and services • Provide project funds to strengthen local public infrastructure and services (e.g. health clinics, markets, schools) • Avoid creating congested and

Activity	Potential Impacts	Potential Mitigation Measures
measures, flood control structures	and natural resource exploitation activities, due to improved access (e.g. conversion of forest to pasture, or of sustainable land use to unsustainable, short-cycle cropping; illegal or unsustainable hunting)	unsafe road conditions at intersections, and in villages and towns
	Displacement of housing or farms or involuntary resettlement	• Purchase of replacement land and resettlement of affected people • Monetary compensation
	Loss of natural areas, important habitats, biodiversity	Avoid infringing on: • Critical habitats or areas with significant biodiversity (e.g. wetlands) • Protected natural sites and wilderness areas
	Contaminate surface water and generate trash due to lack of solid waste management	• Provide temporary sanitation (e.g. latrine), where this is not possible, instruct crews to employ soil mining (digging a pit for human waste and covering with soil immediately after use) • Collect all solid waste from all site areas and dispose of either in local landfill or well-screened waste pits
	Accidents and safety risks	• Construct basic speed bumps and employ traffic signs where possible
	Dust due to traffic	• Implement agreed dust control measures such as wetting dirt roads, truck washing for trucks exiting site, and monitoring dust emissions

Environmental and Social Screening Process

Environmental and social screening marks the beginning of ESIA or ESMP process for any proposed. The screening should be initiated as early as possible along with the sub-project planning process after the subproject is conceived. The extent of environmental assessment that might be required to be carried out in respect of a proposed subproject will depend on the outcome of the screening process.

The purpose of the preliminary screening is to: (i) rapidly determine whether proposed projects are likely to have potential negative environmental and social impacts; (ii) decide if 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 as appropriate; (v) review and approve projects proposals and (vi) monitor environmental and social impacts and concerns during implementation. . The early screening

process will also consider the provisions of the RPF for possible land acquisition and livelihood impacts DA Safeguards Teams/Focal Persons must foremost carry out the preliminary environmental and social screening for each proposed subproject by using the standard Safeguards screening checklist attached as (suggested in Annex 1 .) and liaise with the World Bank and EPA for determination of their significance, assignment of appropriate environmental category, recommendation of appropriate safeguards instrument that should be prepared for the subproject in case provisions in the ESF of the World Bank and any national environmental requirements are triggered.

When there are minimal or insignificant expected impacts (as determined using the standard safeguards screening checklist), DAs Safeguards Teams to be constituted must consult with the Lead Implementing Ministry Safeguards Specialists and the World Bank Country Office Safeguards Team and secure clearance to proceed to subproject design and preparation stage.

Nonetheless, no subproject requiring preparation of a safeguards instrument should commence until the said safeguards instrument is completed by the Client, approved by the World Bank and EPA, and disclosed publicly in Ghana and on the World Bank external website.

ESMF Implementation Arrangements

The MLGDRD, MOGCSP, EPA, RCOs, the DAs and communities are the main implementers of environmental and social mitigation measures in the project. The other institutions and agencies whose functions relate to the project in terms of oversight, project design and technical support include the National Oversight Committee (NOC), Project Technical Working Group, Department of Feeder Roads and MOFA. The roles to played by the key actors of the ESMF are:

Ministry of Local Government, Decentralisation and Rural Development (MLGDRD)

The MLGDRD will be the lead ministry for the implementation of the Project . The Project, just like other World Bank/ Donor Supported projects are coordinated under the Local Governance and Decentralisation Directorate of the Ministry . The Ministry will also chair the National Oversight Committee (NOC), which has general oversight over the Project together with other collaborating Ministries and Agencies (ie: Ministry of Youth and Sports, Ministry of Food and Agriculture, Ministry of Interior, Ghana Immigration Service, Northern Development Authority etc).

Ministry of Gender, Children and Social Protection (MOGCSP)

The MOGCSP is responsible for the management of the GRM since it has a good case management system in the single window citizens engagement service. The Ministry will also be a member of the NOC.

Environmental Protection Agency

The EPA is responsible for ensuring compliance with laid down EA procedures in Ghana in accordance with the EPA Act 1994 (Act 490) and its amendment, and the Agency is expected to give environmental approval for Projects. The EA is applied in Ghana to development projects as well as other undertakings as an environmental permitting prerequisite and a major environmental management tool. The EPA is represented in all the sixteen (16) regions of the country and will support the project by exercising its permitting and monitoring role.

The Project Implementation Unit (PIU)

The Project Implemenation Unit operates directly under the MLGDRD and would spearhead project implementation and coordination at the regional level. The PIU will have dedicated Environmental and Social Safeguards Specialists stationed at the MLGDRD to provide them with technical support to exercise their oversight responsibility for the implementation of environmental and social requirements of the Project. They will work closely with the participating MAs Safeguards teams.

Regional Coordinating Office (RCO)

The Project will rely on the 3 Zonal Coordinating Offices of the Ghana Productive Safety Net Project offices in Wa, Bolgatanga, Tamale. The Accra PIU will also serve as a zonal office, being directly responsible for projects in the southern zone (Oti Region). The Zonal offices will work with the Regional Coordinating Councils to provide technical backstopping and monitoring to the implementing DAs and Communities. In terms of environment and social safeguards implementation, the DA Safeguards Teams will play the lead role in its implementation at the District level.

District Assemblies

The DAs have full responsibility for the project implementation in collaboration with the beneficiary communities. The District Engineer and the Project Safeguards Focal Persons are the key environmental and social safeguards officers at the DA level. The Client Supervisors (mostly DA Works Dept staff) and Agricultural Extension Agents (AEA), who also work for the DAs play key E&S roles to ensure quality of facilities.

Project (Beneficiary) Communities

The beneficiary communities are particularly the most important when it comes to environmental and social safeguards implementation since the benefits or otherwise are borne by the community. The Community Facilitator is expected to lead E&S related activities at the community level. He is supported by 3-member case management committee (case management) and 5 – member community FMCs. E&S capacity is virtually non-existent at this level.

The World Bank Group

The World Bank Group (WBG) is a group of five international organizations that make available leveraged loans to low and middle-income countries. It is the largest development bank globally. The bank is headquartered in Washington, D.C. in the United States. The five organizations of the Group are: The International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Centre for Settlement of Investment Disputes (ICSID). The first two (IBRD and IDA) are sometimes collectively referred to as the World Bank.

The WBG was established in 1944, and its purpose was to issue long-term loans to governments for reconstruction and economic development following the Second World War. It thus, provides loans and grants to the governments of low- and middle-income countries for the purpose of pursuing capital projects. The Bank is centred around the goals of sustainability, ending extreme poverty and promoting shared prosperity.

Borrowers and Bank financed Projects are required to abide by the relevant requirements of the World Bank Group's Environmental, Health and Safety Guidelines (EHSG) and the Environmental and Social Framework of the World Bank (IBRD and IDA).

Capacity Building and Training

The first step in pursuing capacity building will be to identify the capacity needs of the various stakeholders. The major capacity issues have to do with the staffing numbers, skill sets and the availability of and exposure to the use of appropriate modern technologies (including Global Positioning System (GPS)) within the main implementing agencies (MLGDRD, MOFA, DAs). The environmental and social safeguards staff of the implementing agencies are grossly inadequate, lack the full complement of the variety of skill sets (e.g., Environmental and social Safeguards Specialists) needed to perform their functions, and are highly under-resourced with respect to the equipment and modern technologies needed to perform their required functions and roles effectively and efficiently.

Effective E&S instrument implementation requires all key stakeholders and project actors to understand their respective roles and responsibilities. The PIU, led by the ESSS at MLGDRD and facilitated by the ICDS, shall execute a planned capacity building program. The broad objectives of the capacity building efforts would be to:

Ensure that all relevant actors understand their expected roles in all phases of the sub- project's implementation. Some additional training would be required and some hand-held equipment such as noise monitors, particulate matter (PM10) monitors and SOx, NOx and CO2 monitors. In addition, a computer-based monitoring system to facilitate rapid tracking of project activities and for quick generation of various kinds of reports will be required.

Training will be categorized along specific thematic areas and targeted at various stakeholders at various levels in the MDAs and MMAs. Where relevant, expertise will be drawn from regulators to inform on key issues. The trainings should be provided in collaboration with the World Bank and EPA. The capacity building will include training workshops, field visits and production of guidance reports and tools. The following training programmes are recommended are shown in Table 10.

Monitoring, Evaluation and Reporting

Monitoring is a key component of the ESMF. It will be essential that the basis for the choices and decisions made in the sub-project design and other E&S safeguard measures implemented are continuously verified. Monitoring will ascertain the effectiveness of management, including the extent to which mitigation measures are successfully implemented.

Therefore, monitoring plans will be developed to track safeguard progress at both the ESMF and sub-project activity level. Issues to be monitored issues at the ESMF level include confirmation of the dissemination of both ESMF and RF documents as well as capacity building and training activities. At the sub- project activity level, this will encompass instituting monitoring actions to confirm the Screening of projects, Preparation of the ESIA reports, Acquisition of environmental Permits, disclosure of safeguards instruments at national and global levels, etc

Grievance Management

The multiplicity of actors, and processes and the vulnerable nature of beneficiaries (being the poorest) may predispose participants to unfair treatment and abuse, while misunderstanding may also arise. A grievance mechanism developed under the GPSNP will be used to address complaints to ensure that all direct and indirect beneficiaries, service providers and other stakeholders are given the opportunity at no cost to raise their concerns. These stakeholders will be informed of the grievance mechanism in place during sensitisations and other interactions as well as the measures put in place to protect the identity of complainants.

Single Window Citizen Engagement Service System (SWCES)

Gulf of Guinea Northern Regions Social Cohesion Project (SOCO, P175043), use the SWCES established under GPSNP 2. The SWCES was operationalized in December 2017 and provides a centralized channel for beneficiaries of all SP programs and other stakeholders to raise grievances, report malpractices, and request information on all social programs for free. This has been operationalized through the creation of the 'Helpline of Hope' Call Center that hosts toll-free phone lines and SMS. A key pillar of the single window system is an integrated Unified Case Management System (UCMS) which provides a single platform for citizens to log, manage, monitor, and escalate their grievances as well as to disseminate relevant information on behalf of the major SP programs. It is envisaged that GPSNP 2 will support the use of the SWCES through the decentralized governance system and in all five participating regions of the country, with the ultimate goal of becoming a national single-entry point for SP programs and social programming (and issues) led by ministries that do not have grievance redress systems.

As a further step towards deepening transparency and accountability, the toll-free numbers of the SWCES (0800800 800/0900800 800) will be posted on the TABs. In addition, all safeguards and case management officers, and community facilitators, will be provided with the numbers so they can intend make it available for beneficiaries. Beneficiaries and community members will be encouraged to make the SWCES their first port of call.

Institutional Framework for Grievance Management

To successfully operationalize the grievance redress system, roles and responsibilities have been identified at the community, district, zonal and national levels. The process for the registration of grievances and their resolution a dual channel (bottom-up and top-down) and is facilitated by these roles at the different levels. These are outlined below:

Community Level. At the community level, this includes: (i) the appointment of CFs at all subproject sites as focal points for project-related grievances. Additionally, the project will facilitate the initiation of a 3 - member Case Management Committee at the community level to be drawn from the FMC. Membership shall comprise: the traditional leader's representative; a women's representative, and a male opinion leader preferably a member of the Unit Committee/ Assembly member or leader of the dominant religion in the area. The membership of this committee will be validated by the beneficiaries. The CFs will be required to submit monthly reports on all cases that were reported at their respective sites and will ensure that these are also recorded through the SWCES (for those that were not called or texted in directly to the SWCES).

District Level. At the DA level, the LIPW Desk Officer will act as a focal point for case management and will be required to liaise with the statutory Public Relations and Complaints Committee, (when deemed necessary) to resolve all LIPW-related grievances that will be referred to the DA level. Cases once

resolved will be passed on to the E&S Officers who will then ensure that they are recorded as closed in the SWCES system.

Regional Level. At the regional level, a E&S Officer (RSO) will be assigned to each regional office who will receive all cases and follow up to ensure resolution of the cases. The resolution of the cases may require coordination with other actors at DAs, DA Safeguards Focal Person, Works Engineer, the MIS officer etc

National level. The National Coordinating Office will have Environmental and Social Safeguards Specialists (ESSS) at the PIU who will be responsible for the overall case management process of the project. The ESSS specialists will also liaise with the responsible person at the SWCES and see to the resolution of all cases through that channel (coordinating with any of the actors mentioned in the levels above). In the event that a complainant is still not satisfied with a resolution, the grievance will be sent to the MLGDRD, and as applicable, could be sent to the Ministry of Employment and Labour Relations or the law courts for redress.

Suggested Timeframe for Handling complaints

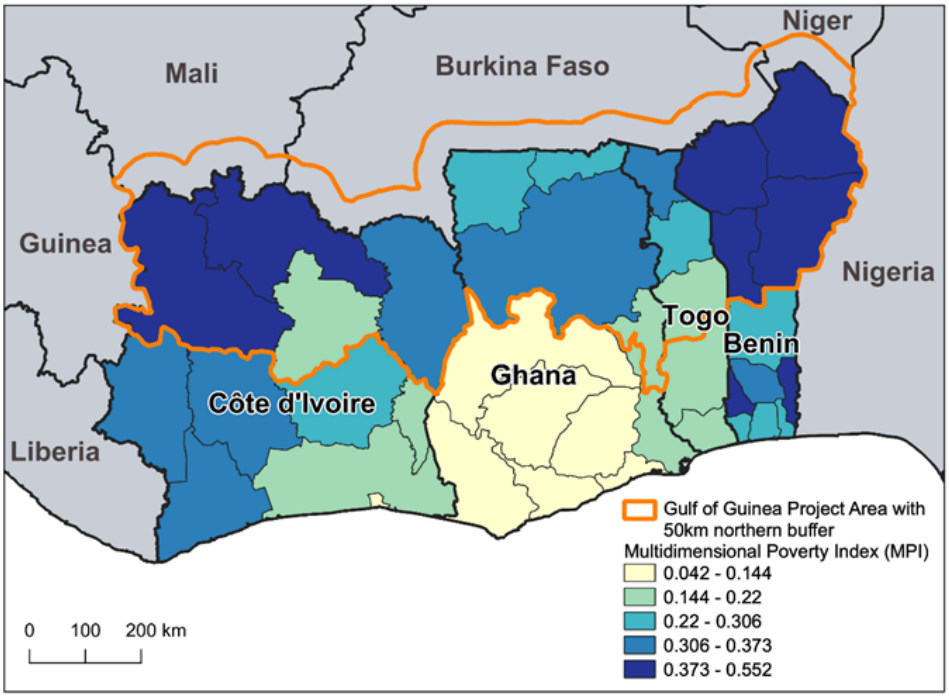
Step	Process	Time frame
1	Receive and register grievance	within 5 Days
2	Acknowledge, assess grievance and assign responsibility	within 14 Days
3	Development of response	within 14 Days
4	Implementation of response if agreement is reached	within 1 Month
5	Close grievance	within 7 Days
6	Initiate grievance review process if no agreement is reached at the first instance	within 1 Month
7	Implement review recommendation and close grievance	within 2 Months
8	Grievance taken to court by complainant	-

1.0 INTRODUCTION

Background

The Gulf of Guinea Northern Regions refers to the northern geographic sections of Benin, Cote d'Ivoire, Ghana, and Togo. These countries in recent years have increasingly faced spill-over risks of Fragility, Conflict and Violence (FCV). Furthermore, the consistent pattern of spatial disparity across the Northern area of countries in the sub-region leads to the incidence of high average poverty, the concentration of agricultural activity without diversification, insufficient decentralisation, and low access to basic services. The region is home to approximately 74 million people and is at the heart of West Africa's impressive economic transformation. The Gulf of Guinea Northern Regions Social Cohesion Project will therefore cover lagging northern regions of the four countries. The Project will be funded by a grant from the International Bank for Reconstruction and Development/ International Development Association of the World Bank. The Project seeks to improve the social and economic resilience of the target lagging regions and strengthen regional dialogue across target Gulf of Guinea countries. The Project main approach for implementation of interventions will be Community Driven Development (CDD) approach.

Figure 1: The Guld of Guinea Region (Highlighted)



Source : PAD, 2021

In the case of Ghana, this project is in line with the previous Country Partnership Strategy (FY13–FY16), which emphasises the need to reduce disparities and inequality along the north-south divide. Although a new CPF is currently under preparation, the WB Country Management Unit (CMU) and government affirmed that investing in the north and addressing regional disparity continue to be an important part of the country's development strategy, especially as the north has seen the highest rate of youth unemployment and a slower decline in the poverty rate. The project also supports the social pillar of the

Ghana@100 vision and Ghana's long-term National Development Plan (2018–2057), particularly goal 1 along the geographic dimension (no community left behind) and goal.

Rationale and Objectives of ESMF

Per the requirements of the World Bank, all International Bank for Reconstruction and Development /International Development Association (IDA) Projects financed by Investment Project Financing (IPF) must be subjected to Environmental Assessment. As the intervention subproject's exact locations are not clearly defined during this project preparation phase, an Environmental and Social Management Framework (ESMF) is deemed as the most appropriate environmental and social risks assessment instrument for project preparation.

The ESMF defines the methodology and procedure for conducting environmental and social screening once the different infrastructure locations are defined. The Environmental and Social Assessment will be carried-out in line with the national requirements spelt out in the Ghana Environmental Assessment Regulations (LI1652) and its associated thematic area guidelines as well as the provisions made in the World Bank Environmental and Social Frameworks (ESF). To this end, the subprojects assessment will also be guided by the relevant provisions outlined in the ten environmental and social standards associated with the ESF.

This ESMF sets out the principles, rules, guidelines, and procedures to assess the environmental and social risks and impacts likely to be encountered during execution of project activities. Furthermore, the ESMF instrument clearly define mitigation measures for construction and operational phases, roles and responsibilities, time and costs for each mitigation measures recommended, including potential site-specific Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs) requirements and contents.

Approach For The Preparation of The ESMF

Environmental Assessment is multifaceted and a multidisciplinary activity, requiring many methods and approaches and expertise. The preparation of this ESMF for the Gulf of Guinea lagging Regions Social Cohesion Project-Ghana was based on various methods as discussed subsequently. The ESMF of the on-going Ghana Productive Safety Net Project (GPSNP) served as one of the good reference documents for the preparation of this document. Other sources of information used in the preparation include:

Extensive Literature Review

All relevant available preparatory literature on the proposed Gulf of Guinea Northern Regions Social Cohesion Project were duly reviewed. These include The Project PAD, Presentations by World Bank on Project Component, the World Bank's new Environmental and Social Framework document, World Bank ESF guidance notes on community health and safety and stakeholder engagement. Others are the Local Governance Act 2016 of Ghana (ACT 936), National Environmental Policies, Laws and Guidelines. Among the laws reviewed were: Environmental Protection Agency Act, 1994 (Act 490); Ghana Environmental Impact Assessment Procedures (1995); Environmental Assessment Regulations, 1999 (LI 1652); Environmental Assessment (Amendment) Regulations, 2002 (LI 1703); and the Fees and Charges (Miscellaneous Provisions) Instrument, 2019 (LI 2386), etc. The Labour Act, 2003 (Act 651); Ghana Investment Promotion Centre Act, 1994 (Act 478); National HIV Workplace Policy (2004); Labour-Intensive Public Works Policy; National Employment Policy; and a plethora of other documents were also reviewed and inform the preparation of this ESMF.

Expert Judgment
Expert judgment (including that of identified stakeholders and the safeguards consultants on GSCSP and GPSNP) was relied upon to predict the potential risks and impacts of the project components

Engagements with Stakeholders
Project stakeholders are people who have a role in the project or could be affected by the project or who are interested in the project. Project stakeholders can be categorized into:

Primary stakeholders: Individuals, groups or local communities that may be affected by the project, positively or negatively and directly or indirectly, especially those who are directly affected, including those who are disadvantaged or vulnerable. The primary stakeholders identified for this project include:

- Poor and vulnerable individuals and households within the project geographic locations
- Poor communities in rural and urban areas
- Community leaders and members of vulnerable and conflict-prone communities

Secondary stakeholders: Broader stakeholders who may be able to influence the project's outcome because of their mandate, relationship and knowledge about the affected communities or political influence. These include Assembly Members, MMDAs public servants

Discussions with stakeholders centred on experiences under GSCSP and GPSNP, concerns and recommendations, and community concerns and individual interests regarding project implementation. Various stakeholders were consulted, including beneficiaries of GSCSP and GPSNP (and potential beneficiaries of SOCO), communities, private sector entities, contractors, service providers, government agencies, and Civil Society Organizations (CSOs).

ESF Disclosure
The EPA and World Bank policies require that environmental and social reports for projects be made available to project-affected groups, local NGOs, and the public. Following clearance from the World Bank, district and regional disclosure sessions will be held in selected beneficiary districts and regions, particularly in areas where there will be a large number of potential beneficiaries, e.g., Upper East, Upper West, Northern, North East, Savanna and Oti Regions. Additionally, copies of the ESMF will be made available in selected public places for information and comments. The notification will be done through a newspaper announcement. The notification will provide:

- a brief description of the project
- a list of venues where the ESF report is on display and available for viewing
- duration of the display period
- contact information for comments

The ESF will finally be disclosed on the MLGDRD, MOFA, Ministry of Youth and Sports and Northern Development Authority websites, and the World Bank's external website.

2.0 PROJECT DESCRIPTION

Project Development Objective

The project development objective is to improve regional collaboration and the socioeconomic and climate resilience of border-zone communities in the target northern regions of the Gulf of Guinea countries exposed to conflict and climate risks

Components Description

The proposed project would have five components and will be structured around the following components:

Component 1: Community Resiliency and Inclusion

The objective of this component is to create community resilience and cohesion for preventing FCV risks. This component will finance local-level investments to promote community resilience and inclusion in border areas, based on a territorial medium-term vision that is shared across the four countries. The approach to be use in promoting interventions will include assisting communities to identify and prioritize their most pressing socioeconomic infrastructure needs. This component will have three subcomponents namely:

Subcomponent1.1: This component will finance community level public infrastructure in vulnerable village clusters near border areas. The objective is to increase access to local –levels, climate-resilient, socioeconomic infrastructure that responds to communities' most pressing needs. The subcomponent will invest broadly in these infrastructure thematic activities: Connectivity, WASH, Natural resource management and climate adaptation, energy and ICT and social. The eligible community-based activities under these thematic areas are:

Connectivity: Upgrading, rehabilitation, and/or expansion of rural roads; cleaning, construction, or repair of culverts and other structures; cross-border security infrastructure (small lights, electricity, bridge, and so on). Special consideration will be given to optimize climate-smart connectivity investments, such as road repairs with water retention for ponds or reforestation, trees buffer on roadsides, and so on.

WASH: (Water, sanitation and hygiene) Climate-resilient water and sanitation structures, including water reservoirs and water sources, supply pipes, ponds, community water supply system, pump houses and deep tube wells, drainage lines, waste disposal and composting plants, simple hygiene and sanitation systems (for example, latrines), and so on.

Natural resource management and climate adaptation: Small irrigation canals, soil and water conservation measures, flood control structures, community pond, tree nurseries, afforestation, soil preservation to improve soil fertility, restoration works, and regeneration of pasture lands to improve carbon stocks.

Energy and ICT: Energy-efficient off-grid electrification; information and communication technology (ICT)-based installations at the community; community-run radio, and communication systems; and so on.

Social: Rehabilitation or extension of pre-schools, primary school, literacy centers, and social centers, including accompanying furniture and equipment; rehabilitation or expansion of basic health care centers or other common health services (eg. community pharmacy, and so on), including initial stock of drugs

for the clinics; as well as gender-specific investments, such as child-care facilities, to support women's economic activities, including promoting of cross-border trade. Where feasible, climate proofing of the infrastructure/facilities will be supported.

Subcomponent 2: Investing in youth socio-cultural priorities and aspirations. This subcomponent aims to create short-term benefits to existing economic activities, but also to build longer-term economic sources of resilience by investing strategically in targeted local markets e.g., market infrastructural facilities, storage, sanitation, skill training, security infrastructure etc

Subcomponent 3: At the village level, communities are expected to benefit from multiple cycles of investments from the different subcomponents, providing the foundations for inclusive community-driven processes to strengthen local ***bonding***. **This subcomponent will invest in (a) social cohesion activities and events as well as (b) the construction, rehabilitation, and/or equipment of cluster-level community infrastructure—that are identified and prioritized by youth. These investments broadly cover:**

a) *Social cohesion activities and events will entail:* Organization of sports and/or cultural events (potentially inter-village and/or cross-border), inter-generational/inter-group dialogues and collaboration events (for example, water forum), community volunteering activities, and community awareness raising activities (for example, on climate change adaptation). A village could have village-level social cohesion activities or choose to pool resources together with one or more neighboring villages for combined social cohesion activities.

***b) Cluster-level community infrastructure*:** Upgrading, rehabilitation, expansion, or repurposing of existing land/facilities for cross-village youth-friendly recreational spaces, parks, community gathering spaces, sports facilities, and youth centers. The infrastructure should be climate sensitive and benefit across villages that is, shared by at least two or more villages in the cluster.

Component 2: Building foundation and capacity for inclusive and resilient communities

This component will finance various training and capacity building activities that can build the foundation and capacity of local stakeholders across the GoG countries, especially in key four dimensions: (a) identify and implement subprojects under Component 1, (b) create a base for local economic ecosystem with cross-border vision that can lead to medium- to long-term territorial development in the target northern region, (c) equip targeted youth in border communities with skills to engage in project's activities, and (d) promote better understanding and practice of social inclusion and cohesion. The beneficiaries of this component will be the communities, LGs, community facilitators, local technical staff of line ministries and partners, as well as certain critical national-level stakeholders.

Component 3: Regional Coordination Platform and Dialogue

This component aims to strengthen regional collaboration across the four target countries to support a coherent response to prevent FCV risks in the Gulf of Guinea (GoG). Specifically, it will finance the establishment of a Regional Cooperation Platform (RCP) under the project, structured around three key pillars: (a) data collection and analysis, (b) knowledge generation, and (c) dialogue building. *Data collection* activities aim to enhance access to quality data and information to better understand complex regional and national FCV and climate dynamics. *Knowledge generation* activities will support evidence-based analysis for the development of regional/cross-border policy and for informing project implementation. *Dialogue building* activities seek to improve regional cooperation by providing solid and neutral grounds for discussion, coordination, and planning.

Implementation of activities will mainstream climate fragility and risks to support countries better understand the climate change-security nexus and develop relevant action plans.

Component 4: Project Management

This component will support project management and coordination at the regional, national, and subnational levels for the effective implementation of project activities. Project management areas covered by the component include planning, implementation, and technical oversight of program activities; social and environmental safeguards management and monitoring; overall FM and procurement; preparation of work plans, budgets, and progress reports; communication and public awareness campaigns; M&E arrangements, including the setup of a management information system (MIS); setup and management of a project beneficiary feedback mechanism; and measures for enhanced transparency and accountability including potential use of ICT platforms. Coordination activities will support the establishment and operation of a Committee for Regional Coordination (CRC), national steering committees (NSCs), and technical national and subnational committees. The component will finance CRC and PIU staff-related costs; operating costs, including equipment, vehicles, fuel, and office space at national and regional levels; communications costs; targeted national and regional capacity building activities to strengthen overall project management; and operating costs related to the procurement, supervision, auditing, and evaluation of project activities.

Component 5: Contingent Emergency Response Component (*CERC*)

This zero-budget component will serve as a contingent emergency funding mechanism that could be triggered in the event of a natural or man-made disaster and/or health crisis such as pandemics through formal declaration of a national emergency, or upon a formal request from one of the Governments. In the event of such a disaster/crisis, funds from the unallocated expenditure category or from other project components could be reallocated to finance emergency response expenditures to meet urgent needs. The operations manual will describe in detail the implementation arrangements for the immediate response mechanism. ESMF does not cover the CERC and that a standalone CERC-ESMF will be prepared.

3.0 POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Relevant Policies, Legal and Institutional Frameworks

Introduction:

The Proposed Gulf of Guinea Lagging Regions Social Cohesion Project–Ghana will use the New World Bank Group Environment and Social Framework to complement and strengthen the national regulations and its associated thematic area guidelines in managing the risks and impacts associated with the infrastructural works and livelihood investments particularly those in Component1 of the Project.

This section reviews the relevant polices and other statutory laws and regulations as well as institutional/administrative frameworks that will guide the assessment of environmental and social risks and impacts of proposed subprojects from its planning, design, land acquisition, implementation and monitoring. The section also looks at the World Bank ESF requirements and other international policies and regulatory frameworks.

3.2 Relevant National Policy Frameworks

Table 1: Summary of the Key National Policy Frameworks Relevant to the Project

Policy Frameworks	Summary of core requirements	Relevance to Project Policy Development
The Coordinated Programme of Economic and Social Development Policies 2017 - 2024	The objective of Government's environment, infrastructure and human settlements development policies and programmes is to safeguard the natural environment and ensure a resilient environment. In this regard, interventions will focus on the following: (i) protected areas; (ii) mineral extraction; (iii) coastal erosion; (iv) waste, pollution and noise; (v) deforestation, desertification and soil erosion; (vi) greening the environment; (vii) climate variability and change; (viii) disaster management; (ix) transportation; (x) water for development; (xi) information and communications technology; (xii) energy and petroleum; (xiii) construction industry development; (xiv) drainage and flood control; (xv) infrastructure maintenance; (xvi) land administration and management; (xvii) human settlements (xviii) rural development; (xix) urbanisation; and (xx) Zongos and inner cities development.	This is the broad national policy framework that charts the development growth agenda for Ghana/ The proposed project will be implemented within these national coordinated policies and programmes of action
National Environmental Sanitation Policy, April 2010	The Policy describes the objectives of environmental sanitation to include developing a clean, safe and pleasant physical environment in all human settlements, promoting the social, economic and physical well-being of all sections of the population. Comprises of various activities including the construction and maintenance of sanitary infrastructure, provision of service, public education, community and individual action, regulation and legislation.	The proposed project will be guided generally by the National Environmental Sanitation Policy and specifically by sanitation bye-laws of participating Assemblies

Policy Frameworks	Summary of core requirements	Relevance to Project Policy Development
National Environment Policy (2012)	The NEP is based on a broad vision founded on and directed by respect for all relevant principles and themes of environment and sustainable development. According to the Policy, Ghanaians are entitled to an environment that is not harmful to their health and wellbeing and are enjoined to have the environment protected for the benefit of present and future generations through reasonable legislative and administrative measures. The Policy, among others, therefore aims at: ☐ Reversing the current insufficient commitment to environmental objectives, policies and interventions ☐ Reversing rapid population growth, economic expansion, persisting poverty, poor governance and institutional weaknesses and failures ☐ Creating an understanding of the nature and causes of environmental problems ☐ Establishing a clear definition of the national environmental agenda and its links to economic growth and poverty reduction and weak legal, regulatory, financial, technical, human and institutional capacity ☐ Mainstreaming international relations into the national environmental agenda	The general objectives and activities of the project will be guided by the National Environment Policy The project will promote sustainable development by including economic, social and environmental considerations in its implementation.
Occupational Safety and Health Policy of Ghana (OSHP), 2014	The policy statement of the Occupational Safety and Health Policy (draft 2004) is to prevent accidents and injuries arising out of, or linked with, or occurring in the course of work, by minimizing as far as reasonably practicable, the cause of the hazards in the working environment and therefore, the risk to which employees and the public may be exposed. The OSHP is derived from the provisions of the International Labour Organisation (ILO) Conventions Nos. 155 and 161. The policy document highlights specific strategies, activities promotion and awareness creation which ensure that workers engaged at the construction and operation stages of the project are protected.	Potential sources of accidents and injuries that could occur in the course of project implementation will be identified and incorporated into safeguards for minimising safety and health risks and hazards as required by the draft OSH Policy.
National Workplace HIV/AIDS Policy, 2005	The National Workplace HIV/AIDS Policy provides protection from discrimination in the workplace to people living with HIV and AIDS; prevents HIV and AIDS spread amongst workers; and provides care, support, and counselling for those infected and affected.	The project will institute a plan of action to prevent HIV/AIDS spread through awareness creation
National Employment Policy, 2014	The goal of the National Employment Policy (NEP) is to create gainful and decent employment opportunities for the growing labour force to improve their living conditions and contribute to economic growth and national development within the framework of equity, fairness, security, and dignity. The key objectives to be pursued in order to achieve the overall goal are: 1. To create more decent jobs to meet the growing demand for employment. 2. To improve the quality of jobs for those who are employed. 3. To increase labour productivity. 4. To strengthen governance and labour administration	The proposed project will develop a Human Resource and labour and employment policy for implementation within the framework of this National Employment Policy
National Water Policy	The NWP of Ghana aims at providing a framework for the sustainable development and utilization of Ghana's water resources. It is targeted at all water users, water managers and practitioners, investors, decision-makers and policy makers within the central and decentralized government structures such as the district assemblies,	The project will operate within the National Water Policy of Ghana.

	non-governmental organizations and international agencies.	
Ghana National Climate Change Policy/Action Plan 1994	The National Climate Change Policy (NCCP) is Ghana's integrated response to climate change concerns. The policy aims at ensuring a climate-resilient and climate-compatible economy, while pursuing sustainable development agenda through equitable low-carbon economic growth for Ghana. The policy areas have been subdivided into programme areas which will improve food security, increase the resilience of infrastructure and communities, improve environmental management practices and ecosystems for greater biodiversity and carbon sequestration, optimize key socio-economic factors, and achieve more efficient systems for improved economic growth.	The project implementation has the potential to increase carbon emission in the beneficiary communities, as the activities will include operation and use of use of diesel-powered generators, auto emissions from vehicles and machineries

3.3 National Legal and Regulatory Frameworks

The national legal and regulatory areas which can be applied to the project activities are summarised in Table 2 below

Table 2: Relevant Legal and Regulatory Framework

Regulatory Frameworks	Summary of core requirements	Relevance to Policy Development
Constitution of Ghana, 1992;	The Constitution places an obligation on every citizen as a duty to protect and safeguard the environment for prosperity. Section 41(k) stipulated that 'It shall be the duty of every citizen to protect and safeguard the environment'. The Constitution includes some provisions to protect the right of individuals to private property and sets principles under which citizens may be deprived of their property in the public interest (described in Articles 18 and 20). In Article 20, describes the circumstances under which compulsory acquisition of immovable properties in the public interest can be done. It includes: ☐ the development or utilization of property for public benefit ☐ reasonable justification is provided for acquisition ☐ the prompt payment of fair and adequate compensation ☐ resettlement of displaced persons on suitable alternative land with due regard for their economic well-being, social and cultural values.	This is the overarching legislative framework of Ghana. Articles 18 and 20 provides conditions for the acquisition of property (in this case land) for development projects and compensation. The proposed project will adhere to these relevant constitutional provisions on protection of the environment, human rights, forced labour and compensation
Local Government Act, 2016 Act 936	The Local Governance Act of 2016, Act 936 which Act repealed the Local Government Act 462 (1993) gives mandate to the District Assemblies among others, to promote local economic development; and provide guidance, give direction to and supervise other administrative authorities in the district as may be prescribed by law; initiate programmes for the development of basic infrastructure and provide municipal works and services in the district; as well as be responsible for the development, improvement and management of human settlements and the environment in the district.	The input of the Physical Planning and Roads Departments of the District Assemblies will be sought in designing the distribution network in the project area.

Regulatory Frameworks	Summary of core requirements	Relevance to Policy Development
Environmental Protection Agency Act 1994, Act 490	The Environmental Protection Agency Act, 1994 (Act 490) gives mandate to the EPA among others "to ensure compliance with any laid down environmental assessment procedures in the planning and execution of development Projects, including compliance in respect of existing Projects" Section 2(i). The Act also provides for integrated Environmental management and the protection and conservation of the environment through sustainable management and use of natural resources	This law is the primary legal basis for undertaking environmental assessment in Ghana. The proposed project shall fully comply with requirements of this national regulation during implementation of the ESMP.
Environmental Assessment Regulations 1999, LI 1652	The Environmental Assessment Regulations 1999, LI 1652 state that a developer shall not implement a Project for which an Environmental Impact Statement is required under the regulations unless a Preliminary Environmental Assessment has been concluded in accordance with the Regulations and the EPA has issued a permit.	The development of the project will be guided by LI 1652 including registering sub-projects with the EPA and obtaining an environmental permit.
Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917)	The Hazardous and Electronic Waste and Control Act 2016 (Act 917) provides list of hazardous and other waste. It also provides control, management, and disposal of electrical and electronic waste. Hazardous waste generally refers to waste with properties that makes it potentially dangerous or harmful to human health or the environment and they include liquids, solids or gases which cannot be treated or dispose of by common means Cannot cannot be treated or disposed of by common means.	Wastes such as waste oils which are toxic will be disposed of properly and this has been provided for in ESMP plans
Hazardous, Electrical and Other Wastes Control & Management Regulations, 2016 (LI 2250)	The Act ensures that harmful elements associated with hazardous and other waste products are captured and processed safely to preserve critical ecological components such as the soil, groundwater, flora and fauna.	The ESMP will provide for the proper storage and disposal of harmful substances like waste oils
Ghana Standards for Environment and Health Protection-Requirement for Effluent Discharge (GS1212, 2019)	Ghana Standard Environmental Protection –Requirements for effluent Discharge (GS 1212:2019) specifies requirements for sector specific effluent quality and also gives guideline discharge into the environment.	Wastewater will be mainly generated during the operational phase of the project. This will be monitored as stated in the ESMP to ensure it does not exceed the acceptable limits of this standard
Ghana Standards for Environment and Health Protection-Requirements for Ambient Air Quality and Point Source/ Stack Emissions (GS 1236, 2019)	Ghana Standard (GS 1236: 2019) for Environment and Health Protection - Requirement for Ambient Air Quality and Point Source/Stack Emissions specifies the requirements and methods of analysis for ambient air. It also specifies the requirements and test methods for point source or stack emissions based on the sources of energy.	Dust and vehicular emissions will be controlled as specified in the proposed ESMP
Ghana Standards for Environment and Health Protection-Requirements for Ambient Noise Control (GS 1222, 2018)	Ghana Standard (GS 1222: 2018) for Health Protection - Requirements for Ambient Noise Control specifies the requirements for acceptable ambient noise levels within categorized locations. According to the Standards, the test method should be in accordance with the relevant test methods given in GS 1253:2018 (Acoustics- Guide for the measurement of outdoor A-weighted sound levels	Noise generated will be mainly at the construction stage and will be monitored as stated in the proposed ESMP to ensure it does not exceed acceptable limits

Regulatory Frameworks	Summary of core requirements	Relevance to Policy Development
Ghana Standards for Environment and Health Protection-Requirements for Motor Vehicle Emission (GS1219, 2018	Ghana Standards for Environment and Health Protection-Requirements for Motor Vehicle Emission (GS1219: 2018) specifies the requirements for exhaust emissions of motor vehicles as well as tractors, farm equipment (such as combine harvester, etc.), mobile industrial / construction machines (such as excavators).	Vehicles for transportation of materials and workers will produce fumes but will be managed with regular maintenance as stipulated in the proposed ESMP
Land Use and Spatial Planning Act, 2016 (Act 925)	The Land Use and Spatial Planning Act, 2016 (Act 925) regulates land use through a decentralised planning system to ensure judicious use of land in order to improve quality of life, promote health and safety in respect of human settlements and generally provide for spatial aspects of socio-economic development and related matters	The project design will be guided by planning schemes and local plan guides developed by the Land Use and Spatial Planning Departments.
Labour Act, 2003 (Act 651)	The Labour Act provides for the rights and duties of employers and workers; legal or illegal strikes; guarantees trade unions and freedom of associations and establishes the Labour Commission to mediate and act in respect of all labour issues. The Act consolidates and updates various pieces of former legislation and introduces provisions to reflect International Labour Organisation (ILO) Conventions ratified by Ghana. Occupational health and safety conditions are discussed in Part 15 and include general health and safety conditions, exposure to hazards, employer occupational accidents, and diseases reporting.	The proposed project will draw up programmes to eliminate any "Worst Forms of Child Labour" In accordance with this Act and other ILO Requirements.
Workmen's Compensation Law, 1987, PNDCL 187	This Law provides for the payment of cash compensation by an employer to an employee in the event of injury resulting from accident on the job and in the event of death, payable to dependents through the courts. Section 2 under employer's liability for compensation of the law states that: ☐ Where an employee sustains personal injury by accident arising out of, and in the course of employment, the employer is liable, subject to this Act, to pay compensation in accordance with this Act. ☐ Subject to sections 3 and 4, where the injury results in death or serious and permanent incapacity, the Court on consideration of the circumstances, may award the appropriate compensation under this Act.	This will apply to this project and the safety of all workers will be the responsibility of the proponent. A Grievance Redress system is prepared to quickly address any HSE complaints
Public Health Act, 2012 Act 851	The Act empowers an Assembly to prevent unhealthy activities. It provides for the prevention of disease and pollution dangerous to human health and to any water supply for domestic use. It also empowers the Assembly to control drainage, latrine and disposal of sewerage and treatment systems.	The premises and surrounding environment of the development shall be managed based on the Public Health Act.
Factories, Offices and Shops Act 1970, Act 328	The Act requires all factories, offices and shops to among others to 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 project will be registered with the Factories Inspectorate Division and any accident reported as per Act 328, 1970.

State Lands Act, 1962.	This is the principal Law under which private lands could be compulsorily acquired. The Law empowers the President to acquire any land for the public benefit. The Act and its Regulation that is State Lands Regulation 1962 LI 230 details out the mechanism and procedure for compulsorily acquiring lands. It is a mandatory requirement that a copy of the instrument of acquisition be served on any person having an interest in or possession such lands or be affixed at a convenient place on the land and be published thrice in a newspaper circulating in the district where the land is situated. The Act emphasizes the payment of compensation to the victim of acquisition made under the Act.	Acquisition of land for the project, valuation and compensation payments to affected farmers and persons will be guided by the relevant provisions of this Act
Regulatory Frameworks	**Summary of Core Requirements**	**Relevance to Policy Development**
Lands (Statutory Wayleaves) Act, 1963	The Lands Statutory Wayleaves Act, 1963; Act 186 was enacted to facilitate the entry on any land for the purposes of construction, installation and maintenance of public utility work and creation of right of ways and other similar right for such works. Works for which right of way may be created are "highways or works for purposes of, or in connection with any public utility works". Highways have been defined in the Act as "any road, street, path, pavement, or square and includes any bridge, or any other structure associated therewith" The Act and its accompanying Regulation, the Lands Statutory Way leave Regulation 1964 (LI 334) provides the modalities and procedures for the acquisition of the Statutory right of ways. Thus, the mechanism for entry for survey works and construction has been spelt out in details. The owner/occupier is required to be given formal notification at least one week, about the intent to enter, and at least 24 hours prior to actual entry. In assessing compensation to be paid consideration must be given to the increases of land values as a result of the installation or construction of works. A right of appeal by an aggrieved person is also provided for.	The project development will involve installation and maintenance of works of public utility, construction of ground cables which shall comply with the provisions of this Act The wayleaves will be utilized for siting drains and utility lines especially along roads since all wayleaves have been acquired by the state.
Lands Commission Act 2008, Act 767	This Act establishes the Lands Commission, in accordance with Article 258 of the constitution as a body corporate, defines the functions of and assign powers to the commission and makes provision with respect to its composition and administration and the qualification and appointment of members of the commission. The objectives of the commission, among others, are to: (i) promote the judicious use of land by the society and (ii) ensure that land development is in conformity with the nation's development goals.	The project will be implemented in line with the objectives of the Commission for sustainable development of land and conform to the development goals of the programme.
Water Resources Commission Act 1996, Act 522	The Act establishes a commission to regulate and manage national water resources. The commission is tasked with establishing comprehensive plans for the use, conservation, protection, development, and improvement of Ghana's water resources and is able to grant rights for the exploitation of water resources.	The project will generate waste with water pollution potential. However, waste will be managed properly as provided in the Waste Management plan of this report
Fire Protection, (Premises) Regulations, 2003 (LI 1724)	The Fire Precaution (Premises) regulations 2003 L.I 1724 was passed to give backing to the Ghana National Fire Service (GNFS) to insist on or evaluate Fire Safety Precautions measures in premises to occupants or any person staying in that premises by ensuring that they can escape from fire safety and quickly.	This regulation is important to the Project in order to ensure that fire safety measures are put in place to protect lives that will

	Generally, the regulation requires that the developer applies to the GNFS for permit to ensure that the necessary fire safety measures are part of the drawings for the building before the developer is permitted to begin construction works.	use the premises as well as the properties in the facility. A Fire certificate will be obtained for the operation of the project.
Persons with Disability Act 2006, (Act 715	Section 6 and 7 of the Act states that the owner or occupier of a place to which the public has access shall provide appropriate facilities that make the place accessible to and available for use by a person with disability. Section 7 states that a person who provides service to the public shall put in place the necessary facilities that make the service available and accessible to a person with disability. Penalty for contravention is stated in Section 8 that a person who contravenes Section 6, or 7 commits an offence and is liable on summary conviction to a fine not exceeding fifty penalty units or to a term of imprisonment not exceeding three months or to both.	The Project developer shall ensure that people with disabilities will have equal opportunity to use of facilities including reasonable modifications such as ramps, grab bars in the bathroom, or Braille on a sign.

3.4 Administrative and Institutional Framework

The management for social and economic infrastructural development and community based rural livelihood activities is fragmented among a number of Ministries, Department, Agencies and organisations and non-governmental organisations . The relevant ones to this proposed Project include:

- Ministry of Local Government, Decentralisation and Rural Development (MLGDRD)
- Ministry of Finance (MoF)
- Ministry of Food and Agriculture;
- Ministry of Roads and Highways
- Ministry of Trade and Industry
- Ministry of Interior
- Ministry of Youth and Sports
- Environmental Protection Agency (EPA)
- Lands Commission
- Ghana Immigration Service
- Northern Development Authority
- District Assemblies and their technical units; namely:
    - Municipal Planning Coordinating Unit
    - Physical Planning Department;
    - Works Department
- Traditional Councils/Authorities and
- Non-Governmental Organisations

Ministry of Local Government Decentralisation and Rural Development (MLGDRD)

The Ministry of Local Government, Decentralisation and Rural Development (MLGDRD) will be the lead Ministry responsible for managing and coordinating the implementation of the Gulf of Guinea Social Cohesion Project in Ghana. The MLGDRD is responsible for planning, budgeting and collaborating in the execution of the Project in collaboration with other MDAs which provide supportive roles to DAs in their day-to-day work. Furthermore, the Ministry will be responsible for the overall disbursement and accounting for the Project funds to Ministry of Finance and Parliament.

Ministry of Finance

The Ministry of Finance is the ministry that manages the central government's budget. The Ministry of Finance is responsible for releasing funds to support displacement and resettlement activities through the participating District Assemblies. Furthermore, on request from MLGDRD, the Ministry of Finance will authorize and release to DAs through MLGDRD funds required to implement the project activities. The Ministry may also enter into special arrangements with participating MDAs regarding implementation of provisions in the Project ESMFs.

Ministry of Roads and Highways (MRH)

The Ministry of Roads and Highways (MRH) is a government establishment responsible for policy formulation, monitoring and evaluation with regards to the road sector which consists of the following areas:

- Road Infrastructure sub-sector
- Road Transport Services and Safety sub-sector. Road Transport Training
- Road Maintenance Financing
- Department of Feeder Roads (DFR)
- Department of Urban Roads (DUR)

Environmental Protection Agency (EPA)

The Environmental Protection Agency is responsible for providing technical advice on environmental protection and sustainable development to the Ministry of Environment, Science and Technology. The functions of the agency include promotion of environmental education, research, monitoring and regulation, and preparation of standards and guidelines for environmental management.

In carrying out their functions, the agency is legally backed by the Environmental Protection Act 490, and the Environmental Assessment Regulation LI 1652. The agency also operates within the framework of the National Environmental Action Plan (NEAP), Environmental Sanitation Policy and ensuring compliance with laid down EIA procedures in Ghana in accordance with the EPA Act 1994 (Act 490).

The Ghana EA procedures are largely in agreement with the World Bank ESF processes and procedures. The previous gap analysis showed that the current regulations on environment and labour that are applied to the SOCO are comparable to the international standards and the former is now well establish in the country to assure satisfactory environmental and social performance of proposed project activities the following gaps in the national standards:

1. Resettlement / relocation issues
2. Gender-based violence issues
3. Chance Find Issues

The EPA is not sufficiently staffed and underfunded as well as not sufficiently presented in the districts, to carry out its function in a satisfactory way and country wide. Since recently, the EPA does no longer receive funds from the central government and instead needs to fund itself by generating its own revenues, which include registration and permit fees, financial penalties received for the non-compliance with the environmental legislations and charges for services it provides to other government agencies. This serves to increase the incentive of the EPA to act indeed according to its mandate and to register as many

projects as possible; however, it also leaves the agency with a shortage of funds and a limited room for manoeuvre. This makes a concentration for the EPA on certain, more profitable areas of the country likely while abandoning rural areas with fewer activities.

Currently the EPA is present in the 10 regional capitals as well as 16 district offices, which have only opened earlier this year. Furthermore, the EPA employs around 360 persons, of whom 60% can be considered as experts, who possess a Master's degree. Additionally, it is supported by around 300 National Service workers. Nevertheless, to cover the whole country, it is estimated by the EPA, that around three times as many regular employees are needed as it has now. This would amount to around 1000 persons, showing the high degree of understaffing.

Finally, the EPA lacks also of a centralised reporting and monitoring system, which connects the regional offices to the headquarters. Only projects needing a full EIS are reported to the headquarter, while the provision of environmental permits to projects, that only need the application form or a preliminary environment report are handled by the regional and district offices without having a centralised reporting and registration system. This makes the monitoring of the compliance with the environmental regulations difficult and prevents knowledge creation and systematic intervention

Lands Commission

This is the state agency charged primarily with the management and administration of state and vested lands. It is responsible for advising on policy framework for development of particular areas so as to ensure that development of such areas is coordinated. The functions of the Lands Commission are spelt out in Article 256 of the 1992 Constitution and the Lands Commission Act (Act 483) 1994. The Commission's role in the compulsory acquisition is that it serves as a member/secretary to the Site Selection Committee, a technical committee that considers request for compulsory acquisition by the state agencies and recommends its acceptance or otherwise. The proprietary plan covering the site to be acquired is plotted by the Commission in the government records. Also, recommendation on the acquisition is processed by the Commission for the approval by the Minister responsible for lands before an executive instrument would be issued and gazetted.

The Lands Commission comprises of four Divisions:

- Lands Registration Division
- Land Valuation Division
- Survey and Mapping Division; and
- Public and Vested Lands Management Division

Labour Department and Labour Commission

The Labour Commission and the Labour Department are both responsible for the compliance with the labour law. While the Labour Commission is indirectly responsible for it – its responsibility is the settlement and prevention of labour disputes - the Labour Department is the main, responsible institution. Both agencies are not able to cover the whole country and therefore, in large parts of the country the labour laws are not enforced. The Labour Department conducts inspections at different companies in order to assess their compliance with the labour standards and in case of deficiencies, to instruct them on possible improvement or to sanction them. It has offices in the 10 regional capitals as well as in 55 additional districts and is therefore not present in large parts of the country. The Labour Commission,

which according to the law should also be present in all the regions, only has two offices – one in Accra and the other one in Takoradi, limiting its influence on rural districts. The Labour Commission is also negatively affected by capacity constraints, mainly in the form of their low presence in the districts. Even though it should be present in all regions according to the law, the Labour Commission is only present in two locations: Accra and Takoradi.

From this the conclusion can be drawn that compliance with the labour law is differently developed within Ghana. While in the more urban areas it is likely that an office of the labour department is located and some degree of enforcement is given, in rural districts, the labour department is not present and therefore unable to enforce the labour standards, which also leads to low compliance.

District Assemblies

The District Assemblies are the planning authorities who have jurisdiction over the project implementation and sites. They grant permits and licenses for development and operation of infrastructure and any commercial activity. Land demarcation and general development plans of communities lie with the assemblies as well as the communities in consultations with the Traditional Authorities who are custodians of lands in most part of Ghana. The HHMA will be acquiring lands for sub-projects in their MTDPs and where resettlement and compensations are triggered; they will be responsible for the implementation of the provisions of the ESMPs

District Planning Coordinating Unit

The District Planning Co-ordinating Units of beneficiary Assemblies will be the main focal units responsible for the implementation of activities of the Project. The unit co-ordinates, monitors and evaluates all development activities of the Assembly and ensure consistency in policy formulation of the Assembly. The main functions include:

- Collection and preliminary analysis of data;
- Preliminary rationalization and harmonization of development policies;
- Implementation of strategies and programmes and the preparation of projects documentation;
- Identification of bankable projects, assessment of the economic viability of projects and provision of guidance for their implementation;
- Monitoring and evaluating the implementation of plans of various sector agencies and ensuring the achievement of plan targets; and
- Co-ordination of donor funded development projects.

Physical Planning Department

The Physical Planning Department is one of the decentralized Departments of the DAs whose functions are crucial for effective implementation of Physical Planning related policies and programmes at the local level. The main functions of the department include:

- Advise the District Assemblies on policies on physical planning, land use and development.
- Co-ordinate activities and projects of departments and other agencies including Non-Governmental Organizations to ensure compliance with planning standards;
- Prepare spatial plans as a guide for the formulation of development policies and decisions in the district;

- Identify problems concerning the development of land and its social, environmental and economic implications;
- Advise on setting out approved plans for future development of land at the district level;
- Advise on preparation of structure plans for towns and villages within the district;
- Collaborate with the Survey and Mapping Division of Lands Commission in the performance of its functions;
- Facilitate and participate in research and public education in planning and human settlement development in the District; and
- Assist to prepare a District Land-Use Plan to guide activities in the district;

Works Department of the Assembly

The Works Department is one of the decentralized Departments of the DAs whose functions are crucial for effective implementation of infrastructural works (building, water and feeder roads) related policies and programmes at the local level. The main functions of the Works Department include.

- Facilitate the implementation of policies on works and report to the Assembly, and provide advice on matters relating to Works in the Assembly.
- Facilitate the construction, repair and maintenance of:
- Public roads including Feeder Roads.
- Drains along any streets in the major settlements within its jurisdiction.
- Encourage and facilitate maintenance of public buildings and facilities in the Assembly;
- Assist to build, equip, close and maintain markets and prohibit the erection of stores in places other than the markets;
- Assist to inspect projects undertaken by the District Assembly with the relevant departments of the Assembly; and
- Provide technical advice for the machinery and structural layout of building plans to facilitate escape from fire, rescue operation and fire management

District Agricultural Directorate

Implement the agricultural policies of the country.

Traditional Authorities

In the 1992 Constitution, chieftaincy together with its traditional councils is guaranteed and protected as an important institution in the country. Article 267 (1) of the 1992 Constitution avers that all stool lands in the country shall vest in the appropriate stool on behalf of, and in trust of the subjects of the stool in accordance with customary law and usage.

Traditional Authorities play a key role in the administration of the area and in customary land control. At the village level, family and land disputes and development issues are also traditionally dealt with by the village chief and elders. In addition, the chiefs act as custodians of stool/skin land, can mobilise their people for developmental efforts and arbitrate in the resolution of local disputes. Although chiefs

have no direct political authority, some are appointed by the Government on District Assemblies. For the purpose of this project, community elders and chiefs will play a key role in identifying Project Affected Persons for compensation purposes.

Non-Governmental Organizations (NGO)

NGOs are independent bodies who serve as the mouthpiece of the local people. They participate in public hearings of the ESMPs and in addressing the concerns of the communities. As part of the broader project consultation, the project will engage relevant NGOs in project activities. Some major Non-Governmental Organizations in the municipality include:

- Concern for Humanity and Nature Center-Environmental activity
- Pro-Link Organization-HIV/AIDs and Peer Education
- World Vision International, Action AID, Christian Rural Aid Network (CRAN) - Private Extension, Micro Financing and Capacity Building of farmers.

3.5 Relevant International Conventions and Protocols

Convention on the Control of Transboundary Movement of Hazardous Waste and their Disposal (Basel Convention) 2003.

The Basel Convention aims to protect human health and environment against the harmful effects of hazardous waste. The convention's provisions relate to reducing hazardous waste generation, promoting environmentally sound management, and restricting transboundary movement. The provisions of the convention include a range of waste defined as "hazardous" as well as "other waste" including household waste and incinerator ash. Ghana is in a process of restricting the importation of hazardous and other waste to Ghana for recovery and final disposal.

Relevance: The Project will need to take the application of the Basel Convention into account and monitor the legal analysis process to ensure compliance of the waste management facilities and operations planned for the project.

UN Convention on Biological Diversity (CBD), 1994

The Convention on Biological Diversity (CBD) is an international legally binding treaty with three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. Its overall objective is to encourage actions which will lead to a sustainable future.

Relevance: The Convention on Biological Diversity will be referred to during the study to ensure that the developer conforms to these provisions

UN Framework Convention on Climate Change, 1992

The Convention on Climate Change sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. Under the Convention, governments:

- gather and share information on greenhouse gas emissions, national policies and best practices
- launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
- cooperate in preparing for adaptation to the impacts of climate change

Relevance: The Convention on Climate Change is relevant to the Project since climate change impacts such as floods, carbon sinks can have adverse implications on Project implementation.

Convention Concerning the Protection of Workers against Occupational Hazards in the Working Environmental due to Air Pollution, Noise and Vibration (ILO No. 148) 1977

According to this convention, national laws or regulations shall prescribe that measures be taken for the prevention and control of, and protection against, occupational hazards in the working environment due to air pollution, noise and vibration. Provisions concerning the practical implementation of the measures so prescribed may be adopted through technical standards, codes of practice and other appropriate methods.

Relevance: This convention is relevant to the Project since employees would be engaged in the construction and implementation of the Project

3.6 The World Bank Environmental and Social Framework

The World Bank launched the Environmental and Social Framework in 2018 to be applied to all investment project commencing on or after October 2018. The ESF re-enforces the vision of the Bank to pursue sustainable development and poverty reduction. It also sets out the policy of the Bank to support borrowers to develop and implement environmentally and socially sustainable projects as well as build capacity in the assessment and management of environmental and social impacts and risks associated with the implementation and operation of projects. The World Bank, as part of the new framework also has environmental and social standards that borrowers must comply with for projects to be sustainable, non-discriminatory, transparent, participatory, environmentally, and socially accountable as well as conform to good international practices. There are ten (10) Environmental and Social Standards under the new World Bank Environmental and Social Framework (ESF) that all projects/investments that are funded by the Investment Project Financing arrangements are obliged to conform to. Eight of these standards are relevant to the funding of intended investment s under the Gulf of Guinea Northern Regions Social Cohesion Project-Ghana. Particularly those under Component 1. These are:

ESS1 – Assessment and Management of Environmental and Social Risks and Impacts.

ESS 1 places the responsibility of ameliorating the environmental impacts of a Bank-financed project on the borrower. Specifically, the objectives of ESS1 are to:

(i) identify, evaluate, and manage the environment and social risks and impacts of a Bank financed project in a manner consistent with the Bank's Environmental and Social Standards. ESSS1 recommends the following hierarchy in the amelioration of impacts (a) Anticipate and avoid risks and impacts; (b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (d) Once risks and impacts have been minimized or reduced, mitigate; and (e) Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.

(ii) To adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project.

(iii) To utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development, and implementation of projects, whenever appropriate.

(iv) To promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity.

ESS 1 is relevant because sub-project activities under components 1 and ***2 are expected to engender some impacts on the environment. These impacts need to be ameliorated. With specific sub- project locations being unknown, ESS 1 is the basis for the preparation of this ESMF.***

ESS 2 – Labour and Working Relations. Employment creation, income generation and welfare of labor are the core of ESS2. It recognises the importance of these in the pursuit of poverty reduction and economic growth. It requires management to treat workers fairly and provide them with safe and healthy working conditions to enhance the development benefits of projects. The specific objectives of ESS 2 are to:

(i) To promote safety and health at work.
(ii) To promote the fair treatment, non-discrimination, and equal opportunity of project workers.
(iii) To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate.
(iv) To prevent the use of all forms of forced labour and child labor.
(v) To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law.
(vi) To provide project workers with accessible means to raise workplace concerns.

ESS 2 is applicable to the following categories of labor: people employed or engaged directly by the Borrower (Project staff); people employed or engaged through third parties (contractors, sub-contractors, brokers, agents and intermediaries) to perform work related to core functions of the project, regardless of location; people employed or engaged by the Borrower's primary suppliers (suppliers who, on an ongoing basis, provide directly to the project goods or materials essential for the core functions of the project); and, people employed or engaged in providing community labour. ESS2 applies to people engaged on the project on full-time, part-time, temporary, and seasonal basis as well as migrant workers.

Activities under Components 1 and 2 of this CDD project will make use of community workers and contracted workers particularly in the case of public market infrastructure and therefore making provisions under ESS 2 relevant to the implementation to project activities. **To this end, a labour Management Procedures Document (LMP) was prepared as a separate document but to be used in conjunction with this ESMF in the implementation of subproject community based infrastructural and natural resource and climate change investments and also in implementing public market and feeder roads investments.**

ESS 3 – Resource Efficiency and Pollution Prevention and Management. ESS 3 sets out the requirements to address resource efficiency and pollution prevention (air, water and land pollution and management arising out of economic activities and urbanization) throughout the project life-cycle consistent with Good International Industry Practice (GIIP). The specific objectives of this ESS are:

(i) To promote the sustainable use of resources, including energy, water, and raw materials;
(ii) To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities;
(iii) To avoid or minimize project-related emissions of short and long-lived climate pollutants;
(iv) To avoid or minimize generation of hazardous and non- hazardous waste; and,
(v) To minimize and manage the risks and impacts associated with pesticide use.

ESS3 enjoins the borrower to consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention measures in accordance with the mitigation hierarchy. The measures are expected to be proportionate to the risks and impacts associated with the project and consistent with GIIP, in the first instance the Environment, Health and Safety Guidelines of the Bank.

Components 1 and 2 – Component1 will finance community level public infrastructure in vulnerable village clusters near border areas this include access ***feeder roads and related connectivity activities and consequently will involve land clearing, excavation, vegetation removal and also generation of dust and waste. Also, the natural resource management and climate change adaptation initiatives and associated activities (tree planting) may also require the use of agrochemicals, making ESS 3 relevant in the implementation of project activities.***

ESS 4: Community Health and Safety. ESS4 addresses the potential health, safety, and security risks and impacts of Bank financed projects (resulting from project activities, equipment, and infrastructure) on project-affected communities. It places a responsibility on the Borrower to avoid or minimize such risks and impacts, with particular attention to people who, because of their circumstances, may be vulnerable. The specific objectives of ESS4 are to: anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life-cycle from both routine and non-routine circumstances; promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams; avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials; have in place effective measures to address emergency events; ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.

ESS 4 is relevant because of the CDD approach adopted for project implementation there will be high level community involvement and the fact that the subproject ***locations in an already high fragility environment triggers provisions under ESS4***

ESS 5: Land Acquisitions, Restrictions on Land Use, and Involuntary Resettlement. ESS5 recognizes that Bank funded projects may result in involuntary resettlement, which, if unmitigated will lead to severe consequent undesirable socio-economic and environmental impacts on project communities. The specific objectives of ESS5 are to: avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives; avoid forced eviction; mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by: (a) providing timely compensation for loss of assets at replacement cost and (b) assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher; improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure; conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant; ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.

The project will not acquire new lands but will rely on lands voluntarily donated as well as communal and public lands. ESS 5 will be applicable because it will provide guidance for ensuring

that land provided to the project by the community have been agreed upon by all parties (traditional authorities, community dwelleters, etc.)

ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. ESS6 recognizes that Bank funded projects could negatively impact on biodiversity and that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. The specific objectives of this ESS are to: protect and conserve biodiversity and habitats; apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity; promote the sustainable management of living natural resources; support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.

ESS 6 is relevant because climate change mitigation initiatives and rehabilitation of feeder roads and dugouts may require land clearing which, although expected to be minimal, may potentially impact on biodiversity.

ESS 8: Cultural Heritage**.** ESS 8 recognizes the importance of cultural heritage (natural areas with cultural and/or spiritual value such as sacred groves, sacred bodies of water and waterways, sacred mountains, sacred trees, sacred rocks, burial grounds, and sites) as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity and practice. It provides continuity in tangible and intangible forms between the past, present and future and reflects constantly evolving values, beliefs, knowledge, and traditions. The specific objectives of this ESS are to: protect cultural heritage from the adverse impacts of project activities and support its preservation; address cultural heritage as an integral aspect of sustainable development; promote meaningful consultation with stakeholders regarding cultural heritage; and, promote the equitable sharing of benefits from the use of cultural heritage. The requirements of this ESS 8 will apply to all projects that are likely to have risks or impacts on cultural heritage, regardless of whether it has been legally protected or previously identified or disturbed. This will include a project which: Involves excavations, demolition, movement of earth, flooding or other changes in the physical environment; (b) Is located within a legally protected area or a legally defined buffer zone; (c) Is located in, or in the vicinity of, a recognized cultural heritage site; or (d) Is specifically designed to support the conservation, management and use of cultural heritage.

ESS 8 is relevant to this project because small earth dams and dugouts and feeder roads rehabilitation under LIPW may involve earth works **that could lead to the discovery or identification of certain cultural heritage, including archaeological relics, graves, shrines, sacred trees or groves that may require attention of relevant government agencies.**

ESS 10: Stakeholder Engagement **and Information Disclosure.** This ESS places premium on open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. The specific objectives ESS 10 are to: establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, especially project affected parties; assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance; promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life-cycle on issues that could potentially affect them;

ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format; and, provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.

ESS 10 is particularly relevant to Gulf of Guinea Social Cohesion Project-Ghana because of the multiplicity of stakeholders ***that will be involved in the project – communities, government agencies, regional and district administrations and traditional authorities and nationals from neighbouring border communities.***

3.7 World Bank Group Environment, Health and Safety Guidelines (EHSG)

Environment

Air Emissions and Ambient air quality. This guideline applies to facilities or projects that generate emissions to air at any stage of the project life cycle. It complements the industry-specific emissions guidance presented in the Industry Sector Environmental, Health, and Safety (EHS) Guidelines by providing information about common techniques for emissions management that may be applied to a range of industry sectors. This guideline provides an approach to the management of significant sources of emissions, including specific guidance for assessment and monitoring of impacts. It is also intended to provide additional information on approaches to emissions management in projects located in areas of poor air quality, where it may be necessary to establish project- specific emissions standards. Feeder roads and small earth dams and dugouts rehabilitation to be undertaken under the project are expected to generate some level of dust. In the case of the dugouts, dust generation may be only realized during the construction phase [available: https://www.ifc.org/wps/wcm/connect/4e01e089-ad1a-4986-b955-e19e1f305ff0/1-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES&CVID=nPtgvbS].

Hazardous material Management. These guidelines apply to projects that use, store, or handle any quantity of hazardous materials (Hazmats), defined as materials that represent a risk to human health, property, or the environment due to their physical or chemical characteristics. Hazmats can be classified according to the hazard as explosives; compressed gases, including toxic or flammable gases; flammable liquids; flammable solids; oxidizing substances; toxic materials; radioactive material; and corrosive substances. The potential use of agrochemicals in the implementation of the Climate Change sub-project makes this guideline relevant to the project [available: https://www.ifc.org/wps/wcm/connect/90231ba8-5bb3-40f4-9255-eaf723d89c32/1-5%2BHazardous%2BMaterials%2BManagement.pdf?MOD=AJPERES&CVID=nPtgwml].

Waste Management. These guidelines apply to projects that generate, store, or handle any quantity of waste across a range of industry sectors. It is not intended to apply to projects or facilities where the primary business is the collection, transportation, treatment, or disposal of wastes. Construction (excavated spoils) and domestic waste (from the numerous beneficiaries to be engaged) expected to be generated from various sites makes this guideline relevant to the project's implementation [Available: https://www.ifc.org/wps/wcm/connect/456bbb17-b961-45b3-b0a7-c1bd1c7163e0/1-6%2BWaste%2BManagement.pdf?MOD=AJPERES&CVID=nPtgwEW].

Noise Management. This guideline addresses impacts of noise beyond the property boundary of the facilities or projects being implemented. Thus, it seeks to addresses the public health risks of noise generated from the project and not the occupational health risks. The use of the handheld compactor at both the feeder roads and dugout sites [Available: https://www.ifc.org/wps/wcm/connect/4a4db1c5-ee97-43ba-99dd-8b120b22ea32/1-7%2BNoise.pdf?MOD=AJPERES&CVID=nPtgwZY]..

Occupational Health and Safety: This guideline provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. Although the focus is placed on the operational phase of projects, much of the guidance also applies to construction and decommissioning activities. Activities at LIPW sites such as land clearing, excavation, hauling etc. expose beneficiaries to one form of occupational risk or the other. Guidance provided under this guideline will be helpful in managing such risks [Available: https://www.ifc.org/wps/wcm/connect/1d19c1ab-3ef8-42d4-bd6b-cb79648af3fe/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES&CVID=nPtgxyx].

Community Health and Safety. Specific guidelines provided under traffic safety, water quality and availability, disease prevention and construction and decommissioning presented in this guideline are relevant to the implementation of the project's sub-project activities such as feeder road and dugout rehabilitation/construction [Available: https://www.ifc.org/wps/wcm/connect/eeb82b4a-e9a8-4ad1-9472-f1c766eb67c8/3%2BCommunity%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES&CVID=nPtgxTd].

Water and Sanitation

The EHS Guidelines for Water and Sanitation include information relevant to the operation and maintenance of (i) potable water treatment and distribution systems, and (ii) collection of sewage in centralized systems (such as piped sewer collection networks) or decentralized systems (such as septic tanks subsequently serviced by pump trucks) and treatment of collected sewage at centralized facilities [Available: https://www.ifc.org/wps/wcm/connect/0d8cb86a-9120-4e37-98f7-cfb1a941f235/Final%2B-%2BWater%2Band%2BSanitation.pdf?MOD=AJPERES&CVID=nPtk0wW].

Toll Roads

The EHS Guidelines for Toll Roads include information relevant to construction, operation and maintenance of large, sealed road projects including associated bridges and overpasses. Issues associated with the construction and operation of maintenance facilities are addressed in the General EHS Guidelines. Issues associated with sourcing of construction materials are presented in the EHS Guidelines for Construction Materials Extraction, while those related to vehicle service areas are included in the EHS Guidelines for Retail Petroleum [Available: https://www.ifc.org/wps/wcm/connect/9c8cfb24-abbd-4ab4-ba63-84f94da02af7/Final%2B-%2BToll%2BRoads.pdf?MOD=AJPERES&CVID=nPtjJOQ&id=1323162564158].

Power Transmission and Distribution The EHS Guidelines for Electric Power Transmission and Distribution include information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas. Annex A provides a summary of industry sector activities [Available: https://www.ifc.org/wps/wcm/connect/7b65ce6b-129d-4634-99dc-12f85c0674b3/Final%2B-%2BElectric%2BTransmission%2Band%2BDistribution.pdf?MOD=AJPERES&CVID=nPtfp32&id=1323162154847].

Waste Management Facilities

The EHS Guidelines for Waste Management cover facilities or projects dedicated to the management of municipal solid waste and industrial waste, including waste collection and transport; waste receipt, unloading, processing, and storage; landfill disposal; physico-chemical and biological treatment; and incineration projects. 2 Industry-specific waste management activities applicable, for example, to medical waste, municipal sewage, cement kilns, and others are covered in the relevant industry-sector EHS Guidelines, as is the minimization and reuse of waste at the source [Available: https://www.ifc.org/wps/wcm/connect/5b05bf0e-1726-42b1-b7c9-33c7b46ddda8/Final%2B-%2BWaste%2BManagement%2BFacilities.pdf?MOD=AJPERES&CVID=nPtj.3h&id=1323162538174

Table 3: Gap Analysis - National and World Bank

Comparison of Ghana's Regulations/ Policies and World Bank ESF for Handling Environmental and Social Risks and Impacts

Scope/Objective	Description of Bank Policy	Description of Government	Gaps Identified	Gap Bridging Actions
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts				
Identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs. **To adopt a mitigation hierarchy approach to:** **• Anticipate and avoid risks and impacts** **• Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;** **• Once risks and impacts have been minimized or reduced, mitigate; and** **• Where significant residual impacts remain,**	The standard provides guidance on assessing the Project's potential environmental and social risks and impacts and addressing potential impacts through planning and mitigation hierarchy approach.	Environmental Assessment. Regulation 1 (2) of LI 1652 mandates that no person shall commence an undertaking which in the opinion of the Agency has or is likely to have adverse effects on the environment or public health unless, prior to the commencement, the undertaking has been registered by the EPA and an environmental permit has been issued by the Agency in respect of the undertaking.	Even though the regulation seeks to anticipate and mitigate/avoid risks and impacts, it does not fully address potential impacts and mitigation hierarchy approach e.g. content wise it does not address impacts on the vulnerable	• Assistance/compensations are provided for the affected parties by government through the district and municipal assemblies at various project locations. • The MDA's and MMDAs were fully involved in the project preparatory stage through consultations for them to become abreast with project components roles they will play during implementation. • The capacities of the MDAs staff on world bank ESF will also be built at the early stage of project implementation to enable them to collaborate effectively in addressing this gap
ESS2: Labor and Working Conditions				
• To promote safety and health at work, fair treatment, non-discrimination and equal opportunity of project workers including vulnerable workers such as women, persons with disabilities, children	ESS2 promotes the fair treatment, non-discrimination and provision of equal opportunities for workers engaged on projects it supports. It strongly encourages protection of all project workers, including vulnerable groups such as women, persons with	• The Labour Act 2003 (Act 651) provides for the rights and duties of employers and workers; legal or illegal strike; guarantees trade unions the freedom of associations and establishes Labour Commission to mediate and act in respect of all	Although the Commission makes provision for anticipated labor-related complaints and redress, beneficiaries' access (distance and processes) to the commission at the district-level may be a challenge.	• The project will adopt and enhance and existing transparent GRM which addresses concerns promptly • It has also developed labor management procedures e.g. working conditions, occupational health and safety, child labor, etc. (section 5.4). which will

Scope/Objective	Description of Bank Policy	Description of Government	Gaps Identified	Gap Bridging Actions
• To prevent the use of all forms of forced labor and child labor. **• To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law.** **To provide project workers with accessible means to raise workplace concerns.** **OHS Hazard identification and right of employees to remove themselves from such workplaces without being punished.**	disabilities, children (of working age) and migrant workers, contracted workers and primary supply workers, as appropriate. It provides certain requirements that the project must meet in terms of working conditions, protection of the work force (especially the prevention of all forms of forced and child labor), and provision of a grievance mechanism that addresses concerns on the project promptly and uses a transparent process that provides timely feedback to those concerned. Under ESS 2, workplace processes will be put in place for project workers to report work situations that they believe are not safe or healthy, and to remove themselves from a work situation which they have reasonable justification to believe presents an imminent and serious danger to their life or health. Project workers who remove themselves from such situations will not be required to return to work until necessary remedial action to correct the situation has been taken. Project workers will not be retaliated against or otherwise subject to reprisal or negative action for such reporting or removal.	labor issues. Under Part XV (Occupational Health Safety and Environment), the Act explicitly indicates that it is the duty of an employer to ensure the worker works under satisfactory, safe and healthy conditions. The Workmen's Compensation Law 1987 (PNDC 187) seeks to address the necessary compensations needed to be awarded to workers for personal injuries arising out of and in the course of their employment. Section 78 of the Factories, Offices and Shop Act 1970 (Act 328), details the duties of persons employed. it is not part of the duties of persons employed to remove themselves from such unsafe working places and also silent on they not being retaliated against	The law does not explicitly mandate workers to remove themselves from such unsafe working places and also silent on they not being retaliated against if they should do so	guide project implementers in managing labor-related issues. For instance in order to avoid child labor the acceptable age will be 18 years and the Ghana 2010 risks assessment technique of child labor monitoring (CLM) described under (section 5.4.4) will also be observed to ensure that labor management procedures in respect of child labor is respected. (LMP - Appendix 12). Labor management procedures has been prepared as part of this ESMF, which adequately takes care of ESS 2 provisions. Workers will be sensitized on the LMP and their rights to remove themselves from unsafe workplaces and will not be retaliated against if they do so in line with the LMP/ESS 2 provisions

Scope/Objective	Description of Bank Policy	Description of Government	Gaps Identified	Gap Bridging Actions
ESS3: Resource Efficiency and Pollution Prevention and Management				
• **To achieve the sustainable use of resources, including implementing measures that avoids or reduces pollution resulting from project activities and to minimize and manage the risks and impacts associated with pesticide use.**	The ESS3 provides requirements for projects to achieve the sustainable use of resources, including energy, water and raw materials, as well as implement measures that avoids or reduces pollution resulting from project activities. The standard places specific consideration on hazardous wastes or materials and air emissions (climate pollutants) given that the current and projected atmospheric concentration of greenhouse gases (GHG) threaten the welfare of present and future lives.	• The Act 490 mandates the EPA to enforce compliance with established EIA procedures among companies and businesses in the planning and execution of development projects, including existing projects. • Part II of the Act also mandates the Agency to register and manage all pesticides to ensure that the approved ones are used. • The Pesticide Control and Management Act, 1996 (Act 528) provides for the registration and use of pesticides and related matters	The regulation ensures that measures are put in place by polluters through routine monitoring by regulatory agencies and institutions i.e. EPA, etc. It does not address the risks associated with the use of pesticides by prospective users	• An Integrated Pest Management Plan has been developed for the project and will guide NRCA implementation activities. (See TOR in Appendix 9)
ESS4: Community Health and Safety				
• **To anticipate and avoid adverse impacts on the health and safety of project affected communities during the**	This standard recognizes that project activities, project equipment and infrastructure increase the exposure of project	The Public Health Act, 2012, Act 851 revises and consolidates all the laws and regulations pertaining to the prevention of disease,	The regulation does not consider assessment of events and measures to deal with occurrences and emergencies	• The law provides the platform to engage with stakeholders. A stakeholder engagement plan has been prepared and will be in

Scope/Objective	Description of Bank Policy	Description of Government of Ghana Regulation	Gaps Identified	Gap Bridging Actions
• **To anticipate and avoid project lifecycle from both routine and non-routine circumstances.** • **To promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams.** • **To ensure that safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities and adverse impacts on the health and safety of project affected persons**	This standard recognizes that project activities, project equipment and infrastructure stakeholder communities to various health, safety and security risks and impacts and thus recommends that projects implement measures that avoids or limits the occurrence of such risks. It provides further requirements or guidelines on managing safety, including the need for projects to undertake safety assessment for each phase of the project, monitor incidents and accidents and preparing regular reports on such monitoring. ESS4 also provides guidance on emergency preparedness and response.	The Public Health Act, 2012, Act 851 revises and consolidates all the laws and regulations promote, safeguard and maintain and protect the health of human and animals, and to provide for related matters. The law has merged all provisions in the criminal code, ordinances, legislative and executive instruments, acts, by-laws of the District Assemblies etc. The Act enjoins the provision of sanitary stations and facilities, destruction of vectors including mosquitoes, protection of water receptacles and the promotion of environmental sanitation.	The regulation does not consider assessment of events and measures to	The law provides the platform to engage with stakeholders. A stakeholder engagement plan has place for project implementation. Community needs with respect to project activities will be assessed and necessary measures taken.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources				
Scope/objective	**Description of World Bank Policy**	**Description of Government of Ghana Regulations**	**Gaps Identified**	**Gaps Bridging actions**
• **To protect and conserve biodiversity and habitats.** • **To apply the mitigation hierarchy and**	ESS6 promotes the conservation of biodiversity or natural habitats. and supports the protection and maintenance of the core ecological	The 1994 Forest and Wildlife Policy was revised in 2011 and subsequently approved in 2012 aims at the conservation and sustainable development of	Adequate provisions made under national laws and policies.	The project will take measures to protect and conserve biodiversity and habitats and all requirements specified in the ESS6

the precautionary approach in the design and implementation of projects that could have an impact on biodiversity. • **To promote the sustainable management of living natural resources.** • **To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.**	functions of natural habitats and the biodiversity they support. It also encourages projects to incorporate into their development, environmental and social strategies that address any major natural habitat issues, including identification of important natural habitat sites, the ecological functions they perform, the degree of threat to the sites, and priorities for conservation.	forest and wildlife resources for the maintenance of environmental stability and continuous flow of optimum benefits from the socio-cultural and economic goods and services that the forest environment provides to the present and future generations, whilst fulfilling Ghana's commitments under international agreements and conventions.		
ESS8: Cultural Heritage				
Scope/objective	**Description of World Bank Policy**	**Description of Government of Ghana Regulations**	**Gaps Identified**	**Gaps Bridging actions**
• **To protect cultural heritage from the adverse impacts of project activities and support its preservation.** • **To address cultural heritage as an integral aspect of**	This standard sets out general provisions on cultural heritage preservation and recommends protecting cultural heritage from the adverse impacts of project activities. It addresses physical or tangible cultural	The Fourth Republic Constitution (1992) recognizes culture as a necessary tool for national integration and development and, under the Directive Principles of State Policy (Article 39), declares as follows: "(1) Subject to clause (2) of this article, the State shall take steps to encourage integration of appropriate customary values into the fabric of national life through formal and informal education and the conscious Introduction of cultural dimensions to relevant Aspect of national planning. (2) The State shall ensure that appropriate	The regulations and policies do not address cultural heritage as an integral part of sustainable development and promotion of	The National commission on culture provides a platform for collaboration with Chiefs, opinion leaders and community representatives and other institutions to protect cultural assets. The project will go by the procedures outlined by the Commission in respect of cultural assets. The project

sustainable development. • **To promote meaningful consultation with stakeholders regarding cultural heritage.** • **To promote the equitable sharing of benefits from the use of cultural heritage.**	resources, which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be in urban or rural settings, and may be above or below ground, or underwater. It also addresses intangible cultural heritage such as practices, representations, expressions, instruments, objects and cultural spaces that communities recognize as part of their cultural heritage. Projects involving significant excavations, demolition, movement of earth, flooding, or other environmental changes are to take cognizance of this standard in the ESMF.	customary and cultural values are adapted and developed as an integral part of the growing needs of the society as a whole; and in particular, that traditional practices which are injurious to the health and well-being of the person are abolished (3) The State shall foster the development of Ghanaian languages and pride in Ghanaian culture. - The Ghana cultural policy (2004) enjoins the National Commission on Culture to undertake the following actions to protect and preserves monument, forests reserves, national parks and recreational facilities	equitable sharing of benefits	will also go the extra mile to complement this collaboration with stakeholder engagement procedures enshrined in the SEP to educate communities to appreciate the role of cultural values and assets in sustainable development and also the need to share benefits accruing from the use of cultural assets.

ESS10: Stakeholder Engagement and information Disclosure				
Scope/objective	**Description of World Bank Policy**	**Description of Government of Ghana Regulations**	**Gaps Identified**	**Gaps Bridging actions**
• **To establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties. To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance** • **To promote and provide means for effective and inclusive engagement with project-**	ESS10 seeks to encourage open and transparent engagement between the Borrower and the project stakeholders project-affected parties) throughout the project life cycle. The standard establishes a systematic approach to stakeholder engagement that potentially helps the Borrower to identify stakeholders and build and maintain a constructive relationship with them, as well as disclose information on the environmental and social risks and impacts to stakeholders in a timely, understandable, accessible and appropriate manner and format. It recommends that stakeholder engagements are commenced as early as possible in the project development process and continued throughout the lifecycle	• The key laws most relevant to stakeholder engagement are: • Article 21(1) (f) of the 1992 Constitution of Ghana which recognizes the right to information for all citizens as a fundamental human right. To fully operationalized the right to information, people need to be effectively engaged and provided with information on issues that affect their lives. • The *Right to Information Act, 2019 (Act 989),* which was also passed into law in 2019 by Ghana's parliament is meant to put into effect the aforementioned article in the constitution of the Republic of Ghana. • *Articles 40 to 48 of the Local Governance Act, 2016 (Act 936),* mandate local authorities to create opportunities for residents and other stakeholders to access information and to participate in decision making. • Stakeholder engagement is an integral part of the Environmental Impact Assessment process. *Ghana Environmental Assessment Regulation LI 1652 (1999),* as amended (2002), requires effective public consultation and participation as an integral component of Environmental and Social Impact Assessment (ESIA) procedures (Appendix 10) • Strategic goal 4 of the National Environmental Policy, which focuses on participation and coordination in environmental governance, charges the lead institutions in environmental governance to ensure active participation in all environmental matters.	The regulations to the Right To Information (RTI) 2019 Act (989) , has not been developed to fully operationalize mechanisms for disclosure or dissemination of information and grievance redress.	The project has developed a stakeholder Engagement Plan. The SEP also includes a GRM based on an existing grievance redress mechanism for resolving grievances for the GPSNP. • The GRM is a decentralized and transparent system which ensured quick resolution of complaints and disputes, it also has the structure for disclosing vital information to requisite stakeholders • It also provides means for effective and inclusive engagement. This instrument which satisfy almost all the requirements of ESS 10 will jealously be applied during project implementation to bridge the gaps in national regulations and policies

affected parties throughout the project life cycle on issue that could potentially affect them. • **To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format.** • **To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances**	of the Project. This allows for stakeholders' views to be considered in the project design and environmental and social performance. The Borrower is also expected to implement a grievance mechanism to receive and facilitate resolution of concerns and grievances			

3.8 World Bank COVID-19 Guidelines

The World Bank COVID-19 guidelines emphasize the importance of careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination and the need for high levels of responsiveness in a changing environment due the COVID 19 pandemic. It recommends assessing current situation of projects, putting in place mitigation measures to avoid or minimize the chances of spread of the virus. Recommendations are made to cover cleaning and waste disposal, medical services and general hygiene for the workforce together with management of site entry and exit points, work practices and medical supplies for site workers. The guidelines acknowledge that national and local laws may impose social distancing, restriction on movement and large gatherings as measures to minimize the spread of COVID 19 together with the fact the general public may be averse to large gathering as they protect themselves from COVID 19. The Bank further acknowledges that COVID-19 spread, and restrictions can adversely affect the extent to which the project can meet the requirements of ESS10.

4.0 ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS OF GHANA

4.1 Location

Ghana lies along the Gulf of Guinea in West Africa. It lies within longitudes 3°5'W and 1° 10'E and latitudes 4°35'N and 11°N. It covers an area of about some 239,000 km^2, with the Exclusive Economic Zone (EEZ) constituting an additional 110,000 km of the sea to the territorial area. Ghana has a southern coastal shoreline of 550km. The country is bordered by Togo to the east, La Cote d'Ivoire to the west and Burkina Faso to the north.

4.2 Physical Environment

Climate (Mainly Rainfall, Temperature and Humidity)

The climate of Ghana is characterized by dry and wet seasons, a typical tropical monsoonal climate. Rainfall in this region is mainly associated with mesoscale convective systems and controlled by the advection of moisture from the Gulf of Guinea in the low-level atmosphere. This system is usually referred to as the West African Monsoon (WAM), and it is driven by the energy and temperature gradient between the Gulf of Guinea and the Sahara. The maritime tropical air mass originates from the Atlantic Ocean, is moisture laden and converges with the dry northeast continental tropical air mass, usually along the Inter-Tropical Discontinuity (ITD). Therefore, the spatial pattern of annual rainfall is closely related to the north- and southward migration of the ITD, resulting in changes in the rainfall regime from the south to the north of the country. This gives rise to two rainfall regimes: bi-modal in the south, consisting mainly of coastal and the forest zones, and uni-modal in the northern part of the country, consisting of part of the transition and savannah zones (Amekudzi et al., 2015)

Using the average characteristics of rainfall, temperature, and humidity for 25 – 30 years, Ghana has been classified into four main climatic regions - the South-western Equatorial Climatic Zone and Dry Equatorial Wet-semi–Equatorial Climatic Zone and Tropical Continental (savannah) Climatic Zone.

Southwestern Equatorial Climatic Zone. It is the wettest climatic zone in Ghana, with a double maxima rainfall regime. Mean annual rainfall is above 190cm, and average monthly precipitation of not less than 2.5cm. The highest monthly temperature of about 30^{O}C is recorded between March and April, and the lowest of about 26^{O}C in August. Monthly relative humidity (average) of 75-80% during the two rainy

seasons and the lowest of 70-80% during the rest of the year. (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours and solar radiation 133 km/day, 6.2 hours and 18.1 MJ/m2 /day respectively. (EPA, 2002)

Dry Equatorial Climatic Zone. This Climatic zone has a more marked dry season even though it also has double rainfall maxima. Between 74 and 89cm of mean annual rainfall are recorded. Despite its location, this zone is the driest in the country. However, temperatures recorded are just like that of the Southwestern Equatorial Climatic Zone - mean monthly temperatures of 30^{O}C between March and April and 26^{O}C in August. The highest average relative humidity does not exceed 75%, with the lowest being about 60% (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours, and solar radiation are 251 km/day, 6.5 hours, and 18.6 MJ/m2 /day. Annual potential evaporation is about 1504 mm, respectively. (EPA, 2002)

Wet-semi–Equatorial Climatic Zone. This zone is also characterized by a double maxima rainfall regime but has a mean annual rainfall between 125 and 200cm. Some of the wetter areas include the Akwapim-Togo Ranges and the Southern Voltaian Plateau, where annual rainfall exceeds 165cm. The first rainy season is from May to June, and the second rainy season is from September to October. With a more pronounced dry season, temperatures and relative humidity are, however, as in the south-western equatorial and the dry equatorial climatic zone (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours, and solar radiation are 138 km/day, 7.3 hours, and 19.6 MJ/m2 /day. Potential evaporation is 1720 mm per annum. (EPA, 2002).

Dry Equatorial Climatic Zone. The characteristics of this climatic zone are in sharp contrast with all the others. This is the only climatic region with a single rainy season that starts in May and ends in October, followed by six (6) months of the dry season. Mean annual rainfall of between 100 and 115cm is recorded. Mean annual temperatures vary from about 36^{O}C in March to about 27^{O}C in August. Relative humidity of between 70 and 90% may be recorded during the rainy season but may fall to as low as 20% during the dry season (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours, and solar radiation are 81 km/day, 7.9 hours, and 20.4 MJ/m2 /day. Potential evaporation is 1652 mm per annum, and the annual aridity index is 0.60. (EPA, 2002).

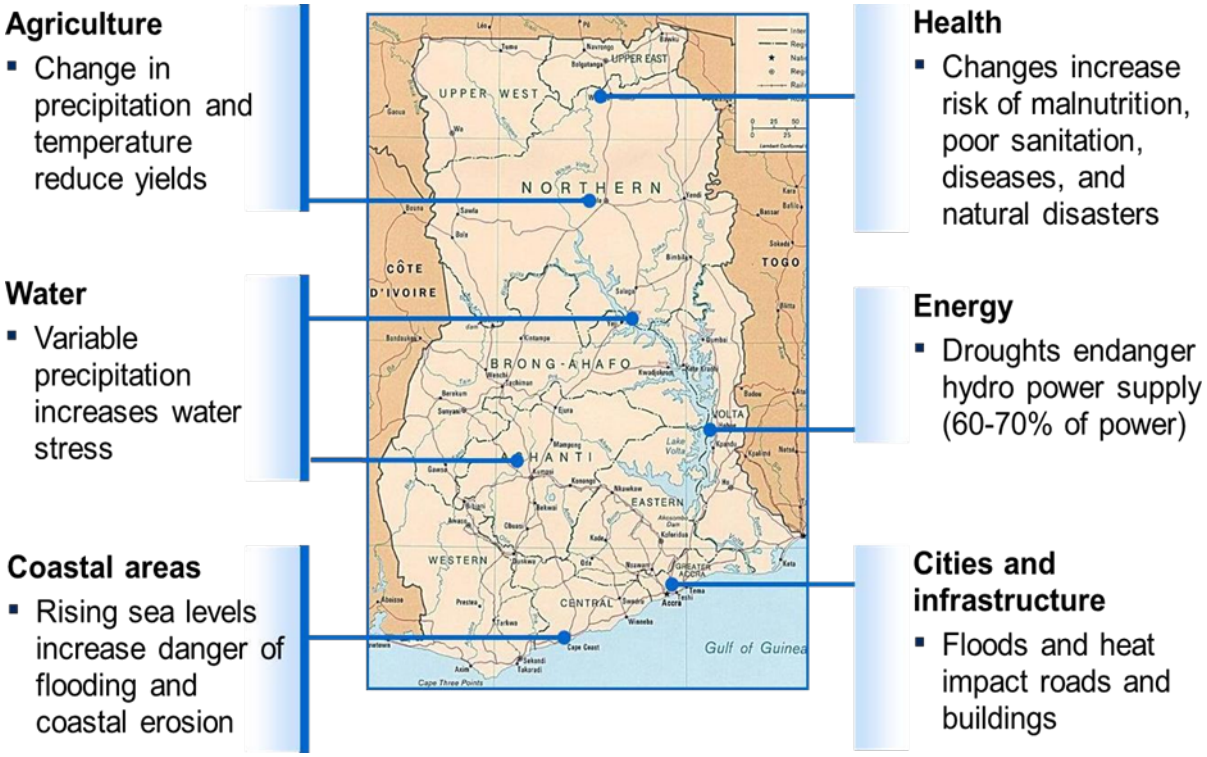
Climate Change. Projections made in Ghana's Third National Communication Report to the United Nations Framework Convention on Climate Change (UNFCC) indicates the following:

- Ghana will continue to get warmer. The mean temperature is projected to increase by 1.0-3.0°C by 2060 and 1.5°C to 5.2°C by the 2090s. The projected rate of warming is more rapid in the northern inlands than the coastal regions. All projections indicate substantial increases in the frequency of days and nights that are considered 'hot'. There are likelihoods that 'hot' days will occur on 18-59% of days by 2060. Most projections indicate decreases in the frequency of days and nights that are considered cold.
- Rainfall will continue to be uncertain and difficult to predict. Projections of mean annual rainfall from different models predict wide range of changes. About half of the models predict increases while the other half project decreases. The proportion of total annual rainfall that falls in heavy events tends towards an increase in the ensemble projections. Projected changes in 1-and 5-day rainfall maxima trend towards increases, but projection ranges between both increase and decrease in all seasons.
- Sea level rise will continue intensely in already vulnerable coastal areas. Scenarios of sea-level changes

with respect to 1999 mean predicts an average rise of 5.8cm, 16.5cm and 34.5 cm. by 2020, 2050 and 2080, respectively.

Further assessments suggest that vulnerabilities in Ghana due to Climate Change are not evenly distributed nationwide.

Figure 2: Spread of Climate Change Vulnerabilities in specific localities in Ghana



Source: (EPA, 2015) 2015 Climate Change Report. Ghana's Third National Communication to the UNFCC

Table 4: Climate Change risk in the different ecological zones in Ghana

Ecological zone	Identified risk	Risk level
Coastal Savannah	Sea level rise	High
	Out-migration	Medium
	Weak livelihood support	Medium
	Sea erosion	Extreme
High forest	Erratic rainfall	Medium
	Late start of rains	High
	Early termination of rains	High
	Drought spell	Low
Transition	Low rainfall	High
	Rainfall extremes	High
	Crop failures	High
	Reduced minor rains	Low
Guinea and Sudan Savannah	Long dry spell	High
	Frequent flooding	High
	Out-migration	Extreme
	Erratic rainfall	Medium
	Rising temperature	High

Source: 3rd National Communication Report to UNFCC, 2015

4.3 Topography and Landscape

The physiographic regions of Ghana are broadly classified into the following: Coastal Plains, the Forest Dissected Plateau, the Savannah High Plains, the Voltaian Sandstone Basin (VSB) and the ridges and escarpments bordering the VSB.

The Forest Dissected Plateau. Many years of intensive erosion have reduced this area to a uniformly low height between 240m and 300m above sea level. The different rock formations in this region have given rise to different relief types, ranging from hills that stand up to 60-90 metres above sea level to steep-sided hills rising above 240m above the flat valley bottom (Dickson and Benneh, 1988).

The Savannah High Plains. The topography is gently rolling, with an average plain height ranging between 180m and 300m above sea level. Small, rounded hills composed mainly of granite are scattered on this plain (Dickson and Benneh, 1988).

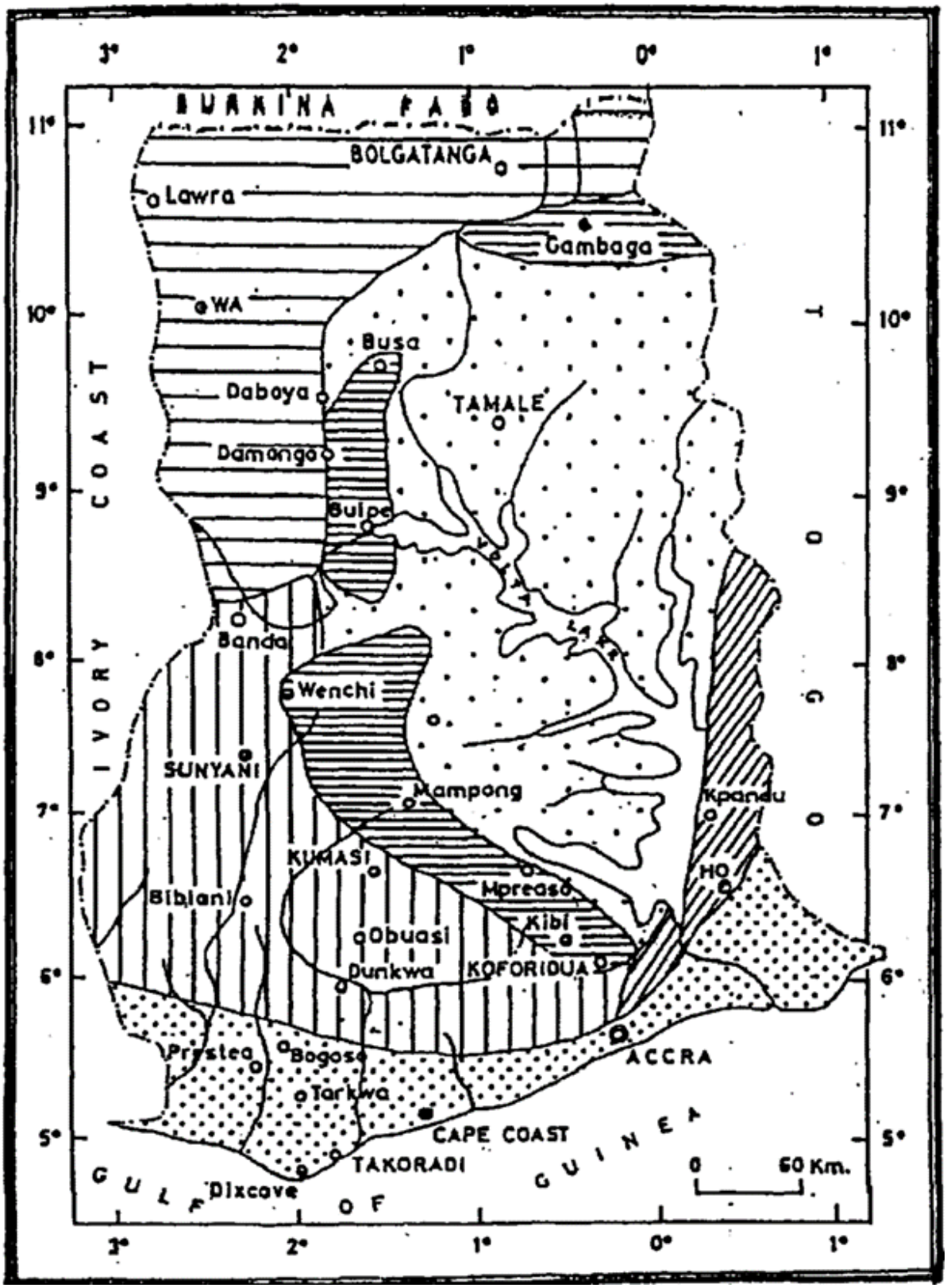
Voltaian Sandstone Basin (VSB). Covering an area of about 112,768km^2, the VSB is made up of an almost flat extensive plain with heights ranging between 60m and 150m in that part of the basin south of the east-west Black Volta and up to about 180m above sea level in that part north of the river (Dickson and Benneh, 1988).

Rides and Escarpments. These comprise the Southern Voltaian Plateau (SVP), the Gambaga escarpment and the Akwapim-Togo Ranges. The SVP marks the southern boundary of the Volta Basin, while the Gambaga scarp marks the northern limit of the VSB. Average elevation does not exceed 450m above sea level. The Akwapim-Togo Ranges are fold mountains forming the eastern boundary of the VSB. The ranges start from near the mouth of the Densu, West of Accra, and run in a north-easterly direction across the Volta Region and Togo and beyond (Dickson and Benneh, 1988).

The low-lying coastal plains. The coastal plains, only about eight kilometres in width at its western end, stretches eastward through the Accra Plains, where it widens to more than eighty kilometres and terminates at the south-eastern corner of the country at the lower end of the Akwapim-Togo Ranges. Almost flat and featureless, the Accra Plains descend gradually to the gulf from a height of about 150 meters. The topography east of the city of Accra is marked by a succession of ridges and a spoon-shaped valley.

The map below shows the physiographic regions of Ghana.

Figure 3: Physiographic regions of Ghana



Physiographic regions of Ghana (Dickson and Benneh, 1980)

4.4 Drainage and Water Resources

Ghana has three major drainage systems, covering about 5% (911,800Km2) of the total area of Ghana. These are the Volta River System (70%), Southwestern River System (22%) and Coastal River System (8%) (EPA, 2005). Nearly three-fourth of the total land surface area of Ghana lies Within the Volta River Basin. The basin can be subdivided into smaller basins – the Black Volta, the White Volta, the Oti and the Volta. The Volta River system basin includes the Oti, Daka, Pru, Sene and Afram Rivers. Many of the streams and tributaries of the major rivers in northern Ghana, all of which are tributaries of the Volta System, dwindle in the dry season and flood in the rainy season (Dickson and Benneh, 1988). With a surface of 8,500 km^2, Volta Lake is one of the world's largest artificial lakes. The total renewable water resources are estimated to be 53.2 billion m3 per year (EPA, 2016).

The Southwestern River System comprise the Bia, Tano, Ankobra and Pra basins. The Pra has the largest basin in the closed forest. Unlike the rivers in northern Ghana, the forest rivers are perennial with a higher flow pattern (Dickson and Benneh, 1988).

The Ochi-Nawuka, Ochi Amissah, Ayensu, Densu and Tordzie rivers make up the coastal river system (EPA, 2016). The only area of internal drainage in Ghana is around Lake Bosumtwi, a natural lake with a surface area of approximately 39km^2 and surrounded by hills. It is located about 34km to the South-East of Kumasi (Dickson & Benneh, 1988), where numerous streams flow into the lake.

The above characteristics of water bodies in the two halves of Ghana imply that any disturbance of water quality resulting from human activity (feeder road and dug-outs construction, etc.) could exert a severer effect in the northern half during the long dry season. The characteristic widespread seasonal flooding requires careful sub-project site selection or the need to elevate the base of roads significantly above the general elevation of the corridor neighbourhood. In the southern half, the regularity and high flow of rivers potentially enhance the assimilative and regenerative capacity of the water bodies to support water quality and aquatic life (MRH, 2007).

4.5 Water Quality

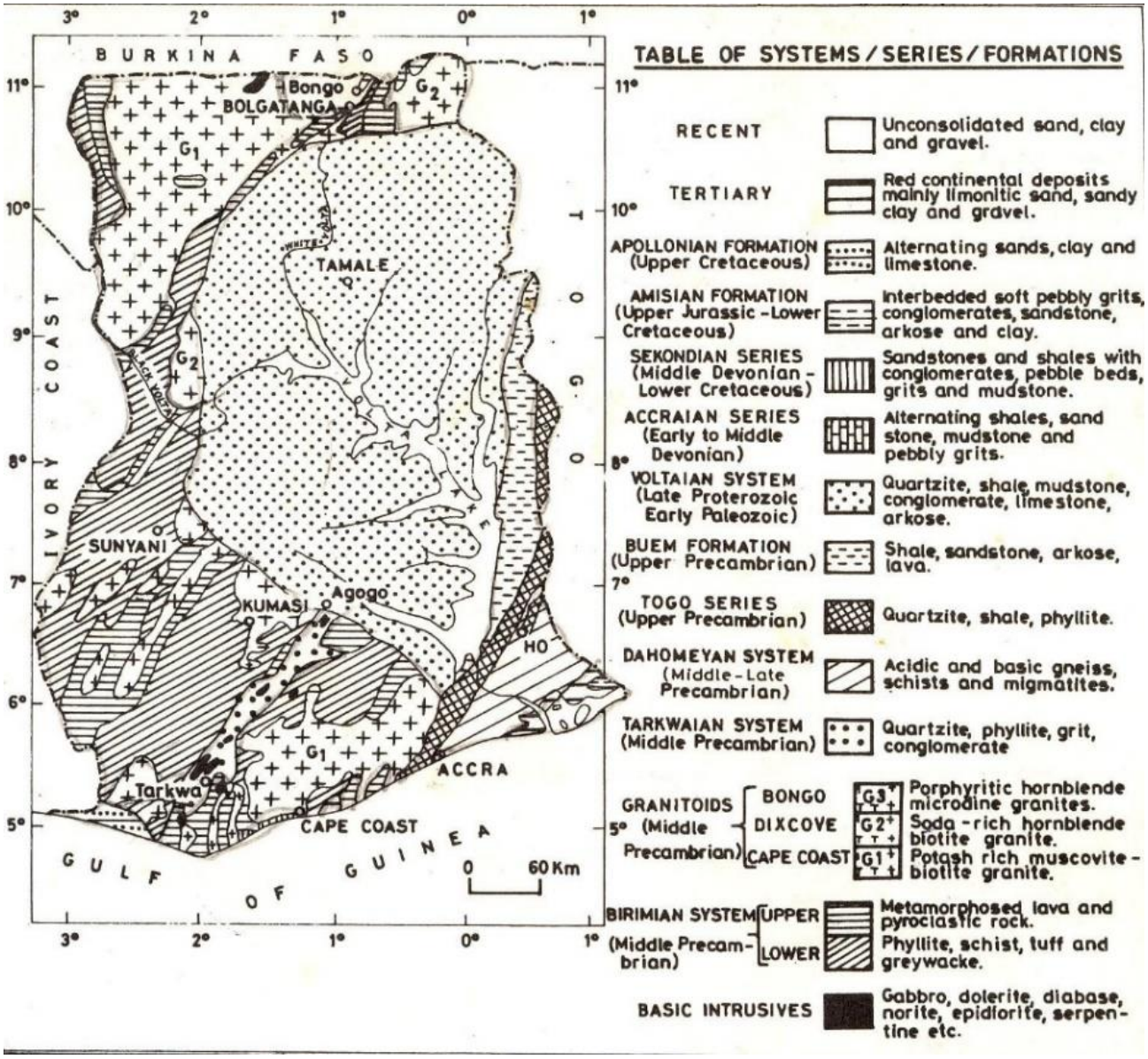
Compared to groundwater, surface water quality is below drinking water quality standards. This is mainly attributed to anthropogenic activities such as discharge of untreated waste materials into water bodies, farming along water systems and illegal artisanal mining (EPA, 2017).

The water quality in many of Ghana's surface water systems has been declining since 2004. Water quality analyses conducted between 2005 and 2014 showed a decreasing water quality over the period (EPA, 2017). Studies conducted by (Ansa-Asare & Gordon, 2012) on the pollution of the Densu, Birim and Ayensu showed a high level of concentration of ammonium and other nutrients in the rivers. These contaminants were largely from domestic and agricultural sources. In the case of the Birim, the poor quality is because of mining activities (EPA, 2017).

4.6 Geology

About two-thirds of the country is dominated by Paleoproterozoic Birimian rocks consisting of five evenly spaced volcanic belts trending northeast-southwest. The intervening basins between the volcanic belts are filled by sediments. The remaining one-third is made up of post-Birimian rocks. The map below shows the geological map of Ghana.

Figure 4: Geological Map of Ghana



Source: Geological Map of Ghana: (in Geophysical Investigation Report of the Komenda Sugar Factory - Ebenezer Gyamera, 2018)

4.7 Soils

The soils of Ghana are derived from rocks of the mid-Paleozoic age or older, comprising mainly of Siluro Devonian sandstone and shales and some igneous and granitic material (Dickson and Benneh, 1980). In the forest zone, where the annual rainfall is between 1,000 and 2,000 mm, forest ochrosols are found. These soils developed from a wide range of highly weathered parent materials, including granite, Tarkwaian and Birimian rocks. The soils are porous, well-drained and generally loamy. In the wetter forest areas, sandy Oxysols are found. Lithosols are usually found on steep slopes made up of hard, resistant rocks. The soils in the Voltain and savanna plains are mainly of groundwater laterites and savanna ochrosols. The laterites are developed over both the Voltain shales and granites. They are characterized by the presence of cemented layer of ironstone (also called iron pan) at shallow depths below the surface of the soil, through

which rainwater does not percolate easily. Thus, the top layers of the soil become waterlogged right up to the surface in the rainy season but dry up in the dry season. The savanna ochrosols are formed over granites, Birimian rocks and Voltain shales. They are well drained, porous, and loamy.

In the coastal plains, the soils are younger and are closely related to the underlying rocks. They are mainly a mixture of savannah ochrosols, lateritic sandy soils, tropical black earths, sodium vleisols, tropical grey earths, acid gleisols, and coastal sands (Dickson and Benneh, 1980). The lateritic soils found here are developed over acid gneiss and granite and consist of sandy soils overlying a hardened layer of clay, not iron pan. It is this layer of clay that impedes downward drainage and causes waterlogging in the wet season. The tropical black earths are developed over basic gneiss. During the rainy season, they are heavy, plastic and sticky, but in the dry season they become hard and compact and develop wide cracks. The tropical grey earths consist of a few centimetres of firm grey sand overlying a very hard and compact clay layer.

4.8 Biological Environment

Vegetation/ Flora

Ghana has six agro-ecological zones, distinguished by natural vegetation and influenced by climate and soil characteristics: Sudan savannah, coastal savannah, Guinea savannah, transition zone, semi-deciduous forest and rain forest.

Sudan Savanna. The Sudan savanna, which covers an estimated area of 1,900 km^2, consists of short drought and fire-resistant deciduous trees interspersed with open savanna grassland. Grass cover is very sparse, and in most areas, the land is bare and severely eroded. Common grasses include Andropogon spp., *Heteropogon spp; Hyparrhenia spp; Aristida spp; and Loudetia spp*. (Sam et al.; 1996). Tree cover is very low. Common trees include *Anogeissus leiocarpus, Acacia spp; Terminalia microcarpa* and *Vitellaria paradoxa*. In the densely settled and cultivated areas, important economic trees such as Adansonia digitata, Ceiba pentandra, Butyrospermum parkii, Faidherbia albida and Parkia Antiaris africana, Ceiba pentandra, Albizia zygia and Azadirachta indica. Baphia nitida, Grewia spp, Griffonia simplicifolia and Milletia spp. are among shrubs found in the zone and of importance for browse feeding for livestock. Short and medium grasses are the dominant plant species. These include Andropogon gayanus and Hyparrhenia dissoluta in upland areas and Vetiveria fulbibarbis and Brachiaria falcifera in low lying areas. Panicum maximum often occurs in moist areas.

The Forest-Savanna Transitional Zone (Derived Savanna). This zone, covering about 8,300 km2, occurs as a normal strip about 48 km wide along the north and the northeastern limits of the semi-deciduous forest. Most of the tree species of the forest zone occur in this area in addition to such species as Daniella Oliveri, Terminalia macroptera and Borassus aethiopum. These trees occur in association with tall to medium tall grasses such as Andropogon and Pennisetum spp.

The High Rainforest. The rainforest covering an area of about 7,500km2 is located in the south-western corner of the country. The vegetation is generally evergreen, although some species common to the semi-deciduous forest may be found. Such species tend to shed their leaves during the dry season. The zone is characterized by the Cynometra-Lophira-Tarrietia association with Cynometra ananta, Lophira alata, and Tarrietia utilis as indicator trees. The topography is undulating to rolling with numerous freshwater swamps potentially suitable for

rice cultivation occupying low lying valley bottoms. The swamp vegetation consists of Raphia palms with shrubs such as Alchornea cordifolia, Caropa procera and Macaranga spp. entangled by various climbers.

The Semi-deciduous Forest Zone. The semi-deciduous forest zone is about 66,300 km^2 in extent and forms about 90% of the total forest zone. The characteristic associations are Celtic-Triplochiton and Antiaris Chlorophora. The indicator trees for the former consist of Celtic milbraedii and Triplochiton scleroxylon whilst the latter is characterized by Antiaris africana and Chlorophora excelsa. It is within this zone that most food crops and cocoa cultivation takes place. Most of the timber for both local needs and export comes from the zone. As a result of these activities the vegetation outside forest reserves consists mainly of forest regrowth, thicket, secondary forest, and swamp thicket.

The Rangelands of Ghana. The Sudan, Guinea and Coastal Savanna constitute the rangelands of Ghana. These cover an area of about 156,000 km2 which is approximately 65.7% of Ghana's land area. The Interior Savanna (Guinea and Sudan) holds about 74.4% of the nation's cattle population of 1.25 million and 40% of the small ruminant population of 4.95 million. The annual forage production of the rangelands was estimated as 10.6 million mt of which some 70% were from grassland herbage.

Fauna

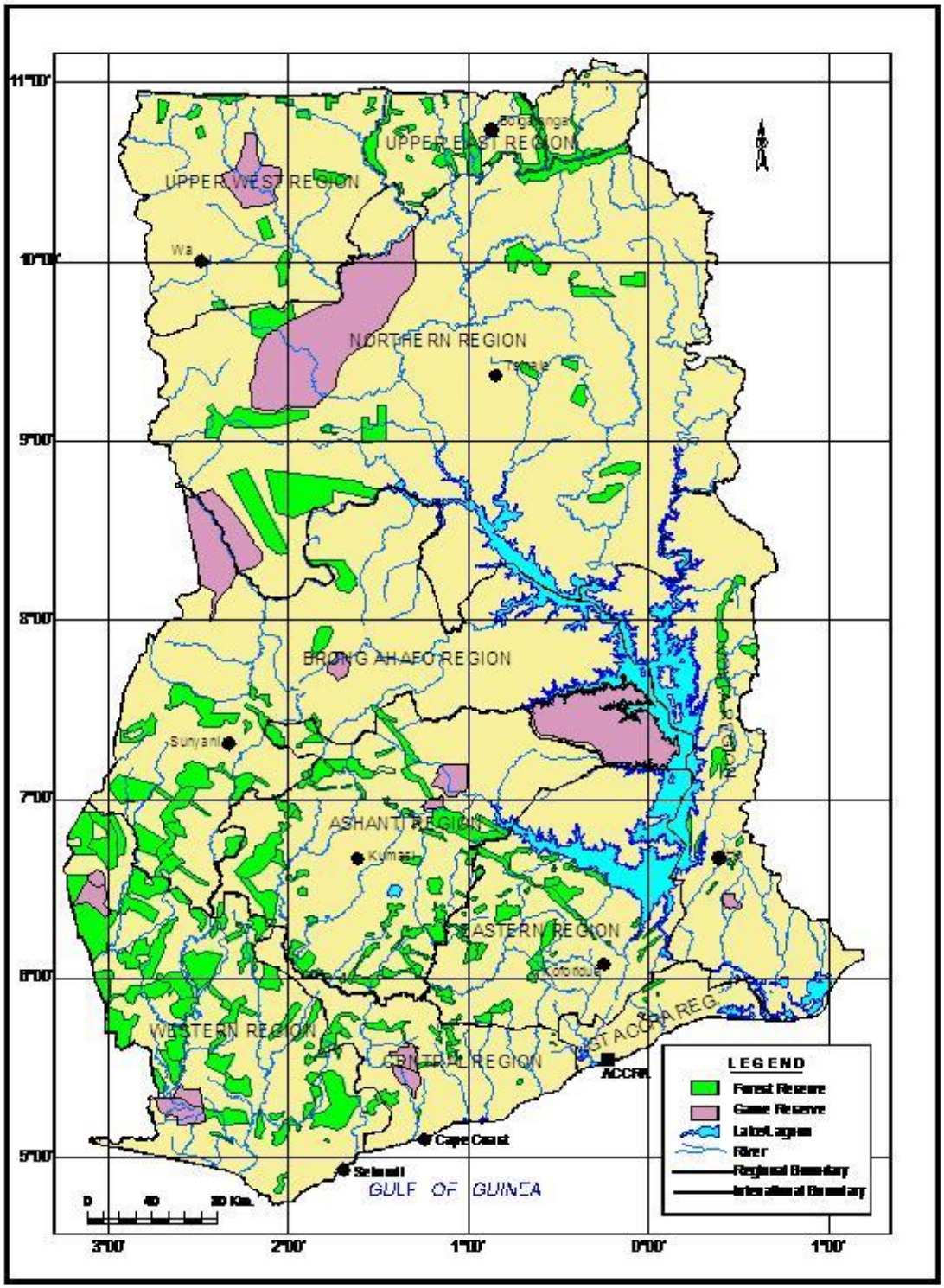
The fauna of Ghana, though thought to be relatively impoverished, comprise a diverse array of species including several of conservation concern (MES, 2000). Many of the ecologically important areas are protected. These include:

- Bia and Kakum Conservation Areas
- Bomfobiri, Owabi and Agumatsa Wildlife Sanctuary;
- Kogya Strict Nature Reserve
- Digya National Park
- Kalakpa Resource Reserve
- Gbele Resource Reserves
- Mole National Park

Current records indicate that there could be as many as 221 species of amphibians and reptiles, 724 species of birds and 225 mammalian species (with 93 recorded to inhabit the savannah ecological zone; MES, 2002, cited in Ashong, 2004). Threatened species in Ghana include four species of marine turtles and three species of crocodiles. Three species of frogs (*Hyperolius baumanni, H. fusciventris* and *H. sylvaticus*) and the lizard, *Agama sylvanus* have been found to be endemic in the country (MES, 2002).

A total of over 3,600 plant species, representing the three major taxonomic groups can be found in Ghana (MES, 2002). The wet evergreen forest exhibits the most diverse level of endemism and species richness in Ghana. The Ankasa and Nini-Suhien Conservation Areas are biological 'hotspot', because of their high biological diversity (CI, 2002, cited in EPA, 2005).

Figure 5: Map of Protected Areas in Ghana



Source: Forestry Commission (2017) ESMF for REDD+ Mechanism in Ghana

Vulnerable, Threatened, Endangered, Critically Endangered

Ghana is an important country for dozens of vulnerable, threatened, endangered, critically endangered or near-extinct mammalian species including the primates common chimpanzee (*Pan troglodytes*) and western red colobus (*Piliocolobus badius*), the big cats lion (*Panthera leo*) and leopard (Panthera pardus), African bush elephant (*Loxodonta africana*), and water-birds, being located on the boundary of the east Atlantic Ocean Flyway and Mediterranean Flyway. There are also several rare terrestrial birds, such as the white-necked rockfowl (*Picathartes gymnocephalus*).

The following is a list of Critically Endangered species in Ghana according to the IUCN Red List.

Scientific_name	Common_name
Phrynobatrachus intermedius	
Conraua derooi	Togo Slippery Frog
Talbotiella gentii	
Arthroleptis krokosua	Krokosua Squeaking Frog

4.9 Socio-economic and Cultural Environment

Population

Ghana has a population of 30.8 million (Ghana 2021 Population and Housing Census). Overall, females make up 50.7% of the population and males 49.3%, giving a national sex ratio of 97 males for every 100 females.

Age-Sex Distribution. Data generated from the LFS indicates that a higher proportion of the population exists in the lower age groups. The proportion in age group 0-14 stands at 39.9 percent of the nation, while the proportion for urban and rural areas were found to be 35.7 percent and 44.2 percent, respectively. This demonstrates higher fertility in the rural areas compared to the urban areas (GSS, 2016). Ghana's dependency ratio (the ratio of persons in the "dependent" age group (generally under age 15 and age 65+ to those in the working population; 15-64 years) is 81.3 percent, with the males having higher dependency ratio of 92.2 percent as against the female population (72.5%). With regards to urban-rural differentials, the dependency ratio in the rural population (98.1%) is higher than that of urban population (67.4%). It is notable that, for both sexes, the population in the working age group 15-64 at the national level is more than half (55.1%) of the total population. The same pattern is observed in both urban and rural areas, with the urban area having more than half (59.7%) of the population in the working age group 15-64, while the rural area has a little over half (50.5%) of the population in the working age group 15-64 years (GSS, 2016).

Mean Household Size. There has been a reduction in the mean household size in Ghana from 4.4 during the 2010 Population and Housing Census to 3.2 in the 2015 Labour Force Survey, which implies a difference of 1.2 in the mean household size (GSS, 2015). The mean household sizes for urban and rural areas are 2.9 and 3.5 respectively. Prior to the creation of six additional regions in year 2019, the Northern region had the highest mean household size of 5.1 in 2015, followed by Upper East with 4.3. Greater Accra region has the least mean household size of 2.6.

School Attendance. At the national level, more than half (72.1%) of the population 3 years and older, in rural areas, has never attended school compared to 27.9% in urban areas. Among the male population 3 years and older in the urban area, a little over one fifth (20.8%) has never attended school, compared to more than half (79.2%) of their male counterparts in the rural areas (GSS, 2016).

Literacy. At the aggregate level, the literacy rate of population 11 years and older in Ghana is 63% for both sexes, 71.8% for males and 55.5% for females. Urban-rural variations exist, with the literacy rate for both sexes in the urban area (74.5%) being higher than in the rural areas (50.1%). This means that there are more literate individuals in the urban communities than in the rural communities. The distribution by region indicates that Greater Accra region has the highest literacy rate for both sexes, as well as for urban and rural communities in the region, while the lowest literacy rate for both sexes is observed in the Northern region (34.5%).

Educational Level. Of the total population 3 years and older, 32.8% have attained primary education while less than one percent (0.7%) have attained a post graduate degree. There are variations in the level of education by urban-rural location and by sex, particularly for higher education. At the national level, less than 4 percent (3.9%) of the male population had attained a Bachelor's degree compared to less than 3 percent (2.2%) of the female population in same category (GSS, 2016).

Economic Activity

Employment. About two-thirds (67.6%) of the population are employed (all those of working age (15 years and older) who, during the seven days preceding the interview, were engaged in any activity to produce goods or provide services for pay or profit) 9.1% are unemployed and 23.3% are not in the labour force. Irrespective of sex, per the definition, the population in rural areas (70.4%) is more likely to be employed than those in urban areas (65.1%).

The regional distribution of current activity status of the population indicates that the Northern region has the highest proportion of persons employed (76.4%) while the Upper East region has the lowest (58.7%). It also shows that more males than females are employed, depicting the national pattern. Conversely, the Upper East region has a higher proportion of persons who are unemployed (13.2%) compared to the other regions; the region also recorded the highest proportion of those who are not in the labour force (28.0%).

The data generated also suggest that the proportion of the employed labour force increases with increasing age except after 49 years. The proportion of the employed increased from 24.9 percent for age 15-19 through to age 45-49 where it peaks at 88.7 percent. The employed population then starts decreasing from age group 50-54 (88.1%) to age 65 years and older (44.3%).

Occupation. Skilled agricultural, forestry and fishery workers constitute the largest occupational group, engaging 2,949,805 of the currently employed. However, more females (1,910,966) are engaged as service and sales workers compared to any other occupation. Whereas in the rural localities, skilled agricultural, forestry and fishery work are the main occupation for the employed (employing 2,537,466 of those in current employment), service and sales is the main occupation for those in urban localities, engaging 1,792,906. More than half of females (52.2% or 1,366,355) in urban localities are engaged in service and sales work (GSS,

2016). Agriculture, forestry, and fishing remains the main industry of employment, engaging 3.3 million of the currently employed. This is followed by wholesale and retail trade and the repair of motor vehicles and motorcycles (1.9 million). Manufacturing is the third major industry of employment, engaging about 1.2 million of the currently employed.

Female labour force participation over the years has been lower than that of their male counterparts. However, data gathered shows that in absolute numbers, there are more women working in Ghana today (4,981,953) than the number of men (4,281,393) in current employment.

Hours of Work. Most males (29,103) who are managers work at least 40-49 hours a week. More females (157,582) than males (115,047) who work as service and sales workers work at least 70 hours a week. The average hours worked a week by currently employed persons is 33.4. The highest mean hours of work per week was by persons engaged in administrative and support service activities (54 hours) and those in transport and storage industry (45.4 hours). The least number of hours worked per week is in the agriculture, forestry and fishing industry (26.3 hours), (GSS, 2016).

Secondary Occupation. A secondary occupation is any task or activity that the employed performs continually or at a certain point in time in addition to their main employment. Workers take a second job to tackle "working poverty" (make ends meet and help maintain their standard of living).

About six percent (5.3%) of the currently employed have a secondary activity. The proportion of those engaged in secondary activity is higher in rural (6.4%) than urban (4.3%) localities. Available data also indicates that about one in every ten male professionals (10.4%) in rural localities engaged in a secondary activity. Again, 6.1% of female skilled agricultural, forestry and fishery workers in urban localities engaged in secondary activities. More than one in ten females engaged in craft and related trades in rural localities (10.9%) engaged in secondary activities.

Agricultural Activities. A total of 2,203,965 households representing 25.8 percent of Ghanaian households are engaged in agricultural activities of which 1,690,026 are headed by males (76.7%) and 513,939 or 23.3 percent by females. Among the urban households, 428,065 (9%) were engaged in agricultural activities out of which 318,409 and 109,656 households are headed by males and females respectively. Among the rural households, nearly 47% are engaged in agricultural activities of which 1,321,429 and 402,051 are headed by males and females, respectively. Agricultural activities in Ghana are predominantly rural (80.6% or 1,775,900).

The Northern region has the highest proportion of households (54.5%) engaged in agricultural activities, out of which 272,173 and 22,499 are headed by males and females, respectively. This is followed by the Brong Ahafo region with 45.7 percent (made up of 242,828 male-headed households and 82,987 female-headed households). The Greater Accra region (2.4%) had the least number of households engaged in agricultural activities of which 31,392 and 9,281 households are headed by males and females, respectively.

Infrastructure

Roads. The Ministry of Transport (2011) reported that 95% of transportation in Ghana is by road. This is an indication that road transport is the predominant means of transportation by Ghanaians which is used for passenger travel as well as movement of goods across the country and neighbouring West African countries. According to the Medium-Term Expenditure report

submitted by the Ministry of Roads and Highways (2016), there were 72,381 km or road networks in Ghana as of 2017 with 14,873 km being trunk road, 15,463 km being urban roads and the remaining 42,045 km being feeder roads. It was also reported that 31% of these roads are being maintained or rehabilitated as required with 66.6% of the road having rural accessibility index (i.e. the percentage of human population within 2 km of the roads). Routine maintenance was carried out so that 10,250 km of the trunk roads, 10,679 km of the feeder roads and 7,200 km of urban roads were being maintained as of September 2017. As at this period also, periodic maintenance (resealing works, spot improvement and re-gravelling) was carried out on 199km of trunk roads, 205 km of feeder roads and 295 km of urban roads. Minor upgrading was also carried out on 47 km of trunk roads, 313 km of feeder roads and 26 km of urban roads. A total of 75% of the paved road networks are in good condition while 74% of unpaved road networks are in good condition (Akinradewo et al, 2019).

Project Target Regions

The Project will cover the following six northern regions: Savannah, Northern, Upper East, Northern East, Upper Weet and Oti

Climatic Characteristics: 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.

Geology and Topography: The targeting area is characterised by a mixture of geology and topography. The Upper East and the Upper West regions are underlain by granitoids of post Birimian age while the Northern, North East, Savannah and Oti regions are underlain by sandstones, shales and limestones of the Voltaian system fringed at the west part by the post Birimian granitoids. The granitoids include granitic and gneissic rocks of grey colours and shades of pink. The gneisses are folded and also jointed with the rest of the formation. These rocks tend to be hard and less weathered due to the drier climatic conditions prevailing in the targeting regions, especially Northern Savanna Zone. There are two main physiographic regions recognisable in the targeting area namely the Savanna High Plains and the Voltaian Sandstone Basin.

Hydrology: The targeting area is the Northern Savannah Zone which 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, the Black Volta in the Savannah Region, Nasia in North East, and Oti in the Oti 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 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 areas.

Forest and Protected Areas: There are 72 forest reserves in the northern savannah. They range in size from 0.4km^2 to 1,116 km^2. However, many of these areas are under pressure from subsistence farmers, livestock herders and others who engage in illegal activities in the reserves. Mole National Park (Ghana's largest) is located in the Savannah Region and Gbele Resource Reserve in the Upper West Region. Both are gazetted wildlife protected areas.

Flora The project targeting area contains 1,519 vascular species known to be indigenous or naturalised. Six species including *Ceropergia gemmifera*, *Commiphora dalzielii*, *Ptleopsis habeensis* and *Eugenia coronta* 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 1.5m high.

Fauna*:* 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 savanna.

Wetlands: In northern Ghana, there are inland wetlands such as Kpasinkpe, near Walewale, Nasia, near Nasiatownship Gbani, Nalerugu Nabogu and Kukobila wetlands all in the Northern region of Ghana. Economically, the local communities around the Kukobila wetlands exploit its plants resources such as the pigweed (Ipomoea aquatic) for feeding cattle and pigs and for preparing soup for human consumption. Some species of grass are used for fencing and roofing houses. The animal resources of the wetland include fish, amphibians, birds and mammals all of which serve as sources of protein for the inhabitants. Ecologically, Kukobila wetland is a habitat of a wide variety of classes of organisms (both plants and animals).

Socio-Cultural Environment: According to the Ghana Statistical Services, 2021 Population and Housing Census puts the population of the targeting regions at 21.3million people. According to the census average household size is 3.6 the lowest recorded in the last six decades. The average household size decreased in all regions with 5out the 6 targeting regions (Northern, Savannah, North East and Upper West) reducing by two or more persons since 2010. The main ethnic groups in the project areas include the Dagbani in the Northern Region; Mamprusi in the North East Region; Gonja in the Savannah Region; Dagaaba, Waala and Sisala in the Upper West Region; Builsa, Kassena, Nankani, Grunnie, Nabdam and Kussasi in the Upper East Region; and Nchumuru, Ewe konkonba and Basari in the Oti Region. In all these ethnic groups patrilineal inheritances is the norm and traditional authority is vested in the chief, who sits on a skin, an acknowledged symbol of identity of the group and authority.

Land in northern Ghana (the target area is held under customary (communal) tenure system with ownership vested in clans, families and earth priests (who hold spiritual authority over land matters. Descendants of the first settlers re regarded as the allodial owners of the land who also accept settlers by allocating portion of the land to them. Women combine crop farming with the collection and processing of shea nuts for consumption and sale. However, gender ideology and social relations generally complicate access to land by women.

The majority of people in the six target regions are traditionally crop and livestock farmers, growing cereals, root and tubers and keeping livestock, mainly goats, cattle and sheep for subsistence and gain. Those along the major rivers combine farming with fishing. Outside farming season activities include farm produce processing and marketing, livestock grazing, and fishing.

It is also common for farmers to engage in artisanal or small-scale mining as a means to diversify income opportunities. Others engage in hunting. The nature of the vegetation exposes the target regions to annual bush fires.

5.0 POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

The project development objective is to improve the socio-economic resilience of communities in the Northern, North east, Oti, Savannah, Upper East and Upper West Regions of the Country exposed to conflict and climate risks through regional dialogues and border-zone investments.

Potential activities envisaged under Component 1in particular are likely to trigger provisions under the E&S framework of the Project. Intervention activities will include investments in connectivity covering upgrading, rehabilitation, and/or expansion of rural roads; cleaning, construction, or repair of culverts and other structures; cross-border security infrastructure (small lights, electricity, bridge, and so on). Special consideration will be given to optimize climate-smart connectivity investments, such as road repairs with water retention for ponds or reforestation, trees buffer on roadsides.

The project will also finance the construction of public marketplaces, cross-border security (small lights, electricity, bridge, etc.). It will also fund processing facilities and possibly, child-care facilities to support female cross-border trade.

In addition, other project activities include those related to natural resource management and climate change adaptation through restoration of landscapes bye-way of afforestation, tree nurseries development, water and soil conservation measures to promote better water retention in soils. Other activities to improve community resiliency include construction of irrigation canals, flood control structures, community pond as well as water supplies (valley tanks/hand-dug wells, etc.). Consequently, the proposed is likely to impact on a wide geographical area and may lead to potential disruption of natural habitats. Furthermore, some activities may require the use of chemical products. Most of the activities proposed for the investment menu under component 1 have the potential of creating adverse environmental and social risks and impacts

5.1 General Potential Positive Environmental and Social Impacts of SOCO

Overall, it can be expected that the environmental and social impacts resulting from the subprojects financed from the Project and implemented by the MMDAs are positive. Due to the participation of communities during the prioritising and selection of subprojects, it is hope that the subprojects are highly relevant and meets the needs of communities. The potential positive impacts of the various thematic area interventions are:

Health infrastructure

- Health services move closer to the citizens, leading to faster access to health services
- Better facilities enable better quality of service delivery
- Increased capacity of health services to the local population
- Decreased mortality in the communities
- Better housing and working conditions for health workers and increased retention at the community level leads to better service delivery

Sanitation

- Better health and sanitation conditions for the local population leads to less water-borne diseases
- Less pollution through the provision of waste collection / treatment facilities

Market Infrastructure
- Better market facilities and increased hygiene
- Increased possibilities for income generation for local population
- Increased possibilities for local taxation on local economic activities

Energy
- Increased access to energy allows for increased economic and social activities in the evenings
- Increased access to energy allows for reading and studying in the evenings
- Increased sense of security in the community thanks to streetlight

Water Facilities
- Better access to clean water for the local population
- Better sanitation and health conditions of local population leads to less water-borne diseases

Rural Roads
- Easier and quicker access to services and other communities
- Improved conditions to attract economic activities and investments
- Reduce cost of transportation
- Reduction of accidents through providing better and safer roads

5.2 General Potential Negative Environmental and Social Impacts associated with SOCO

Implementation
Negative environmental and social impacts are to be expected especially during the construction phase and in alleviated form also during the post-construction phase. Furthermore, the nature of the physical and social environment in the target Project location creates situations which triggers potential negative environmental and social impacts. Nonetheless, since the subprojects are small in size and limited generally to rural geographic space, negative impacts are likely to be temporary or small in size. Generally, these negative impacts are expected during execution of investments particularly for activities under Component 1.

5.2.1 Potential Negative Environmental Impacts

Loss of vegetation, economic and shade providing trees and green space
- Road projects as well as construction of buildings and watse disposal plants may require the cutting of trees and bushes
- Disappearance of small-scaled green space
- Due to rural nature, there is the likelihood of significant effect on biodiversity, forest and savannah ecosystems

Habitat destruction and disruption (flora and fauna impacts).
Important wildlife habitats threatened, and endangered species of flora and fauna may be destroyed during feeder road development/rehabilitation. Road corridors, particularly in new construction may cut through ecosystems and compromise their stability and health. Plant and animal communities may be fragmented into weaker ecological sub-units, rendering them vulnerable to invasions and degradation. The opening up of burrow pits to support feeder road construction could be equally destructive to wildlife and habitats. Erosion from constructed and

rehabilitated sites (of both road and related areas) can lead to downstream siltation, contaminating water resources and ruining fish spawning grounds. Alterations of flow regimes, flood cycles, tidal flows and water levels can upset.

Soil and Land Degradation

- Construction may lead to the usage of earth-moving equipment such as bulldozers, excavators and other heavy machinery which exposes soils during clearing of access ways
- Compacting of soil and break down of soil structure during construction phase
- Sealing of road surface, reducing rainwater percolation into the ground water
- Site-levelling activities interfere with natural drainage patterns
- Potential of causing siltation of the natural drainage channel

Air Quality

- During construction phase increased dust from site preparation: haulage of equipment and construction materials on untarred access road causes deterioration in air quality at site
- Other sources of dust are earthworks such as excavation and the delivery of coarse aggregates
- Excessive generation of dust may have significant impact on health of workers and persons living near the site
- Development projects such as roads and markets may lead to increased traffic and therefore also deterioration in air quality

Water Quality

- There can be deterioration in water quality of both surface and groundwater.
- Potential sources of impacts are site preparation and clearing activities, heaping of materials, blocking and narrowing water channels and flows at certain points. In some cases the speed of flow may be increased resulting in flooding, ponding, soil erosion, channel modification and siltation of streams.
- Other sources of water pollution include sedimentation, changes in biological activity in streams and on their banks, chemicals spillage, contaminated run off from petroleum product drippage, exhaust emissions, pavement and tyre wear, and corrosion of metals, among others.

Constructional Wastes

Different forms of solid and liquid waste including excavation spoil, construction waste, sewage, and garbage are expected to be generated during the construction phase. Areas along roads under construction tend to become centres of local trading which may leave in its trail serious sanitation problems.

- Construction process produces wastes such as excavated soils and redundant materials
- Possible pollution of water from wastewater, which may leak into the environment

Noise Level and Ground Vibration

- Generation of noise during the construction phase
- Increased background noise levels and ground vibrations due to movement of trucks delivering materials, heavy earthmoving equipment and the use of heavy machinery

Asbestos and Health

Inhalation of asbestos fibers can cause many serious health effects, including lung cancer, mesothelioma, and asbestosis, a debilitating and sometimes fatal build-up of fibrous scar tissue in the lungs. Higher concentrations and prolonged exposure make these effects more likely, and often disease symptoms take many years to develop after exposure.

Asbestos is only dangerous when free-floating fibers are released into the air. Asbestos that is "locked in" to a material like roofing sheets or linoleum is not dangerous, except when these materials are cut, scraped, or broken up. When this happens, as in renovation activities, asbestos fibers can be released to the air, presenting a hazard to anyone in the vicinity. Asbestos pipe or boiler insulation can be dangerous even when in place, if it can be easily damaged or disturbed. Asbestos can also exist behind walls and in materials such as mastic and adhesives. Air currents are sufficient to dislodge asbestos fibers from loose or damaged insulation.

Medical Waste From Rehabilitated And Equipped Health Care Centers

Healthcare waste is dangerous. If handled, treated or disposed of incorrectly it can spread disease, poisoning people, livestock, wild animals, plants and entire ecosystems. Wastes generally fall into three categories:

- General healthcare waste, similar or identical to domestic waste, including materials such as packaging or unwanted paper. This waste is generally harmless and needs no special handling; 75–90% of the waste generated by healthcare facilities falls into this category.
- Hazardous healthcare wastes including infectious waste (except sharps and waste from patients with highly infectious diseases), small quantities of chemicals and pharmaceutic and non-recyclable pressurized containers.
- Highly hazardous healthcare wastes includes sharps, highly infectious non-sharp waste, stools from cholera patients, bodily fluids of patients with highly infectious diseases, large quantities of expired or unwanted pharmaceuticals and hazardous chemicals and radioactive wastes, genotoxic wastes (affecting genetic composition and multiple generations), or teratogenic wastes (affecting development of the exposed individual).

5.2.2 Potential Negative Social Impacts

Labor risks associated with Civil Works and contractor workers at subproject level:

Given the nature of the project activities, no major labor risks are envisaged. Subprojects will be implemented by local contractors and most contracted workers will be hired locally. All contractors will be required to have a written contract with their workers materially consistent with objective of ESS2, in particular about child and forced labor.

Occupational Health and Safety

- Safety of the local population and contract workforce may be threatened during the construction phase
- Movement of trucks, operation of various equipment and machinery and the construction exposes workers to work-related accidents and injuries
- Pollutants from dust, noise and asbestos can have negative effects on the health of the community members and workers

Danger of child labour and forced labour

- During construction children could become involved in the work
- Exposes them to risk of accidents and injuries as well as preventing them from seeking an education and potential risk of sexual abuse and harassment due to generally weak economic power of the population

Sexual Exploitation and Abuse and Sexual Harassment are considered low given the nature of project activities. Since civil works to be supported under the project will be very small in scale and prioritized by local communities themselves, the risk of forced labour is expected to be minimal. Nonetheless, the contractors will be required in their contracts to commit against the use of forced labour. Every worker on site will be required to sign an anti-sexual harassment policy which was developed during implementation of GPSNP. Further, as part of monitoring activities, the M&E teams will conduct spot checks to ensure that rules are not violated, and in cases where they are, swift actions will be taken to respond and resolve them.

Resettlement/ Relocation

Construction of projects and the related clearing of land may require the resettlement of few families or persons

Potential exclusion of vulnerable groups

Community health and Safety

- Indiscriminate disposal of construction materials;
- Use of equipment and vehicular movement
- Obstruction to paths and free movement
- Disturbances to historical/cultural sites

Land tenure and ownership

- Conflicts in land claims
- Increased values in land prices leading to economic displacement of poor land tenants
- Potential tension between customary land rules and ESS5 requirements

Security and Safety

- Safety and security of community informants'/ whistle blowers;
- Safety and security of field staff
- Potential cross border activities (infiltration) of terrorist groups

Table 5: Sector Specific Risks and Impacts and Potential Mitigation and Enhancement Measures

Construction/ Rehabilitation of Rural Roads

Type of Activity	Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Construction	Negative social and economic effects on local people and communities, such as: • Unplanned commercial development • Demand for local public infrastructure and services increases beyond existing capacities • Disruption of traditional lifestyles • Induced population movements and natural resource exploitation activities, due to improved access (e.g. conversion of	• Work with affected communities to anticipate and plan for enhanced access to and demand on local public infrastructure and services • Provide project funds to strengthen local public infrastructure and services (e.g. health clinics, markets, schools) • Avoid creating congested and unsafe road conditions at intersections, and in villages and towns	Participation of communities in local planning	NGO/Government
	Displacement of housing or farms or involuntary resettlement	• Purchase of replacement land and resettlement of affected people • Monetary compensation	Number of project affected people adequately compensated and resettled	Local government
	Loss of natural areas, important habitats, biodiversity	Avoid infringing on: • Critical habitats or areas with significant biodiversity (e.g. wetlands) • Protected natural sites and wilderness areas	• Degree of biodiversity (number of species) in road vicinities • Extent of critical habitats	Ministry of Environment /local government

Type of Activity	Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
	Damage valuable historic, religious, cultural, and archaeological resources	Avoid areas of cultural, historical, or religious significance Apply chance find procedures in construction clauses	Participation of communities in local planning	NGO/Local government
	Social disruption during construction (e.g. enhanced transmission of STDs and TB)	• Comprehensive community participation in construction planning and management • Education on avoiding communicable diseases/hygiene • Use regional labour where possible	Occurrence of illness or disease	NGO/ Local government
	Creation of stagnant water in construction borrow pits and quarries, and on roadsides, that breed disease carriers	Assess ecology of disease carriers in road corridor, and employ suitable mitigation measures (e.g. proper drainage of construction areas and road sides, effective road maintenance)	• Occurrence of illness or disease • Drive roads after moderate rains to identify areas that collect or gully water	Local government/ Ministry of Transport or Public Works/ Community
	Impact of road noise on village	Plant 30-meter tree buffer strips between road and village	Number of community complaints to local authorities about noise	Transport Ministry
	Dust	• Stabilize the road surface with gravel and other rocky surfacing materials • Spraying with water to control dust during • construction.	Number of community complaints to local authorities about dust	Transport Ministry

Type of Activity	Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
	Contaminate surface water and generate trash due to lack of solid waste management	• Provide temporary sanitation (e.g. latrine), where this is not possible, instruct crews to employ soil mining (digging a pit for human waste and covering with soil immediately after use) • Collect all solid waste from all site areas and dispose of either in local landfill or well-screened waste pits	Local complaints of excessive waste and odours	Transport and Public Works Ministry/local government
	Increased soil erosion leading to sediment in runoff and, possibly, gully formation from: • Construction activities such as grading, excavations, and borrowing/quarrying • Inadequate design of culverts and drainage controls	• Design: o Use surface drainage controls and mulch on vulnerable surfaces and slopes o Line receiving surfaces with stones or concrete o Locate and design borrow/quarry sites for erosion control during road construction and future maintenance operations o Identify the most environmentally sound source of materials within budget • Construction: o Limit earth movement and soil exposure to the dry season o Balance cut and fill for minimum deposition of earth o Provide sedimentation basins o Resurface and re-vegetate exposed surfaces	• Quality of soil/productivity • Integrity of road structures • Accidents due to erosion of road	Transport and Public Works Ministry
Post- Construction and Operation	Landslides, slumps and slips	• Avoid areas of soil, slope or geological instability and unstable river crossing sites • Stabilize slopes by planting vegetation • Minimize vertical road cuts • Install drainage ditches to drive water from road	• Quality of road • Degree of erosion	Transport and Public Works Ministry

Type of Activity	Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
	Accidents and safety risks	Construct basic speed bumps and employ traffic signs where possible	Number of accidents reported per month to local government	Transport and Public Works Ministry/local government
	Increased soil erosion leading to sediment in runoff and, possibly, gully formation from inadequate maintenance of road surface, ditches, borrow/quarry sites, and drainage and erosion control measures	• Ensure proper and timely maintenance of erosion • control and drainage measures along the road and at borrow/quarry sites • Clean out culverts and side channels/runout when they begin to fill with sediment • Fill mud holes and potholes with quality gravel • se water from settling basins and retention ponds for road maintenance	• Quality of soil/productivity • Integrity of road structures • Accidents due to erosion • of road • Collection of water in drainage system	Transport and Public Works Ministry
	Quarry used for construction may become a health hazard	• Discuss with local community the usefulness of using pits as water collection pits for cattle, irrigation • Highlight issues of disease transmission and the need to prohibit its use for drinking, bathing, and clothes washing	Occurrence of disease or illness	Community
	Impact of road noise on village	Plant 30-meter tree buffer strips between road and village	Number of community complaints to local authorities about noise	Transport and Public Works Ministry
	Dust due to traffic	Implement agreed dust control measures such as wetting dirt roads, truck washing for trucks exiting site, and monitoring dust emissions	Number of community complaints to local authorities about dust	Transport and Public Works Ministry

Small-scale Irrigation and Drainage

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Loss of vegetative cover, decrease in soil fertility	Avoid infringing on protected areas, critical habitats or areas with significant biodiversity (e.g. wetlands)	Decreased productivity	Community/NGO
Reduction in soil and groundwater quality, declines in plant growth and reduced harvests	Use the right fertilizers at correct time (e.g. before field crops are planted), and in correct amounts for the specific crop and soil type	Decreased productivity	Community/NGO
Fertilizer runoff leading to degradation of aquatic environments in nearby ponds, streams and other water bodies	• Use manure to help fertilize crops and build soil quality • Do not apply agro-chemicals too close to streams, ponds and drinking water sources • Do no wash fertilizer bags in streams or ponds	• Quality of liquid effluent and receiving waters • Decreased productivity	Community/NGO
Illness or disease due to pollution of water sources from food processing wastes	• Ensure thorough training in safe storage, handling, use and disposal of agro-chemicals • Do not apply agro-chemicals too close to streams, ponds and drinking water sources • Do no wash fertilizer bags in streams or ponds	Occurrence of human (or livestock) illness or disease	Ministry of Agriculture/ NGO/ Community
Health effects on workers	• Ensure thorough training in safe storage, handling, use and disposal of pesticides • Wear protective clothing • Consider training and use of integrated pest management (IPM)	Incidence of worker disease or illness	Ministry of Agriculture/ NGO/ Community

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Degradation of groundwater, streams, and rivers from solid and liquid wastes, and consequent	• Locate waste disposal sites away from surface and groundwater sources, watercourses, housing and town centers • Install grease traps and skim tanks • Ensure receiving waters for liquid wastes are able to absorb and naturally decompose the effluent • Screen waste liquids to remove coarse solids • Ensure waste that is stored before transport to	• Occurrence of illness in livestock or community • Surface water flows and ground table levels in project area	Ministry of Agriculture/ NGO/ Community
Upsetting existing social and economic community management relationships, land tenure systems, security of livelihoods, and gender division labour	Avoid sites that require: • Resettlement • Displacement of other important land uses • Encroachment on historical, cultural, or traditional use areas	• Number of people displaced and compensated • Encroachment onto historical, cultural or protected areas	Ministry of Agriculture/ NGO/ Community
Conflicting demands on surface or groundwater Supplies	Locate and size irrigation schemes: • Where water supplies are adequate and the scheme will not conflict with existing human, livestock, wildlife or aquatic water uses, especially during dry seasons • Withdrawals should not exceed "safe yield" from	• Involve community in local planning • Complaints from community about water use	Ministry of Agriculture/ NGO/ Community
Loss of vegetative cover, decrease in soil fertility	Avoid infringing on protected areas, critical habitats or areas with significant biodiversity (e.g. wetlands)	Decreased productivity	Community/NGO
Reduction in soil and groundwater quality, declines in plant growth and reduced harvests	Use the right fertilizers at correct time (e.g. before field crops are planted), and in correct amounts for the specific crop and soil type	Decreased productivity	Community/NGO
Fertilizer runoff leading to degradation of aquatic environments in nearby ponds, streams and other water bodies	• Use manure to help fertilize crops and build soil quality • Do not apply agro-chemicals too close to streams, ponds and drinking water sources • Do not wash fertilizer bags in streams or ponds	• Quality of liquid effluent and receiving waters • Decreased productivity	Community/NGO

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Illness or disease due to pollution of water sources from food processing wastes	• Ensure thorough training in safe storage, handling, use and disposal of agro-chemicals • Do not apply agro-chemicals too close to streams, ponds and drinking water sources • Do no wash fertilizer bags in streams or ponds	Occurrence of human (or livestock) illness or disease	Ministry of Agriculture/ NGO/ Community
Health effects on workers Health effects from improper storage, handling, use or disposal of agro-chemicals (pesticides, herbicides)	• Ensure thorough training in safe storage, handling, use and disposal of pesticides • Wear protective clothing • Consider training on good garderining practices and use of integrated pest management	Incidence of worker disease or illness	Ministry of Agriculture/ NGO/ Community
	• Training/supervision of farm workers on use of agro-chemicals to protect worker health and safety along with the environment • Training of Integrated Pest Management (IPM) scouts for early recognition of pest outbreaks and the most environmentally sound methods to combat outbreaks • Appropriately dispose of Pesticide containers and obsolete pesticides. •	• Pest outbreaks Occurrence of illness or disease among workers	Community/ NGO
Degradation of groundwater, streams, and rivers from solid and liquid wastes, and consequent	• Locate waste disposal sites away from surface and groundwater sources, watercourses, housing and town centers • Install grease traps and skim tanks • Ensure receiving waters for liquid wastes are able to absorb and naturally decompose the effluent • Screen waste liquids to remove coarse solids • Ensure waste that is stored before transport to treatment facility or landfill cannot leak into the ground	• Occurrence of illness in • livestock or community • Surface water flows and ground table levels in project area	Ministry of Agriculture/ NGO/ Community

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Upsetting existing social and economic community management relationships, land tenure systems, security of livelihoods, and gender division labour	Avoid sites that require: • Resettlement • Displacement of other important land uses • Encroachment on historical, cultural, or traditional use areas	• Number of people displaced and compensated • Encroachment onto historical, cultural or protected areas	Ministry of Agriculture/ NGO/ Community
Conflicting demands on surface or groundwater Supplies	Locate and size irrigation schemes: • Where water supplies are adequate and the scheme will not conflict with existing human, livestock, wildlife or aquatic water uses, especially during dry seasons • Withdrawals should not exceed "safe yield" from	• Involve community in local planning • Complaints from community about water use	Ministry of Agriculture/ NGO/ Community
Creating habitats in canals and ditches for disease carriers such as mosquitoes and snails	Assess ecology of disease carriers in the project area, and employ suitable prevention and mitigation measures, e.g.: • Site and orient water works, fields and furrows to ensure adequate natural drainage of surface water • Avoid unsuitable gradients, and creating stagnant or slowly moving water • Construct straight or only slightly curved canals • Install gates at canal ends to allow complete flushing • Ensure adequate sub-surface drainage of fields • Avoid over-irrigation • Maintain water works, and clear sediment and weeds, regularly	Occurrence of higher numbers of disease carriers such as mosquitoes and snails, as documented by community survey/complaints	Ministry of Agriculture/ NGO/ Community
Spreading infection and disease through the inappropriate use of irrigation canals for water supply, bathing or human waste disposal	Provide/ensure alternate facilities for domestic water supply, bathing and human waste disposal	• Involve community in local planning • Periodic survey of community about which facilities they use for which activity	Community/ NGO

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
		•	
Waterlogging	• Thoroughly assess project soils and their management needs under irrigated agriculture • Apply water efficiently (consider drip or dawn/evening sprinkler system) • Install and maintain adequate surface and subsurface draining • Use lined canals or pipes to prevent seepage	• Incidences of gathering water from improper drainage • Soil erosion • Dampening of surrounding area due to seepage	Community/NGO
Salinization	• Avoid waterlogging (above) • Mulch exposed soil surfaces to reduce evaporation • Flush irrigated land regularly • Cultivate crops having high tolerance to salinity	Maintain log of hours/water used for irrigation	Community/local government
Erosion	• Design and layout of furrows appropriately • Avoid unsuitable gradients • Avoid over-irrigation • Install sediment traps in fields and canals to capture sediment for return to fields • Minimum tillage, contour cropping, terracing and other methods of conserving soil moisture	Involve community in local planning of sites	Agriculture Ministry/ Community
Reduced quality of surface and groundwater receiving excess irrigation water or drainage (nutrients, agro-chemicals, salts and minerals)	• Minimize risks of waterlogging and salinization (see above) • Use agro-chemicals appropriately (see above) • Prevent surface drainage of fields into nearby water	• Involve community in local planning of sites • Training/practices of local farmers	Community

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Overgrazing	• Development of range management specialists in Agricultural Ministry • Training/supervision of herders in range management	• Involve community is local planning of range management • Practices of local herders	Agricultural Ministry/ Community/ NGO

Water Supply and Sanitation

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Cross contamination sewage and water lines due to pressure differentials and leaks	Employ suitable prevention and mitigation measures (e.g. good drainage around water supply points)	• Complaint from community • Occurrence of disease or illness	Government
Negative social and economic effects on existing community water management practices and relationships	Consider water conservation measures instead of or in addition to a new water supply project, for example: • Upgrade or renovate existing systems (e.g. deepen and clean existing wells, reduce leakage, evaporation and seepage loss) • Introduce water recycling and reuse	• Level of community participation (number of individuals involved and allocated responsibilities) in management of water supply structures • Level and quantity of water recycling and reuse carried out per community	Community/NGO
Potential land use conflicts	Avoid locating project works that require: • Resettlement • Displacement of other important land uses • Encroachment on historical, cultural, traditional use areas, or protected areas	• Number of people displaced and compensated • Encroachment onto historical, cultural or protected areas	Local government/ Community

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Conflicting demands on surface or groundwater Supplies	• Ensure sufficient community participation and organization for effective planning and management of water supply system, and for equitable water distribution • Develop water supply sources: o Where water quantities are adequate and the project will not conflict with existing human, livestock, wildlife or aquatic water uses, especially during dry seasons o So that withdrawals do not exceed "safe yield" from groundwater resources	Level of community participation (number of individuals involved and allocated responsibilities) in management of water supply structures	Local government/ Community
Illness or disease related to poor source water quality or from contaminants entering water supply system	• Ensure that water is fit for drinking (make regular testing a part of the project if possible) • Ensure planning, design, and maintenance of supply, sanitation, and wastewater works is appropriate to local needs, and to soil and water table conditions	• Occurrence of illness or disease • Regular testing (if possible) • Involve community in local planning process	Local government/ Community
Contaminated soils from disposal of inadequately decomposed wastewaters	Ensure planning, design, and maintenance of supply, sanitation, and wastewater works is appropriate to local needs, and to soil and water table conditions	Involve community in local planning process	Local government/ Community

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Contamination of water source supply	• Protect groundwater sources from surface runoff (e.g. rainwater, spillage around wells, wastewater from latrines or homes) that may enter as drainage from above or as seepage from below • Locate source well away from latrines, septic systems, traditional defecating areas, and animal pens • Protect surface water sources from contamination from: o Runoff from nearby agricultural areas (e.g. silt, agro-chemicals, animal waste) o Other uses such as bathing, laundering, and animal watering o Garbage and vegetative debris	• Occurrence of illness or disease • Decrease in production due to water contamination (e.g. stunted growth, no growth) • Complaints/problems documented form local community	Local government/ Community
Groundwater contamination	• Ensure adequate design, installation, and maintenance of latrines, holding tanks, septic systems and wastewater soak-aways • Ensure adequate spacing between latrines and soak-aways	• Occurrence of illness or disease • Decrease in production due to water contamination (e.g. stunted growth, no growth)	Local government/ Community
Surface water contamination	• Ensure proper maintenance of latrines, holding tanks, septic systems and wastewater soak-aways • Locate latrines, septic systems and soak-aways at least 30 meters from any waterbody (e.g. stream, lake, river)	• Occurrence of illness or disease • Decrease in production due to water contamination (e.g. stunted growth, no growth)	Local government/ Community

Waste Management

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Displaced land uses	Involve community in locating project sites and access routes as well as developing practices and responsibilities for managing project activities and sites	Survey of local population regarding land uses	Local government/ Community
Disruption or destruction of sites of cultural, religious or historical importance	Involve community in locating appropriate project sites and access routes that avoid such resources	Survey of local population regarding problems with culturally sensitive areas	Local government/ Community
Human settlements and land uses near landfill and composting sites	Involve community in locating project sites and access routes	Survey of local population regarding siting of facility	Local government
Wind-blown garbage, dust and smoke	Spread and compact incoming refuse, and cover with soil, daily	Complaints from community	Local government
Increased traffic to/from the sites	Pave access roads, or use water spraying to reduce dust	Complaints from community	Local government
Odors	• Provide for safe ventilation of decomposition gases • Spread and compact refuse, and cover with soil daily	Complaints from community	Local government
Containment of water sources	• Ensure site layout and management practices, including working training, are adequate • Install adequate surface drainage control measures • Maintain erosion and surface drainage control measures during operations	• Incidences of illness or disease • Decrease in agricultural production	Local government
Creation of stagnant water sources	• Ensure site layout is adequate for drainage • Install adequate surface drainage control measures • Maintain erosion and surface drainage control measures during operations	Periodic check for pooling water due to inadequate drainage	Local government
Creation of stagnant water in project sites that breed disease carriers	Assess ecology of disease carriers in project area and employ suitable mitigation measures (e.g. proper drainage)	• Increase in disease carriers • Occurrence of illness or disease	Local government / Community
Loss of natural area, important habitats, Biodiversity	Avoid infringing on: • Protected natural areas and wilderness areas • Critical habitats or areas with significant biodiversity (e.g. wetlands)	Survey land area and community for environmentally sensitive areas/habitats	Local government / Community

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Soil erosion	• Minimize time of exposure of areas cleared, graded or excavated • Stabilize and revegetate disturbed areas • Install adequate surface drainage control measures • Maintain erosion and surface drainage control measures during operations	Degree of erosion	Local government / Community
Contamination of surface and groundwaters with landfill runoff and leachate	• Protect water resources by locating landfills: o Where the underlying soils are relatively impermeable, and have a high capability for containing chemical contaminants (e.g. clays) o So that the bottom of the landfill is above the water table o Away and down gradient from surface waters, and groundwater recharge areas sources, whose use could be affected by contamination unless the distance to the receiving water is adequate to dilute and disperse potential contamination • Use a landfill liner (e.g. clay, synthetic) • Collect surface runoff and discharge to safe area • Install test wells at landfill perimeter, and monitor water quality during operations, for early identification and mitigation of emerging adverse effects	• Complaints from community • Lower agricultural productivity • Increased instances of illness or disease	Local government / Community

Community Solid Waste Management (Refuse Collection)

Types of Activities	Potential Impacts	Generic Mitigation Measures	Monitoring	Responsibiliti
Management of health care wastes at facilities (health centers, laboratories, maternity clinics) According to UNICEF, rural and urban sanitation challenges stem from a lack of national strategies and policies to guide sanitation activities, limited funding from both the public and private sectors, increase in populations, especially in urban swam dwellings, limited and public education, Lack of adequate waste disposal and treatment facilities, among others (https://www.unicef.org/ghana/sanitation). The negative effects of plastic waste, in particular, on the	• Disease transmission through infectious waste, sharps, and contaminated water • Chemical and toxic threats through chemical and pharmaceutical exposure climate are well documented. In Ghana, per capita generation of plastic wastes stands at 0.016–0.035 kg/person/day, and plastics make up between 8–9% of the component materials in the waste stream Now most products are packaged in polyethylene films, which form about 70% of the plastic waste in the municipal waste stream. (Fobil, 2000). The severe challenge with reducing plastic waste (and other waste) pollution in Ghana makes it essential to find innovative methods to deal with the situation. Using public works to contribute to improving sanitation therefore becomes critical to reducing climate vulnerability. **Occupational Health and safety risks:** Beneficiaries engaged to undertake waste collection could be exposed to disease-causing pathogens if the necessary personal protective equipment is not worn. In addition, hours of exposure to high ambient temperatures and the sun's rays could be detrimental to the health of the participants. Musculo-skeletal injuries may also result from repetitive motions tasks and lifting of heavy items.	• Community waste management plan • Clearly assigned staff responsibilities • Community guidelines for generation, handling, storage, treatment and disposal • Staff trained in handling, storage, treatment, and disposal • Protective clothing available (provide thick gloves and aprons for staff handling healthcare waste) • Good hygiene practices (soap and water readily available) • Vaccinated workers • Temporary storage containers in designated locations • Minimization, reuse, and recycling procedures • Segregate waste • Treatment methods for hazardous or highly hazardous waste (Incineration and Autoclaving) • Designate a final disposal site (bury waste on site in clay-lined pit	Schedule for periodic review of compliance to and effectiveness of plan	Government/ NGO/ Community

Types of Activities	Potential Impacts	Generic Mitigation Measures	Monitoring	Responsibiliti
	• Spread of disease • Environmental impact	• Select a location with easy access to safe drinking water (source should be dedicated exclusively to the facility, if possible, to reduce spreading disease) • Install adequate sanitation facilities to prevent the spread of disease from infected patients • Avoid locations adjacent to schools to minimize children's risk of exposure • Pick a location where waste can be safety buried (e.g. above the water table and protected from scavenging) or easily shipped off site for safe disposal in a sanitary landfill	Involve community in siting facility and other planning measures	Government/ NGO/ Community

Asbestos

	Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibilities
Rehabilitation Activities	Asbestos pipe or boiler insulation can be dangerous even when in place, if it can be easily damaged or disturbed. Asbestos can also exist behind walls and in materials such as mastic and adhesives. Air currents are sufficient to dislodge asbestos fibers from loose or damaged insulation.	Managing Hazards in Rehabilitation: First Steps. Managing lead and asbestos hazards in rehabilitation begins with three steps: checking for presence of leaded paint, leaded pipe, or Asbestos-containing Material ; determining the need to disturb the paint/material; and determining the standards to apply. Minimum Recommended Practices for Rehabilitation Works Involving Lead	Hazards risk assessment record Laboratory analysis Avoid disturbance of asbestos or lead without proper testing	Government and Communities

		Paint or Asbestos. Workers must be educated on lead paint and asbestos hazards including the proper procedures for identification, removal, handling, managing, and disposal. Proper personal protective equipment (PPE) is required and should be provided for workers based on conditions and task assignments. PPE for working with either lead paint or asbestos includes an approved half or full facepiece respirator, protective clothing consisting of effective coveralls, a head coverage, and, specifically when working with asbestos, foot covers. Workers should also follow good work behavior and safe work practices such as not eating, smoking, or drinking while working in a hazard area; washing hands and face every time after stopping work; cleaning clothing with wet cleaning; vacuuming clothing with a high-efficiency particulate air (HEPA) filter before removing when leaving the work area; changing clothes; and ideally, showering before going home. If undamaged ACMs are present but not a planned part of the renovation, efforts should be undertaken to prevent them from being damaged or disturbed. If the materials are of a nature or in a condition that can easily release asbestos fibers, these should be addressed during the rehabilitation.		

		The work area should be isolated and contained, so that no dust or debris can escape. In addition, work practices should include posting of hazard signs around the work area and turning off all heating and air conditioning systems. Windows should be kept closed and the work area screened off with plastic or other impermeable material and tape. If Drilling, Cutting, or Removing Asbestos Roofing Sheets or Siding: Minimize breakage, drilling, and cutting to the degree possible. Close windows and doors leading into the structure and nearby structures. If doors or windows do not close, seal with plastic sheeting. Clear the worksite of all workers except those involved in the roofing sheet or siding work and stop other activities. Wet the affected area thoroughly with a detergent solution. If the operation may result in heavy vibration or cracking of the whole sheet, wet the whole sheet. Lower pieces gently to the ground; do not drop. Cleaning Up: Collect and store all debris and waste in a strong sealable container until disposal. Clean up		

		thoroughly at the end of each work day. Do not dry-sweep the area. Instead, wet thoroughly and then sweep. Dispose of solid waste as safely as possible in the local context, ideally to a qualified solid waste landfill. Finish by wiping all surfaces with a damp cloth, rinsing frequently. Damp-mop around the containment area. If local rules allow, dispose of rinse and waste water by filtering and dumping down a toilet. If not, store the water in a drum. When finished, remove plastic sheets, and dispose as lead/asbestos waste		

5.3 Environmental and Social Management Procedures for Subprojects under SOCO

5.3.1 The Subproject Environmental and Social Screening Process

Environmental and social screening marks the beginning of ESIA or ESMP process for any proposed. The screening should be initiated as early as possible along with the sub-project planning process after the subproject is conceived. The extent of environmental assessment that might be required to be carried out in respect of a proposed subproject will depend on the outcome of the screening process.

The purpose of the preliminary screening is to: (i) rapidly determine whether proposed projects are likely to have potential negative environmental and social impacts; (ii) decide if 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 as appropriate; (v) review and approve projects proposals and (vi) monitor environmental and social impacts and concerns during implementation. . The early screening process will also consider the provisions of the RPF for possible land acquisition and livelihood impacts DA Safeguards Teams/Focal Persons must foremost carry out the preliminary environmental and social screening for each proposed subproject by using the standard Safeguards screening checklist attached (suggested in **Annex 1**) and liaise with the World Bank and EPA for determination of their significance, assignment of appropriate environmental category, recommendation of appropriate safeguards instrument that should be prepared for the subproject in case provisions in the ESF of the World Bank and any national environmental requirements are triggered.

When there are minimal or insignificant expected impacts (as determined using the standard safeguards screening checklist), MMDA Safeguards Teams to be constituted must consult with the Lead Implementing Ministry Safeguards Specialists and the World Bank Country Office Safeguards Team and secure clearance to proceed to subproject design and preparation stage. Nonetheless, no subproject requiring preparation of a safeguards instrument should commence until the said safeguards instrument is completed by the Client, approved by the World Bank and EPA, and disclosed publicly in Ghana and on the World Bank external website.

Negetive List

A negative list will be used by the project to ensure ineligible subprojects are not progressed and exclude activities with very high or significant adverse environmental or social impacts. The following subproject or activities will be deemed ineligible for the project if they:

- Involve the significant conversion, clearance or degradation of critical natural habitats, forests,
- environmentally sensitive areas, significant biodiversity and/or protected conservation zones;
- Will cause, or have the potential to result in, permanent and/or significantly damage to non-replicable cultural property, irreplaceable cultural relics, historical buildings and/or archaeological sites;
- Will negatively affect rare or endangered species;
- Will result in large-scale involuntary land acquisition or significant physical displacement of affected communities (i.e. more than 200 persons), or relocation of Indigenous Peoples that would restrict or cease their access to traditional lands or resources;
- Do not meet minimum design standards with poor design or construction quality, particularly if located in vulnerable areas;
- Are located in international waterways or disputed territories;

- Require more than 12 months to complete, either in part or in whole, because they are too difficult to manage (too sophisticated, experimental, or requiring too many prior studies, etc.);
- Initiatives that are in contradiction with national or regional development policy or that do not fit into sectoral strategies;
- The purchase of land, or the construction or rehabilitation of buildings on land that does not belong to the community including in conflict areas ;
- Require or involve:
  - ✓Sourcing or sand/gravel from illegal or unregistered quarries;
  - ✓Land that has disputed ownership, tenure or user rights;
  - ✓Land that is considered dangerous due to security issues or the presence of unexploded mines or bombs;
  - ✓Political campaign materials or donations in any form or anti-democratic activities;
  - ✓Weapons including (but not limited to) mines, guns and ammunition;
  - ✓Any activity that will support drug crop production or processing of such crops; or

5.3.2 Thresholds for EPA Registration

The following are to be considered during sub-project registration with the Environmental Protection Agency.

Table 6: Thresholds for sub-project registration with the EPA

Sub-project type		
1	**Feeder Roads**	All feeder roads sub-projects shall be registered with the EPA
2	**Small Earth Dams/**	All SEDDs shall be registered with the EPA
3	**Natural Resource Management and Climate Change Adaptation**	Only sub-projects above 10ha shall be registered with the EPA. Sub- projects of 10ha or below shall only be subjected to the Project's in-house Appraisal (Environmental and social
4	**Improved Water Supply**	All water supply sub-projects will not be registered with the EPA
5	**Waste Management and Sanitation Interventions**	Sub-projects may be registered depending on the outcome of the project's
6	**Solid waste management**	Solid waste management activities (waste collection) shall not be registered with the EPA
7	**Flood mitigation measures**	Only flood mitigation structures that require the construction of major retention structures shall be registered with the EPA.

Processes for Sub-project Environment Assessment

Table 7: Environmental and Social Management requirements for sub-projects

Subproject phase	Environmental and Social Compliance Requirements	Documentation required	Responsibility	Service Provider
1. Sub-project Identification, Appraisal and Design	1.1 DAs In-house E&S screening of sub-projects	SOCO In-house Standard Safeguards Screening Checklist (Annex 1 .) including further and appropriate safeguard documentation as required	DA Safeguards Team/DA Safeguards Focal Person/ MLGDRD Safeguards Specialists/ SOCO Regional Office Schedule Officer	
	1.2 Register subproject with EPA for environmental screening and clearance *(for sub-projects meeting eligibility criteria for registration)*	Copy of forwarding letter and EPA EA Form 1including further and documentation as required	DA Safeguards Team/DA Safeguards Focal Person/ MLGDRD Safeguards Specialists/ SOCO Regional Office Schedule Officer	
	1.3 Obtain environmental permits for subprojects screened by EPA	Copy of permit and environmental compliance schedule for subproject implementation	DA Safeguards Team/DA Subproject Implementation Team/ SOCO Regional Office	
	1.4 Incorporate EPA screening and permit recommendations, and E&S issues identified during In-house sub-project appraisal into subproject formulation and design and contracts /community subproject implementation plan	contract specifications/ community implementation plan	DA Safeguards Team/DA Subproject Implementation Team/ SOCO Regional Office	
	1.5 Undertake field validation/verification on any land acquisition and crop/livelihood displacement and compensation issues identified during in-house screening	Completed guidelines for validating communal lands **(see Annex 2.),** pictures of meetings and signed list and addresses of people consulted during validation	MLGDRD-ESSS/ SOCO Regional Office	Consultant (If needed)

Subproject phase	Environmental and Social Compliance Requirements	Documentation required	Responsibility	Service Provider
2. Sub-project Execution (ESMP Implementation)	1.6 Fully settle and properly document all land acquisition, crop and livelihood compensation issues before commencing subproject execution	MOU for voluntary land acquisition and benefit sharing completed and signed. Pictures and signed list of affected persons	DA/MLGDRD-ESSS/ SOCO-RO	
	Community/ key stakeholder engagements and sensitization	Sensitization reports (Community/ stakeholders)	DA Safeguards Team	
	2.2 a) Undertake training of key project actors (National, Regional, District, and Community levels in the project's E&S requirements for subproject implementation) b) Train contractors/ supervisors/ community members on E&S subproject E&S requirements c) Include safeguards issues on the agenda for community pre-commencement meetings	Training reports/pictures	DA Safeguards Team / MLGRDRD-E&S Safeguards Specialists	
	2.3 Put in measures for handling grievances/ complaints and accountability and widely publicize them. • Make available hotlines for receipt of grievances and complaints. • Install Transparency and Accountability Boards (TABs) • Ensure that the Toll-free numbers for the Single Window Citizens Engagement Service (SWCES) are boldly written on the TAB and educate the communities about the SWCES • Constitute Community Grievance/ complaints committee and train them • Appoint and train Community Facilitators expected to be focal persons for community/ project level grievances	Single Window Citizens Engagement Service toll-free hotline Transparency and Accountability Boards (TABs), Community complaints notebooks, district complaints file and records, RCO complaints file and records	DA Safeguards Team / MLGRDRD-E&S Safeguards Specialists	

Subproject phase	Environmental and Social Compliance Requirements	Documentation required	Responsibility	Service Provider
2. Sub-project Execution (ESMP Implementation)	2.4 Institute and publicize measures for handling community exposure to diseases (IE malaria, guinea worm, Ebola, HIV/AIDS, and COVID-19)	Education Flyers/ posters	MLGRDRD-E&S Safeguards Specialists	
	2.5 Labor and Working conditions 2.51 Enforce the under-listed E&S mitigation Measures • Provision of temporary latrines at environmentally acceptable locations • Provision of adequate portable water to workforce • Ensure the availability of well stocked first aid kit	Site inspection reports/ pictures	DA Safeguards Team / MLGRDRD-E&S Safeguards Specialists	
3. Post-Subproject Execution	3.1 Constitute Community Facility Management Teams and train them	Training reports	ESSS/ RSO	
	Prepare and implement District Facility Management Plans	Facility Management Plans	ESSS/ RSO	
	Maintenance of subprojects	Facility Management Plans	ESSS/ RSO	

5.4 Sub-projects Environmental and Social Management Procedure

The successful implementation of the ESMF depends on the commitment of the beneficiary communities and MDAs, the contractors, the RCOs and PIU, as well as capacity within the institutions and the institutional arrangement to effectively use the framework.

The DAs will be responsible for E&S assessment and for securing the required permits for the sub- projects , with the help of the RCOs and MLGDRD Safeguards Specialists. The District Planning Officer will take custody of this ESMF and will play a lead role under the guidance of the DCO in conducting the initial sub-project E&S assessment. The DPO will liaise with the EPA for submission of the completed assessment forms, for inspection and other processes leading to granting of the permit for sub- projects.

The Project Environmental and Social Management (ESM) is linked to the project implementation activities. The ESM commitment originates from the Initial Assessment/ EA Screening Form requirement. The ESM phase comprises monitoring, management (of E&S impacts and mitigations) and reporting during implementation activities such as rehabilitation, maintenance, decommissioning of sites, etc. The ESM process will verify:

- Effectiveness of mitigation measures being implemented.
- Compliance with mitigation and other environmental and social requirements.
- Unanticipated or residual impacts that have arisen requiring remedial action.
- How far contractors are meeting or adhering to required environmental and social principles, standards, and commitments; and
- Extent to which project monitoring and reporting requirements are met.

5.5 Working Conditions and Management of Worker Relationships

The project will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of the Environment and Social Standard 2: Labour and Working Conditions and national laws. A Labor Management Procedures prepared as part of the ESMF is provided in Appendix 12.

The project will provide workers with documented information that is clear and understandable, regarding their rights under national labour and employment law and any applicable collective agreements, including their rights related to hours of work, wages, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur. Community workers and contractors will be required to sign a code of conduct that will guide the onsite work environment.

The project will not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The project will base the employment relationship on the principle of equal opportunity and fair treatment and will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices,

where applicable. The project will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women.

The project will provide a grievance mechanism for workers to raise workplace concerns. The project will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them. The mechanism will involve an appropriate level of management and address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned, without any retribution. The mechanism will also allow for anonymous complaints to be raised and addressed. The mechanism will not impede access to other judicial or administrative remedies that might be available under the law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.

5.6 Protecting the Work Force

Child Labor: The project will not employ children. Under the Ghana Children Act 1998, the minimum age for admission of children into employment is fifteen (15). However, the minimum age for engagement of persons in hazardous work is eighteen (18). The minimum standard age for all employment set out in the World Bank's Environmental and Social Standard 2 is age 18. The project will comply with the World Bank's minimum age. The project will ensure that children under the age of 18 are not employed as workers.

The Ghana Child Labor Monitoring System (2010) is a holistic and dynamic process for eliminating the Worst Forms of Child Labor. It involves direct observations, repeated regularly, to:

- identify child labourers and to determine the risks to which they are exposed
- refer them to appropriate remediation services
- verify that they have, indeed, been removed,
- track them to ensure that they have satisfactory and sustainable alternatives in life. It involves direction action aimed at:
    - protecting boys and girls
    - enhancing better socio-economic planning of child labor-related activities at the community, district, regional and national levels
    - a more effective national policy on child labor, and
    - a better monitoring of national and international laws and conventions on child labor.

Awareness raising sessions will be regularly conducted to the communities to sensitize on prohibition and negative impacts of child and forced Labor as well as procedures for preventing abuse of child labor. Such sessions will be organized in a culturally appropriate manner. If a minor under the minimum labour eligible age is discovered working on the project, measures will be taken to immediately terminate the employment or engagement of the minor in a responsible manner, taking into account the best interest of the minor.

Forced Labor: The project will not employ forced labor which consists of any work or service not voluntarily performed but it is exacted from an individual under threat of force or penalty, this covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor- contracting arrangements. The project will not employ trafficked persons.

Workers Engaged by Third Parties: With respect to contracted workers the project will make reasonable efforts to ascertain that the third parties who engage contracted workers are reputable and legitimate organizations and have an appropriate labour management procedure. The project will establish policies and procedures for managing and monitoring the performance of such third-party employers in relation to the requirements of this ESS

In addition, the project will incorporate these requirements in contractual agreements with such third- party. Contracted workers will have access to a grievance mechanism. In cases where the third party employing or engaging the workers is not able to provide a grievance mechanism to such workers, the project's grievance mechanism will be available to the contracted workers.

Contractors' labour management records and reports that may be reviewed would include: representative samples of employment contracts or arrangements between third parties and contracted workers, records relating to grievances received and their resolution, reports relating to safety inspections, including fatalities and incidents and implementation of corrective actions, records relating to incidents of non-compliance with national law, adherence to applicable contractor workers code of conduct and records of training provided for contracted workers to explain occupational health and safety risks and preventive measures.

5.7 Incident and Accident and COVID-19 Reporting

In case of occurrence of an incident or accident related or having an impact on the Project which has, or are likely to have, a significant adverse effect on the environment, the affected communities, the public or workers, the implementing agency shall:

- As soon as reasonably practicable, but no later than five (05) calendar days after having been informed of the occurrence of such incident or accident, inform the Bank by any electronic means of its nature, or circumstance and any effect or impact resulting or likely to result there from.
- As soon as reasonably practicable, but no later than twenty (20) days after such incident or accident, provide the Bank with a summary report that includes a description of the incident or accident, and the measures, if any, that the Borrower is taking or plans to take to address it and to prevent any future similar event; and
- Keep the Bank informed of the on-going implementation of the said measures and plans.

Regular reporting

- Accidents and grievance logbooks will be placed in all construction sites
- The contractors monthly progress report will provide details on accidents
- All regular progress report to the Bank will include information on accidents and incidents
- Any severe injury (requiring off-site medical care) or fatality incident shall be reported to the Bank within 24 hours with basic information and a detailed incident report including the following will be submitted:
    a) root cause analysis and
    b) corrective action plan on
        i. immediate mitigation measures in case of continuing danger (e.g. fencing, signboard, guards)
        ii. compensation to the affected family based on a clear rational

iii. risk assessment and correct application of ESHS management procedures
iv. medium- and long-term mitigation measures including enhancement of safety measures, audits, and additional training.

5.8 Chance Find Procedures

Extensive consultations with traditional leaders in the project area and many state institutions reveal that the proposed project area does not contain any critical cultural heritage site (i.e. site protected by both national and international laws. However, given that in some of the works of LIPW (Climate Change, SEDDs and FR), there may be a rare possibility of chancing upon cultural heritage sites and/or materials, during land clearing, "Chance Find Procedures" will be incorporated into programming. The primary objective of this Chance Find Procedure is to provide practical and step-by-step procedures for protecting any cultural heritage that may be accidentally discovered during the project implementation.

Initial Identification/ Exposure

The project will educate all workers, especially those undertaking land clearing activities (Natural Resource Management and Climate Change Adaptation, WASH and Community public infrstructure) to observe the following steps in the event of a discovery:

- The person or group (identifier) who identifies or exposes any such find must cease all activity in the immediate vicinity of the site
- The identifier must immediately inform the site supervisor/ community facilitator (focal person) of the discovery
- The site supervisor/ community focal person must ensure that the site is secured and access to the site is controlled

Consultations

The following consultations shall occur:

- The Supervisor and the community facilitator shall then inform the desk officer at the District Assembly. Together with the desk officer, they shall then consult with the leaders of the community where the Find was made.
- The Chiefs shall then be informed of the Find.
- The District Chief Executive (DCE), representing the District Assembly shall be responsible for contacting the National Museums and Monuments Board (NMMB) preferably by Telephone or Email.
- The NMMB shall be requested to send an expert to the field to advise.
- In the event of the NMMB's failure to honour the invitation and take relevant subsequent action, experts from the Archaeology Department of the University of Ghana shall be invited to do so.

Community Access

In the event of a religious or cultural site being used by a community, the District Assembly in consultation with the community shall establish an appreciable buffer around the religious or cultural site. The buffer shall be adequate to ensure that project-related activities do not impact negatively on the site.

Social Accountability

The project will mainstream social accountability into its implementation processes, intended to: (i) ensure efficiency and beneficiary satisfaction with service delivery; (ii) promote transparency and accountability; (iii) encourage participation and citizen engagement; (iv) assist in reducing leakages; (v) promote community management and ownership; and (vi) provide voice to the beneficiaries, who in most cases are deemed to be voiceless. In view of the nature of the most activities where beneficiaries are mostly semi-literate or illiterate, the accountability tools employed will be simple and use pictures as possible, so that semi-literate populations can understand them, but also tailored to the particular area, e.g. rural versus peri-urban.

The starting point of social accountability under the project will be at the community entry and sensitization stage where managers take the opportunity during the sensitization exercise to fully disclose all relevant information on the project i.e. contract sum, percentage to be paid out as wages, frequency of wage payment, the mode and means of payment, the role of various stakeholders in the delivery process and other entitlements such as the asset that will eventually result from the intervention. This sensitization effort will transcend the entire duration of the sub-project i.e. at project pre commencement meetings, site meetings and other outreach programs, as a way of reinforcing the message on entitlement. At all these engagements, participants will be given the opportunity to ask questions and have their issues adequately addressed.

Community fora. A key activity of the project's social accountability efforts will be the creation of a community forum during which all interested parties will be brought together to review the implementation process. The specific features of the interface which will be facilitated by the DA and Community Facilitator under the guidance of the ZCO, will include:

- An account of resources released towards the execution of the sub-project
- A report on Fiscal Disbursement and Progress by MDA and/or contractor
- Feedback from beneficiaries on their satisfaction with service delivery
- An interface (dialogue) aimed at improving the delivery process

Major concerns resulting from the dialogue will be identified for possible redress. Timelines for their resolution will be agreed upon in a participatory manner. The RCC and ZCO will be expected to follow up on these issues to ensure that they are addressed.

Transparency and Accountability Boards (TABS). As a further step towards deepening accountability, the project will continue with the installation of Transparency and Accountability Boards (TABs) at sub-project sites that will ensure the disclosure of critical project information such as, beneficiary entitlements; expenditure to date, proportion of expenditure paid as wages and signed payment vouchers for beneficiary verification.

6.0 INSTITUTIONAL CAPACITY FOR ESMF IMPLEMENTATION

In view of the fact that the stakeholders in the Gulf of Guinea Project are many and is an inter-ministerial project, an assessment was conducted to identify the strength, weakness and gaps in the existing E&S system for managing ESMP in the country. A summary of the Environmental and Social Safeguards Institutional Capacity Assessment is presented in Table 8 below.

6.1 Institutional Roles and Responsibility for the ESMF Implementation

The MLGDRD, MOGCSP, EPA, RCOs, the DAs and communities are the main implementers of environmental and social mitigation measures in the project. The other institutions and agencies whose functions relate to the project in terms of oversight, project design and technical support include the National Oversight Committee (NOC), National Technical Committee (NTC), Department of Feeder Roads and GIDA.

The project will be implemented by Ministry of Works and Housing in close collaboration with the Ministries of Sanitation and Water Resources (MSWR); the Ministry of Inner City and Zongo Development, and the Ministry of Local Government and Rural Development, and the respective beneficiary MMDAs. As described earlier, a Project Coordinating Unit (PCU) will be set up at the MWH to oversee the entire project and Project Implementation Teams (PITs) will work from the respective ministries. The MMDAs will also compose their respective Local Implementation Teams (LITs). All these management teams will have designated safeguard focal persons.

The Project Coordination Unit will oversee all environmental and social due diligence for the GARID projects across all the Ministries and MMDAs. Therefore, the main institutions implementing the GARID and which will have interest and capacity in environmental and social management include:

- Ministry of Works and Housing/ Hydrological Services Department
- Ministry of Sanitation and Water Resources/ Environmental Health and Sanitation Department
- Ministry of Inner City and Zongo Development/ Project Planning, Monitoring and Evaluation Department
- Ministry of Local Government, Decentralisation and Rural Development/ Policy, Planning, Monitoring and Evaluation Department
- Ministry of Environment, Science, Technology and Innovation/ Environmental Protection Agency (EPA)
- Metropolitan, Municipal and District Assemblies MMDAs)

Their mandates have already been described in earlier sections of this report. However, their safeguard implementation capacity may be limited, and it is expected that the designated safeguard persons within the Project Implementation Units will receive adequate training to be able to sufficiently superintend over the implementation of the environmental and social actions. Specialists will be engaged to support the PIUs.

The MMDAs have been involved in numerous World Bank projects including the Greater Accra Metropolitan Area (GAMA) Sanitation and Water Project hence some level of capacity has been developed over the years. However, as a result of competing projects and multiplicity of donors,

project requirements vary leading to some implementation challenges. GARID must therefore sustain the capacity building effort at this level.

It is noteworthy also that, for many previous interventions, little attention has been paid to capacity development at the sub- metro and zonal council levels even though these are officials working directly with the communities. On the Local Government Capacity Support Project, the teams at the local level were trained. The PCU/PIUs will leverage on the expertise at the MMA level where available. Refresher training on environmental health and safety, grievance redress mechanisms and enhance their ability on transparency and stakeholder engagement mechanisms among others to enhance their function. For safeguard awareness to abound in the project communities as means of assuring sustainability, it is essential that safeguard capacity is developed at the sub metro and zonal council levels also. Safeguard focal persons may be designated/ appointed at this sub level and given some training. The ultimate goal will be to raise safeguard champions within the beneficiary communities.

The respective roles and responsibilities of the assigned safeguard persons are summarized below:

Ministry of Local Government, Decentralisation and Rural Development (MLGDRD)

The MLGDRD has oversight responsibility for the implementation of the Gulf of Guinea Northern Regions Social Cohesion Project (SOCO). The Project, just like other World Bank/ Donor Supported projects are coordinated under the Policy Planning, Budget, and Monitoring & Evaluation Division. The Ministry is also chair to the National Oversight Committee (NOC).

Ministry of Gender, Children and Social Protection

The MOGCSP is important for ensuring Social Protection Systems Strengthening, LEAP and manages the GNHR. Environmental and Social Safeguards capacity at the Ministry is however generally low. It however has a good case management system in the Single Window Citizens Engagement Service.

Environmental Protection Agency

The EPA is responsible for ensuring compliance with laid down EA procedures in Ghana in accordance with the EPA Act 1994 (Act 490) and its amendment, and the Agency is expected to give environmental approval for Projects. The EA is applied in Ghana to development projects as well as other undertakings as an environmental permitting prerequisite and a major environmental management tool. The EPA is represented in all the sixteen (16) regions of the country and will support the project by exercising its permitting and monitoring role.

The Project Implementation Unit (PIU)

The PIU operates directly under the MLGDRD and would spearhead project implementation and coordination. The PIU will have two dedicated Environmental and Social Safeguards Specialists who will have oversight responsibility for the implementation of environmental and social requirements of the Project. They will work closely with the five Zonal Safeguards Officers (ZCOs) and in collaboration with the MMDAs.

Zonal Coordinating Office (ZCO)

The Project will rely on the 3 Zonal Coordinating Offices of the Ghana Productive Safety Net Project offices in Wa, Bolgatanga and Tamale. The Accra PIU will also serve as a zonal office, being directly responsible for projects in the southern zone (Oti Region). The Zonal offices will work with the Regional Coordinating Councils to provide technical backstopping and monitoring to the implementing DAs and Communities. In terms of environment and social safeguards implementation, the DA Safeguards Teams will play the lead role in its implementation.

District Assemblies

The DAs have full responsibility for the project implementation in collaboration with the beneficiary communities. The District Engineer and the Project Schedule Officer are the key environmental and social safeguards officers at the DA level. The Client Supervisors (mostly GIDA staff) and Agric Extension Agents (AEA), who also work for the DAs play key E&S roles to ensure quality of facilities. Though implementation of E&S impact mitigation might not be new to the DAs since the predecessor project and other donor supported projects have trained some DA staff in safeguards, the general E&S capacity of the DAs to mitigate E&S risks and impacts as required by the ESF are generally low.

Project (Beneficiary) Communities

The beneficiary communities are particularly the most important when it comes environmental and social safeguards implementation since the benefits or otherwise are borne by the community. The Community Facilitator is expected to lead E&S related activities at the community level. He is supported by 3-member case management committee (case management) and 5 – member community FMCs. E&S capacity is virtually non-existent at this level

The World Bank Group

The World Bank Group (WBG) is a group of five international organizations that make leveraged loans to low and middle-income countries. It is the largest development bank globally. The bank is headquartered in Washington, D.C. in the United States. The five organizations of the Group are: The International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Centre for Settlement of Investment Disputes (ICSID). The first two (IBRD and IDA) are sometimes collectively referred to as the World Bank.

The WBG was established in 1944, and its purpose was to issue long-term loans to governments for reconstruction and economic development following the Second World War. It thus, provides loans and grants to the governments of low- and middle-income countries for the purpose of pursuing capital projects. The Bank is centered around the goals of sustainability, ending extreme poverty and promoting shared prosperity.

Borrowers and Bank financed Projects are required to abide by the relevant requirements of the World Bank Group's Environmental, Health and Safety Guidelines (EHSG) and the Environmental and Social Framework of the World Bank (IBRD and IDA).

Table 8: Summary of findings from the institutional capacity assessment of key implementers of the ESMF									
No.	**Aspects**	**Criteria**	**Key Implementing Agencies**						
			EPA	**MLGDRD**	**MOGCSP**	**PIU**	**RCOs**	**(M)DA**	**Community**
1	Operational Structure and Staff Organogram	*Safeguard role explicit in organizational structure*	Yes, Organogram (Appendix 5)	Yes, Organogram (Appendix 3)	Yes, but at program level (LMS)	Yes, Organogram (Appendix 6)	Yes, Organogram (Appendix 6)	No, Organogram (Appendix 7)	No
		Adequacy of staff compared to geographic area of jurisdiction	Yes, staff in placed at the national, regional and district	Yes, But not Adequate, 1 National level ES officer and Focal officers at the district	Yes, Case management officers exist at LMS and SWCES and there are focal points at the district	Yes, Adequate	Yes, Adequate	Yes	No
2	Budgetary Resources and Inventory	*Budget allocation for E&S administration*	Yes, but medium	Yes	Yes	Yes, and High	Yes, and High	Yes, but low	No
		Vehicles and equipment for monitoring	Yes	Yes, but medium	Yes, but medium	Yes. and High	Yes, and High	Yes, but low	No

Table 8: Summary of findings from the institutional capacity assessment of key implementers of the ESMF									
No.	**Aspects**	**Criteria**	**Key Implementing Agencies**						
			EPA	**MLGDRD**	**MOGCSP**	**PIU**	**RCOs**	**(M)DA**	**Community**
3	Relevant Skills and Experience	*Competence for scoping environmental and social risks, selecting appropriate E&S instruments, drafting TORs, procuring consultant services*)	Yes. and High	Yes, but medium	Yes, But low	Yes, and High	Yes, but Low	Yes, and low	No
		Sufficient technical competency of good international industry practice)	Yes, and High	Yes, but medium	Yes, but low	Yes, and High	Yes, but ow.	Yes, but Low	No
		Practical experience in prescribing ESS requirements in contractor bidding documents, determining whether contractors have assigned sufficient resources in ESS assessment and management	N/A	Low	No	Medium	Low	Low	No
		Practical experience to monitor, assess and supervise work of contractors in the field	N/A	Medium	N/A	High	Medium	Medium	No

Table 8: Summary of findings from the institutional capacity assessment of key implementers of the ESMF								
No.	**Aspects**	**Criteria**	**Key Implementing Agencies**					
			EPA	**MLGDRD**	**MOGCSP**	**PIU**	**RCOs**	**(M)DA**	**Community**
4	Monitoring	*IA control over contractors and other parties in the project (e.g. Suspension of works, withhold payments and cancel contracts)*	N/A	Medium	N/A	Medium	Low	High	No
5	Stakeholder Engagement	*Extent of stakeholder engagement on an informed and on-going basis*	N/A	High	High	High	High	High	Low
6	Grievance Redress and Disclosure of Information	*Grievance redress (dedicated Staff with expertise and experience)*	N/A	High	High	High	High	High	Low
		Environmental and social information disclosure to stakeholders at all levels	N/A	Medium	Medium	High	High	Medium	No

Table 9: Summary of Roles and Responsibilities for ESMF Implementation

No	Steps/ Activities	Responsible	Collaboration	Service Provider
1.	Identification and/ or siting of the sub-project	Desk Officer, District Planning Officer and District Engineer, District Agriculture	Community	
2.	Screening, categorization and identification of the required instrument (use the national EIA	ESSS at PIU	Community DA RC - PIU	
3.	Approval of the classification and the selected instrument by EPA	ESSS at PIU ZC at ZCOs	NE	EPA The World Bank
4.	Preparation of the safeguard document/ instrument (ESIA, ESMP, RAP/ARAP, and E&S Audit) in accordance with the national legislation/ procedure (taking into account the Bank ES framework requirements).			
	Preparation and approval of the ToRs	ESSS at PIU	DA ZC - PIU	The World Bank
	Preparation of the report		NE – PIU ZCO – PIU DA Community	Consultant
	Report validation and issuance of the permit (when required)		NE – PIU RCO – PIU DA	EPA The World Bank
	Disclosure of the document		Project Coordinator	Media The World Bank

No	Steps/ Activities	Responsible	Collaboration	Service Provider
5.	• Integrating the construction mitigation measures and E&S clauses in the bidding document prior advertising • Ensuring that the contractor prepare an • ESMP (C- ESMP), gets it approved and integrates the relevant measures in the works breakdown structure (WBS) or execution plan.	Procurement Specialist at PIU	ESSS - PIU NE - PIU DE - DA	EPA

No	Steps/ Activities	Responsible	Collaboration	Service
6.	Implementation of the other E&S measures, including environmental monitoring (when relevant) and sensitization activities	ESSS at PIU	NIE - PIU Financial Staff (FS PIU) DA Community	
7.	Oversight of E&S implementation (internal)	ESSS at PIU	M&E Specialist DA Community	Construction firm's supervisor/ DA (Supervisor)
	Reporting on project E&S s performance and disclosure	ESSS at PIU	ZC MISS	-
	External oversight of the project E&S compliance/ performance	Regional Director at EPA	ESSS M&E ZC/ZSO	-
8.	Building stakeholders' capacity in E&S management	ESSS at PIU	ICDS – PIU ZCO	EPA
9.	Independent evaluation of the E&S performance (Audit)	ESSS at PIU	NE ZCO DA Community	Consultant

6.2 Institutional Strengthening and Capacity Building

The first step in pursuing capacity building will be to identify the capacity needs of the various stakeholders. The E&S capacity assessment undertaken as part of project preparation identified gaps in capacity.

The major capacity issues have to do with the staffing numbers, skill sets and the availability of and exposure to the use of appropriate modern technologies (including GPS) within the main implementing agencies (MOFA, DAs, MYS, and MLGDRD). The environmental and social safeguards staff of the implementing agencies are grossly inadequate. They lack the full complement of the variety of skill sets (e.g., Social and Environmental Safeguards Specialists) needed to perform their functions, and are highly under-resourced with respect to the equipment and modern technologies needed to perform their required functions and roles effectively and efficiently.

Effective E&S instrument implementation requires all key stakeholders and project actors to understand their respective roles and responsibilities. The PIU, led by the ESSS and facilitated by the ICDS, shall execute a planned capacity building program. The broad objectives of the capacity building efforts would be to:

Ensure that all relevant actors understand their expected roles in all phases of the sub- project's implementation. Some additional training would be required and some hand-held equipment such as noise monitors, particulate matter (PM10) monitors and SOx, NOx and CO2 monitors. In addition, a computer-based monitoring system to facilitate rapid tracking of project activities and for quick generation of various kinds of reports will be required

Training will be categorized along specific thematic areas and targeted at various stakeholders at various levels in the MDAs and MMAs. Where relevant, expertise will be drawn from regulators to inform on key issues. The trainings should be provided in collaboration with the World Bank and EPA. The capacity building will include training workshops, field visits and production of guidance reports and tools. The following training programmes are recommended:

Table 10: Training Modules and Proposed Participants

Module	Training module content	Participants	Training Entity	Duration
I	• World Bank safeguards requirements for the GARID project, roles and responsibilities	PCU Safeguard Officer, Safeguards Specialists, MDAs PIU	World Bank Safeguards Specialist	8No. 2-day sessions over 2-year period
	• Ghana EPA Environmental Assessment Regulations • GARID ESMF/ RPF	MDAs PIU Staff MMDAs LIU Staff	World Bank Safeguards specialist/EPA	2No. 2-day sessions At MDA/MMA level – 2-day session for each entity
2.	• Screening Checklist, • Completion of EA Registration Forms	MDAs safeguard persons, MMDA safeguard focal persons	World Bank Safeguards specialist/EPA	5No. 1-Day session
3.	• Preparation of Environmental a n d Social Management Plans • Grievance redress registration and resolution forms	MMDA safeguard focal persons, Contractors, Supervising engineers, Sub metro and Zonal Council directors, Community safeguard champions	World Bank Safeguards specialist/EPA	Several sessions over the duration of the project as and when required
4.	• Practical course on land acquisition, resettlement and social sustainability	Key safeguards experts at PCU/PIU	Groningen University, Netherlands	2 weeks

Table 11: Estimated Budget for Capacity Building

No.	Institution	Capacity Gaps	Capacity Building Measures	Rate	Estimate Cost ($)
1	MLGDRD	Inadequate capacity in environmental and social safeguards issues	Training course in environmental and social safeguards compliance for staff of the Ministry (3 days for 4 person)	$200/p/d	2400
2	Department of Feeder Roads (DFR)	Inadequate knowledge of staff in environmental safeguard principles for LIPWs	Two -day Training course for 30No Engineers on safeguards adherence in relation to design and supervision of LIPW Feeder Road intervention based on content of Safeguards Module in LIPW Practitioner's Manual	$200 per head	6,000
3	District Agricultural Directorate	Inadequate knowledge of staff in environmental safeguard principles for LIPWs	Two-day Training course for 40no Engineers on safeguards adherence in relation to design and supervision of LIPW Small Earth Dams-based on content of Safeguards Module in LIPW Practitioner's Manual	$200 per head	4,000
4	Northern Development Authority				
5	Ghana Immigration Service				
6	District Assembly (DA)	Inadequate capacity in Safeguard adherence /compliance and monitoring	Identify a dedicated staff as Safeguards Focal Person. Organize 2-day training program for dedicated Safeguard Officer and one other key staff from 80 DAs in Safeguard compliance and monitoring	$150 per head	24,000
7	Community	Weak capacity in Safeguard adherence/ compliance and monitoring at the community level	1-day training program for all members of the FMC and timekeeper (6 people) in 400 Communities.	$ 40 per head	96,000
8	Contractors	Inadequate capacity in safeguards management of LIPWs	2-day technical training in safeguards management as part Standard LIPW training for 200 contractor supervisors –based on Safeguard Module in LIPW Practitioner's Manual	$ 50 per head	10,000

6.3 Production of Guidelines and Tools

The ESMF provides guidelines to mitigate adverse environmental and social impacts arising out project implementation. Training manuals and checklists are required to assist DA safeguard teams to carry out their functions. Such checklist and manuals will include those designed for environmental and social screening of projects, see **Annex 1 ..**

6.4 Monitoring, Evaluation and Reporting

Monitoring plans will be developed to track safeguard progress at both the ESMF and sub-project activity level. The proposed plans are presented in the **Table 9**. The table confirms the verifiable indicators as well as responsibilities for the various monitoring actions. The monitoring issues at the ESMF level include confirmation of the dissemination of both ESMF and RPF documents as well as capacity building and training activities. At the sub- project activity level, this will encompass instituting monitoring actions to, for example, confirm the Screening of projects, Preparation of the ESIA reports, Acquisition of environmental Permits, disclosure of safeguards instruments at national and global levels, etc.

Monitoring is a key component of the ESMF. It will be essential that the basis for the choices and decisions made in the sub-project design and other E&S safeguard measures implemented are continuously verified. Monitoring will ascertain the effectiveness of management, including the extent to which mitigation measures are successfully implemented.

Monitoring of the general project and the specific sub-project activities will help to:

- Improve environmental and social management practices,
- Check the effectiveness of the DAs' E&S oversight responsibility, and
- Provide the opportunity to report the results on E&S, impacts and mitigation measures implementation.
- Keep informed on COVID-19 data to inform programming
- The District Engineer (DE), supported by the Client Supervisors and AEAs, will be responsible for E&S oversight and monitoring. The DE will ensure that contractors adhere to the E&S requirements.

The Community Facilitator will monitor contractor progress in carrying out his/ her obligations on E&S measures, and report progress on E&S compliance to the DA through the DPO on monthly basis. The DA on its part will submit monthly E&S monitoring reports to the RCO, copying the RCO. The E&S monitoring reports of all participating districts will be collated by the ZCO and submitted to the PIU (through the Environmental and Social Safeguards Specialist - ESSS). The PIU will then collate the regional E&S management reports for submission to MLGDRD and NPSC. The ESSS will conduct annual or end of project environmental and social audits and report appropriately.

Table 12 below provides the project's comprehensive E&S monitoring plan that will guide overall monitoring processes, and the subsequent Table 13, the project monitoring checklist that will be used by staff to monitor implementation progress.

Table 12: Monitoring Plan for ESMF Implementation

Phase	**What** ***(parameter is to be***	**Where** ***(Is the parameter to monitored)***	**How** ***(Is the parameter to be monitored)***	**When** ***(Is the parameter to be***	**Why** ***(Is the parameter being monitored)***	**Cost**	**Who** ***(Is responsible for monitoring)***
Sub-project Preparation	All relevant permits (EPA, etc.)	Prior to start of works	Check documentation	Once at start of project	Ensure compliance with ESMF and ESS 1	Part of sub-project cost	DAs
	Land Agreements	Prior to start of works	Check documentation	Once at start of project	Ensure compliance with ESMF, and ESS 5	Part of sub-project cost	DAs
	Asset Management Agreement with DAs	Prior to start of works	Check documentation	Once at start of project	Ensure compliance with ESMF & ESS 1	Part of sub-project cost	PIU/ ZCOs
Sub-project Implementation	Environmental impacts (dust, noise, erosion, etc.)	Construction Site	Observation	Daily	Minimize environmental impacts and ensure compliance with ESMF & ESS 1	Part of sub-project cost	PIU/ DAs / Dist. Eng. / CF
	Social impacts (skill development, female empowerment, etc.)	Construction Site	Observation	Daily	Minimize social impacts and ensure compliance with ESMF & ESS 1	Part of sub-project cost	RCOs/DAs/ Community Facilitators
	OHS impacts (accidents, PPEs, etc.)	Construction Site	Observation	Daily	Minimize OHS Impacts and ensure compliance with ESMF & ESS 1	Part of sub-project cost	RCOs/ DAs/ Community Facilitators
	Burrow pit reclama	Prior to the end of Construction	Observation	Project completion	Ensure compliance with ESMF & ESS 1	Part of sub-project cost	RCOs/DAs/Dist. Eng/Community Facilitators
	Accident & Grievance reporting	Construction Site	Observation	Daily	Ensure compliance with ESMF and RPF, ESS 1	Part of sub-project cost	ZCOs/ DAs/ Dist. Eng/ Community Facilitators

Phase	**What** ***(parameter is to be***	**Where** ***(Is the parameter to monitored)***	**How** ***(Is the parameter to be monitored)***	**When** ***(Is the parameter to be***	**Why** ***(Is the parameter being monitored)***	**Cost**	**Who** ***(Is responsible for monitoring)***
Sub-project Operationa l Phase	Asset management (maintenance, erosion, siltation, flooding, etc.)	Operational site	Site visit, audits	Quarterly	Ensure compliance with ESMF & ESS 1	Part of sub-project cost	DAs/Dist. Eng/ Community Facility Management Teams/ Community Facilitators

Table 13: Monitoring Checklist for ESMF Implementation Monitoring

Date:			**District:**		
Zone:			**Region:**		
Sub-project Type (SEDDs, FR, CCMI):		**Description of Sub-project:**			
	ENVIRONMENTAL SAFEGUARDS				
No	**Compliance Issues**	**Yes**	**No**	**Corrective/ follow-up action Recommended**	**Responsibility for corrective/ follow-up action/**
1	Land clearance restricted to the designated right of way (RoW)/ or dam foundation area, future reservoir area and locations of other ancillary facilities (e.g. spillway site etc)				
2	Chemicals or burning being used for bush clearing?				
3	Major/ economic trees saved where possible				
4	Winning of sand/ gravel from approved DA sites (Check from the DWE)				
5	All burrow pits well re-instated				
6	Solid and hazardeous waste generated on site adequately collected and properly disposed of (at community's dump site)				
7	Measures in place to collect solid waste (plastics, food leftovers etc.) generated				
8	Channels created for stagnant waters to prevent creation of water pools				
9	Dust suppression measures (dousing) being implemented				
10	Dam embankments reinforced with vertiver grasses and boulders				
11	Catchment area covered with grass and shrubs to reduce erosion and siltation				
12	Broken down canals and faulty valves repaired to reduce water loss from the reservoir and increase water availability to farmers.				
	SOCIAL SAFEGUARDS/ GENDER				
13	Project location devoid of conflicts/disputes that will endanger human lives				
14	Women make up 60% of the workforce (beneficiaries) on site				
15	Pregnant women given opportunity to work				
16	Any of the women beneficiaries suffering spousal violence because of income earned from LIPW?				
17	Is any of the women carrying her child on her back whilst working?				
18	Work schedule conflicting with period for household chores for women				
No	**Compliance Issues**	**Yes**	**No**	**Corrective/ follow-up action Recommended**	**Responsibility for corrective/ follow-up action/ timelines**

19	Women being discriminated against by supervisors				
20	Any woman on site suffering sexual harassment from any of the male supervisors				
21	No Minor working at site				
22	Nursing mothers not carrying babies whilst working				
23	Mandatory rest period of 1 hour being observed				
24	On-site Creche/ Nursery for babies established.				
25	Caregivers are on site				
26	Road marks to aid the visually impaired/ Road ramps to limit speed				
27	Designs of dams are user friendly to the PLWD/ Aged				
28	Transparency and Accountability Board installed				
29	If the TAB is installed, is it updated regularly (within last 2 weeks)				
30	Is the Helpline of Hope Toll- Free phone number (SWCES) displayed and still visible on the TAB?				
31	Income paid regularly (Monthly)				
32	If yes to the above, are payments made on time?				
33	Beneficiaries aware of avenues to channel Grievances to (Case Mgt. Committee hotlines etc.				
	OCCUPATIONAL HEALTH & SAFETY				
34	Workers well-spaced to reduce the risk of injuries when using cutting tools				
35	Well-stocked first aid kit for minor injuries provided at site				
36	Trained person (could be beneficiary) on site to administer First Aid in the event of an injury				
37	Health and First Aid education carried out for all workers				
38	Safe drinking water for participants provided at site with enough provision made for drinking cups (if possible, a cup for each participant)				
39	Engagement of workers in construction activities with no poor/damaged tools				
40	Engagement of workers to use machines and tools for which they have only been trained to use				
No	**Compliance Issues**	**Yes**	**No**	**Corrective/ follow-up action Recommended**	**Responsibility for corrective/ follow-up action/ timelines**

41	No Involvement of workers in activities without appropriate protective gear				
42	Where there are ongoing construction activities on feeder roads, are there signals to warn road users on ongoing works?				
43	Has gravels been heaped on the road in such a manner that it does not impede the free flow of traffic?				
44	Provision of temporary toilet facilities (pit latrines)				
45	Pit latrines provided are clean and odourless				
46	Provision of separate toilet facilities for both male and female				
47	Borrow pits fenced with caution tapes				
48	Adequate safety measures put in place to avoid incidents, accidents e.g. visible warning signs, diversions etc.				
49	Adequate provision made for alternative routes/ road diversions in case where LIPW activities affects access and smooth flow of movement/ traffic				
50	Adequate provision made for working tools				
51	Compliance with COVID-19 protocols				

7.0 STAKEHOLDER CONSULTATION, GRIEVANCE MANAGEMENT AND ESMF DISCLOSURE

Stakeholder engagement was a key ingredient in the preparation of this ESMF. Being a successor to GPSNP, relevant actors of GPSNP were engaged to seek their views on the implementation process, environmental and social challenges encountered and practical mitigation principles, processes, and measures to consider in the formulation of GPSNP 2. Samples of these engagements are provided as a separate document.

Stakeholder consultations were conducted specifically to achieve the following objectives:

- To provide information about the project and its potential impacts to interested parties or beneficiaries or those affected by the project, and solicit their opinion in that regard;
- To educate and solicit views from all stakeholders to enhance the implementation mechanisms and processes;
- To manage expectations and streamline misconceptions regarding the project; and
- To ensure participation and acceptance of the project by all relevant stakeholders

Community participation is a vital in ensuring sustainability of any project. Communities to be targeted by the project may be among the most deprived in the country. This makes it more meaningful that they understand the various components of the project to ensure successful implementation and maximum benefits.

Field consultations for SOCO were held with key representative stakeholders at the national, regional, district and community levels. The national and regional level institutions consulted for SOCO include the Ministry of Employment and Labour Relations, Ghana Statistical Services, Youth Employment Agency, Ministry of Food and Agriculture, Ministry of Education, Labour Department, Northern Development Authourity, Ministry of Education, Ministry of Youth and Sports, Ghana Immigration Service, Office of the Head of Local Government Service (OHLGS), Ghana Education Service, Department of Social Welfare, National Vocational Institute (NVTI), and the Department of Community Development. Some highlights of the consultations with all the stakeholders in the preparation of the ESMF include the following:

- The need to reduce the labor content (percentage of total expenditure on labor payment) to provide flexibility in providing adequately for other equally important safeguards requirements.
- Access to suitable land of adequate size for CCMI activities is very often a challenge. There is the need to consider making fencing of sites mandatory for all sites very close to communities.
- Consider speed ramps in the design of LIPW feeder roads to prevent communities undertaking unorthodox means of reducing vehicle speed in their communities.
- Consider the provision of resources for road signages in the design of feeder roads.
- Adequate time (at least 3 days per site) should be allotted for educating the participants (beneficiaries) before actual commencement of site activities with the beneficiaries. "My-First-day-at work" doesn't offer adequate time for educating the participants on the details of the concept of LIPW.
- Participating DAs should be well resourced (Printers, paper, etc) to enable them effectively to discharge their duties under the project as some DAs are not adequately resourced.
- Consider remuneration package for Community Facilitators since they serve as the main people around whom the successful implementation at of the project revolves.
- The Social welfare/community development officers have relinquished their roles as regards

case management to the desk officers. The desk officers by their training (planners) can adequately play that role.

- In many DAs, the public relations and complaints committee is practically defunct. Consideration must be given to other alternate means of providing support to the desk officers in resolving community level project related disputes.
- Contractors' clerk of works must be required to sign on each page of the Daily Attendance Sheets (DASHES) at sites where attendance is recorded manually. A DASH that has any page unsigned by the supervisor must not be honoured.

7.1 Engagement during Project Implementation

A separate Stakeholder Engagement Plan has been prepared for the project to guide stakeholder engagement during project implementation. Citizen Engagement in the project has already been initiated with consultations on the design of GPSNP 2 and preparation of the ESMF. During the implementation stage, this will continue with a consistent, comprehensive sensitization program, where for every sub-project and activity, the respective community will be brought together and briefed on the project, its objectives, implementation arrangements and delivery mechanisms (as was done during GPSNP implementation). This process will be led by the Metropolitan/ Municipal/ District Assembly sensitization team and Community Facilitator under the guidance of the ZCOs using the project's "Guidelines for Community Sensitization, Targeting and Enrolment". Key among the issues to be discussed during the program will include project features such as labor-based technology, wage rate, project duration, period of engagement within the year, importance of community participation and some common forms of fraud, as well as the Single Window Citizen Engagement (SWCES) grievance redress services.

Prior to actual commencement of sub-projects, each MMDA with technical backstopping from the ZCO would hold pre-commencement meeting(s) involving all key actors relevant to the subproject where at least the following issues would be discussed and feedback taken for improvement: the nature of the contract; roles and responsibilities of stakeholders; expected start date of the work; final work schedule; labor requirements; payment arrangements; safeguard compliance requirements; issues on social accountability; and grievance redress mechanisms. This will be followed with site possession where the subproject site is handed over to the contractor in the full glare of the beneficiary community and an interface organized during which the opportunity is used to sensitize all stakeholders on the sub-project and accountabilities (roles) properly defined and entitlements well communicated to the beneficiaries. The MDAs will continuously engage the project communities even during the operational phases of the sub- projects when the project termination period may have elapsed. Citizens engagement will take into account COVID-19 protocol on hygiene and social distancing.

7.2 Grievance Management

The multiplicity of actors, and processes and the vulnerable nature of beneficiaries (being the poorest) may predispose participants to unfair treatment and abuse, while misunderstanding may also arise. A grievance mechanism developed under the GPSNP will be used to address complaints to ensure that all direct and indirect beneficiaries, service providers and other stakeholders are given the opportunity at no cost to raise their concerns. These stakeholders will be informed of the grievance mechanism in place during sensitizations and other interactions as well as the measures put in place to protect the identity of complainants.

7.3 Single Window Citizen Engagement Service System SWCES)

SOCO use the SWCES established under GPSNP 2. The SWCES was operationalized in December 2017 and provides a centralized channel for beneficiaries of all SP programs and other stakeholders to raise grievances, report malpractices, and request information on all social programs for free. This has been operationalized through the creation of the 'Helpline of Hope' Call Center that hosts toll-free phone lines and SMS. A key pillar of the single window system is an integrated Unified Case Management System (UCMS) which provides a single platform for citizens to log, manage, monitor, and escalate their grievances as well as to disseminate relevant information on behalf of the major SP programs. It is envisaged that GPSNP 2 will support the use of the SWCES through the decentralized governance system and in all five participating regions of the country, with the ultimate goal of becoming a national single-entry point for SP programs and social programming (and issues) led by ministries that do not have grievance redress systems.

As a further step towards deepening transparency and accountability, the toll-free numbers of the SWCES (0800800 800/0900 800 800) will be posted on the TABs. In addition, all safeguards and case management officers, and community facilitators, will be provided with the numbers so they can intend make it available for beneficiaries. Beneficiaries and community members will be encouraged to make the SWCES their first port of call.

7.4 Institutional Framework for Grievance Management

To successfully operationalize the grievance redress system, roles and responsibilities have been identified at the community, district, zonal and national levels. The process for the registration of grievances and their resolution a dual channel (bottom-up and top-down) and is facilitated by these roles at the different levels. These are outlined below:

Community Level. At the community level, this includes: (i) the appointment of CFs at all subproject sites as focal points for project-related grievances. Additionally, the project will facilitate the initiation of a 3 - member Case Management Committee at the community level to be drawn from the FMC. Membership shall comprise: the traditional leader's representative; a women's representative, and a male opinion leader preferably a member of the Unit Committee/ Assembly member or leader of the dominant religion in the area. The membership of this committee will be validated by the beneficiaries. The CFs will be required to submit monthly reports on all cases that were reported at their respective sites and will ensure that these are also recorded through the SWCES (for those that were not called or texted in directly to the SWCES).

District Level. At the DA level, the LIPW Desk Officer will act as a focal point for case management and will be required to liaise with the statutory Public Relations and Complaints Committee, (when deemed necessary) to resolve all LIPW-related grievances that will be referred to the DA level. Cases once resolved will be passed on to the E&S Officers who will then ensure that they are recorded as closed in the SWCES system.

Zonal Level. At the zonal level, a Zonal E&S Officer (ZSO) will be assigned to each regional office who will receive all cases and follow up to ensure resolution of the cases. The resolution of the cases may require coordination with other actors – Zonal Coordinator, Engineer, the MIS officer or Accountant.

National level. The National Coordinating Office will have Environmental and Social Safeguards Specialists (ESSS) at the PIU who will be responsible for the overall case management process of the project. The ESSS specialists will also liaise with the responsible person at the SWCES and see to the resolution of all cases through that channel (coordinating with any of the actors mentioned in the levels

above). In the event that a complainant is still not satisfied with a resolution, the grievance will be sent to the MLGDRD, and as applicable, could be sent to the Ministry of Employment and Labor Relations or the law courts for redress.

7.5 ESMF Disclosure

The World Bank policies require that environmental reports for projects are made available to project affected groups, local NGOs, and the public at large. Public disclosure of ESIA documents or environmental reports is also a requirement of the Ghana ESIA procedures DAs, MMDAs and EPA will make copies of the ESMF available in selected public places as required by World Bank ESF regulations, the EPA environmental assessment regulations and the right to information ACT of Ghana for public information and comments. Also, notification will be done through newspaper advertisements which will provide information on:

- a brief description of the Project;
- a list of venues where the ESMF report is on display and available for viewing;
- duration of the display period; and
- contact information for comments.

The EPA will assist to select display venues upon consultation with MWH.

Following the disclosure of the ESMF in-country, the World Bank will also disclose the ESMF at their website for global attention.

8.0 IMPLEMENTATION SCHEDULE AND COST ESTIMATES

8.1 Implementation Schedule

Table 14: ESMF Implementation Schedule Role and Responsibilities

Project Stage	Steps/ Activities	Responsible	Collaboration	Service Provider	Funding Entity
ESMF Preparatory Stage	ESMF Preparation	PIU	World Bank	Consultant	MLGDRD
	ESMF Approval	World Bank			
	ESMF Disclosure	PIU	MLGDRD DAs World Bank		MLGD RD
Subproject Appraisal and Design	Identification and/ or siting of the sub-project	Desk Officer, District Planning Officer and District Engineer, District Agriculture Officer at DA	Community		MLGDRD
	Screening, categorization and identification of the required instrument (use the national EIA procedure)	PIU	Community DA		MLGDRD
	Approval of the classification and the selected instrument by EPA	PIU	DA	EPA The World Bank	MLGDRD
	Preparation of the safeguard document/ instrument (ESIA, ESMP, RAP/ARAP, and E&S Audit) in accordance with the national legislation/ procedure (taking into account the Bank ES framework requirements).				
	Preparation and approval of the ToRs	PIU	DA	The World Bank	
	Preparation of the report		DA Community	Consultant	
	Report validation and issuance of the permit (when required)		DA	EPA The World Bank	
	Disclosure of the document		Project Coordinator	Media The World	MLGDRD
	Integrating the construction mitigation measures and E&S clauses in the bidding document prior advertising Ensuring that the contractor prepare an ESMP (C- ESMP), gets it approved and	PIU	DA	EPA	

Project Stage	Steps/ Activities	Responsible	Collaboration	Service Provider	Funding Entity
	integrates the relevant measures in the works breakdown structure (WBS) or execution plan.				
	Registration of subprojects with EPA	PIU	DA		MLGDRD
Subproject Execution Phase	Implementation of the other E&S measures, including environmental monitoring (when relevant) and sensitization activities	PIU	DA Community Contractors	Consultant	MLGDRD
	Oversight of E&S implementation (internal)	PIU	DA Community		MLGDRD
	Reporting on project E&S performance and disclosure	PIU	DA	-	
	External oversight of the project E&S compliance/ performance	EPA	PIU	-	EPA
	Building stakeholders' capacity in E&S management	PIU	DA EPA		MLGDRD
Post-Execution Phase	Independent evaluation of the E&S performance (Audit)	PIU	DA Community	Consultant	World Bank

8.2 Estimated Cost for ESMF Implementation

Funding for the ESMF implementation has been included as part of the project. The following project activities will be undertaken for ESMF implementation:

- Screening
- Environmental assessment of project activities that require environmental permits
- Training programs i.e. training of implementation agency staff, field officers from implementing district departments in WB ESF and relevant project E&S issues at the district and community levels
- E&S monitoring activities
- E&S assessments/ audit to ascertain the effectiveness of E&S measures periodically
- Purchase of PPEs

The activities outlined above would be financed from Component 1-3 of the project. Screening and preparation of required due diligence documentation is imbedded in costs of respective substantive components. The estimated cost for implementing the ESMF for project duration is presented in Table 29

below. Though figures are provisional, they are estimated based on current prevailing conditions and may change during actual implementation.

Table 15: Estimated Cost for Implementing ESMF for project duration

No.	E&S Activities	Estimated Cost (USD)
1	Environmental assessment and permitting of project activities that require EPA permits	315,000
2	Training and capacity building programs (Training of Climate	142,000
3	E&S safeguards Monitoring of activities	60,000
5	Purchase of PPEs	1,500,000
6	E&S Assessment or Audit	100,000
7	Construction of creches	1,100,000
8	Construction of Temporary latrines	160,000
9	Provisions for COVID-19 (Veronica buckets, handwashing soaps, nose masks)	240,000
10	Coordinate and undertake environmental and social mitigation measures, climate change education and awareness creation for communities, including proper pesticide handling and use	150,000
Total		**3,767,000**

APPENDIX

INTEGRATED PEST MANAGEMENT PLAN (IPMP)

REPUBLIC OF GHANA

GULF OF GUINEA NORTERN REGIONS SOCIAL COHESION PROJECT (SOCO)

TABLE OF CONTENTS

INTRODUCTION

Background

The Gulf of Guinea Northern Regions Social Cohesion Project is a world bank funded project that seeks to improve the social and economic resilience of the target lagging regions and strengthen regional dialogue across target Gulf of Guinea countries. This project will cover lagging northern regions of the four countries, namely Ghana, Cote d'Ivoire, Togo, and Benin.

The consistent pattern of spatial disparity across the Northern area of countries in the sub-region leads to the incidence of high average poverty, the concentration of agricultural activity without diversification, insufficient decentralisation, and low access to basic services.

These persistent and unequal distributions of growth create perceptions of exclusion that can be mobilised to violence, especially in areas with weak state presence. Also, a high concentration of population in northern regions engage mainly in subsistence agriculture and face numerous challenges such as the lack of market access, increased risk to climate change impacts, the high joint risk for livelihoods and food security. All these tend to increase group-based grievances, which eventually may cause Fragility, Conflict and Violence (FCV) spillovers that go beyond boundaries.

This project is in line with the previous Country Partnership Strategy (FY13–FY16), which emphasises the need to reduce disparities and inequality along the north-south divide. Although a new CPF is currently under preparation, the WB Country Management Unit (CMU) and government affirmed that investing in the north and addressing regional disparity continue to be an important part of the country's development strategy, especially as the north has seen the highest rate of youth unemployment and a slower decline in the poverty rate. The project also supports the social pillar of the Ghana@100 vision and Ghana's long-term National Development Plan (2018–2057), particularly goal 1 along the geographic dimension (no community left behind) and goal 2 to promote social inclusion and equal opportunities and assess to essential social services.

Although the social cohesion project in the northern regions of the Gulf of Guinea does not envisage the acquisition of agrochemicals, the implementation of Component 1.2, including the operation of warehouses, storage facilities and support for income-generating agricultural activities (IGAs) through the ICGs and the Organization of Agricultural Producers and Breeders, could lead to the systematic use of pesticides or increase the quantity of pesticides and other methods of controlling pests and diseases by producers for the improvement of their productivity. In addition, cross-border trade, promoted under the project, can (i) allow agricultural producers to sell their goods more quickly, leading to increased business and yields; and (ii) improve access to agricultural inputs (seeds and fertilizers). However, most obsolete, banned, or unregistered pesticides are readily available, and often at low prices, at country borders (e.g., at the Côte d'Ivoire-Ghana border). Thus, the project's support for income-generating agricultural activities will likely result in increased use of agrochemicals.

Rationale and Objectives of the Pest Management Plan

The Pest Management Plan (PMP) is prepared as an annexe to the Environmental and Social Management Framework of the Gulf of Guinea Northern Regions Social Cohesion Project to prevent and mitigate potential adverse environmental impacts and minimize health risks that may result from project activities. The PMP is prepared in accordance with the World Bank Environmental and Social Standards, mainly ESS3 (Resource Efficiency and Pollution Prevention and Management),. In respect of the ESMF, the anticipated activities likely to trigger the handling, transport, storage and utilisation of pesticides under

this project are agriculture and plantation. A community may wish to undertake youth in agriculture or youth in plantation/tree planting.

The Pest Management Plan (PMP) addresses relevant stakeholder concerns about pests and pesticides.

It stresses the need to monitor and mitigate negative environmental and social impacts of the Project (which includes the use of pesticides) and promote ecosystem management with the human health risk being the underlying principle from seed usage, through planting and growth stage and post-harvest issues, including safe crops for storage and consumption. It emphasises the need for an integrated approach to the management of pests in line with the nation's policy on pest management as well as funding agencies requirements on pest management and makes provision for adequate measures to enable the Project to sustain the adoption of pests management techniques.

The objective of the Pest Management Plan is to promote the use of a combination of environmentally and socially friendly practices (hygienic, cultural, biological or natural control mechanisms and the judicious use of chemicals). Again, it is meant to reduce reliance on synthetic chemical pesticides and ensure that health, social and environmental hazards associated with pesticides are minimised under the Project and within acceptable limit requirements of key stakeholders (i.e., primary users among farmers and their immediate dependents/families). Specifically, the PMP will:

- Ensure appropriate pest management techniques into technologies supported under the Project;
- Effectively monitor pesticide use and pest issues amongst participating farmers;
- Provide for implementation of an action plan if serious pest management issues are encountered, or the introduction of technologies is seen to lead to a significant decrease in the application of pesticides;
- Assess the capacity of the country's regulatory framework and institutions to promote and support safe, effective, socially and environmentally sound pest management and to provide for appropriate institutional capacity support recommendations.
- Ensure compliance with regional standards, laws and regulations.
  Ensure compliance with World Bank safeguard policy

Policy, Legal And Institutional Framework

Policies

The control of pests and the use of fertilisers are also critical to commercial agricultural production. Several sectoral policies will impact the performance of the project, particularly the interventions within the agricultural sector. The key policies include agriculture, land, water, environmental protection, irrigation and pest/pesticide policies. The major national policies include:

- Food and Agriculture Sector Development Policy (FASDEP)
- Ghana's Medium Term Agriculture Sector Investment Plan (METASIP)
- National Irrigation Policy, Strategies and Regulatory Measures, June 2010
- Guidelines for the National Plant Protection Policy, June 2004
- National Land Policy
- National Water Policy, June 2007
- National Environment Policy

Food and Agriculture Sector Development Policy (FASDEP)

The first Food and Agriculture Sector Development Policy (FASDEP) was developed in 2002 as a framework for implementing strategies to modernise the agricultural sector. The revised policy (FASDEP II) emphasises the sustainable utilisation of all resources and commercialising activities in the sector with market-driven growth in mind. Enhancement of productivity of the commodity value chain through applying science and technology, emphasising environmental sustainability.

Ghana's Medium Term Agriculture Sector Investment Plan (METASIP)

The Government of Ghana has developed the Medium-Term Agriculture Sector Investment Plan (METASIP) to implement the Food and Agriculture Sector Development Policy (FASDEP II) over the medium term 2011-2015. It is the framework of interventions for the agriculture sector to play its role in the national economy in the context of the Ghana Shared Growth and Development Agenda (GSGDA), which is the national programme of economic and social development policies coordinated by the National Development Planning Commission (NDPC). METASIP is also in fulfilment of Ghana's participation in agriculture-related initiatives of the Economic Community of West African States (ECOWAS) and the Africa Union Commission (AUC) under the framework of the ECOWAS Agriculture Policy (ECOWAP) and the Comprehensive Africa Agriculture Development Programme (CAADP).

Ghana Irrigation Development Policy

The Ghana Irrigation Development Policy (National Irrigation Policy, Strategies and Regulatory Measures) addresses the problems, constraints and opportunities, which cut across the whole irrigation sub-sector; and specifically for informal, formal and commercial irrigation. It is to be complemented with a strategic framework called the National Irrigation Development Master Plan (NIDMAP) to specify how the strategies in the policy document will be implemented to put an area of 500,000ha under irrigation in the medium term.

Guidelines for the National Plant Protection Policy, June 2004

The overall goal of the national plant protection policy is to achieve an efficient system that ensures that crop losses caused by biological, environmental and ecological factors are contained sustainably and economically. There are thirteen (13) principles underlying the Plant Protection Policy, and these include:

1. Capacity building at national, regional and district levels
2. Intra and inter-ministerial collaboration
3. Private sector involvement
4. Partnerships with international development partners
5. Regional and international cooperation
6. Legislation
7. IPM
8. Coordination of IPM Activities
9. Contribute to IPM research
10. International trade
11. Planting materials production
12. Compliance
13. Participatory approaches and farmer empowerment

Three of the underlying principles, namely principle 7, 8, and 9 provide for integrated pest management (IPM) issues. Principle 7 on IPM states that promoting Integrated Pest Management (IPM) is the standard plant protection strategy for all crops to reduce crop losses with minimum pesticide use effectively.

The Plant Protection and Regulatory Services Directorate (PPRSD) is the national agency assigned the national mandate to organise, regulate, implement, monitor and coordinate plant protection services needed for sustainable agricultural growth and development. The PPRSD has adopted the FAO definition of pest, which is any form of plant or animal life or any pathogenic organism that is injurious or potentially injurious to plants, plant products, livestock or people; pests include insects and other arthropods, nematodes, fungi, bacteria, viruses, vertebrates and weeds.

National Land Policy

The National Land Policy protects water bodies and the environment in the long-term national interest under any form of land usage, be it for human settlements, industry and commerce, agriculture, forestry and mining.

National Water Policy

The National Water Policy, approved in June 2007, is to provide the framework for the sustainable development of water resources in Ghana. The overall goal of the policy is to "achieve sustainable development, management and use of Ghana's water resources to improve health and livelihoods, reduce vulnerability while assuring good governance for present and future generations." There is no mention of pests or pesticides usage in the policy. However, water quality concerns can be observed in many instances in the policy document, which could generally encompass pollution concerns not only from fertilisers (which is categorically mentioned) but also from pesticides as well.

National Environment Policy/Action Plans

The policy aims to ensure sound management of resources and the environment and avoid any exploitation of these resources in a manner that might cause irreparable damage to the environment. Specifically, it provides for maintenance of ecosystems and ecological processes essential for the functioning of the biosphere, sound management of natural resources and the environment, and protection of humans, animals and plants and their habitats. The policy objectives are clearly in line with integrated pest management principles.

Regulatory Framework

The relevant laws governing environmental pollution, plant protection, irrigation, and pest and pesticide management and control include:

- Environmental Protection Agency Act, 1994, Act 490;
- Environmental Assessment Regulations, 1999, LI 1652 and its Amendment;
- Plants and Fertilizer Act, 2010, Act 803;
- Water Resources Commission Act, 1996, Act 522;
- Irrigation Development Authority Act, 1977, SMCD 85.

Environmental Protection Agency Act, 1994, Act 490

This Act establishes and mandates the EPA to seek and request information on any undertaking that, in the opinion of the Agency, can have adverse environmental effects and to instruct the proponent to take necessary measures to prevent the adverse impacts. This law aims at controlling the volumes, types, components, wastes effects or other sources of pollution elements or substances that are potentially dangerous for the quality of life, human health and the environment.

Part II of Act 490 deals with pesticides control and management, and this was formally an Act on its own (Pesticides Control and Management Act of 1996, Act 528). This section of Act 490 provides the rules

for registration, pesticides classification, approval, clearance, using, disposing of and non-disclosure of confidential information, the granting of a license, labelling and pesticides inspections.

Environmental Assessment Regulations, 1999, LI 1652 and its Amendment of 2002, LI1703

The Environmental Assessment Regulations 1999, LI 1652 list activities for which environmental assessment is mandatory. The Regulations describe the procedures to be followed to obtain permits for both existing and proposed undertakings through the conduct of environmental impact assessments and preparation of environmental management plans. The Environmental Assessment (Amendment) Regulations 2002, LI 1703 establishes the charges to be taken by the EPA for review and issuance of a Permit.

Plants and Fertilizer Act 2010, Act 803

The Plants and Fertilizer Act of 2010 combines the Seed Inspection and Certification Decree, NRCD 100 of 1972 and the Prevention & Control of Pests and Diseases of Plants Act of 1965, Act 307. 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 fertiliser trade.

Water Resources Commission Act, 1996, Act 522

The Water Resources Commission Act 522 (1996) conferred on the Water Resource Commission (WRC) the mandate to regulate and control water resources use by granting water rights and water use permits. The Water Use Regulations (L.I.1692) provide the procedure for allocating permits for various water uses, including domestic, commercial, municipal, industrial, agricultural, power generation, water transport, fisheries (aquaculture), and recreational.

Irrigation Development Authority Act of 1977 (SMCD 85) and IDA Regulation of 1987

The Irrigation Development Authority (IDA) Act of 1977 establishes the Irrigation Development Authority and provides for its functions and administrative framework. The Act mandates the IDA to formulate plans for the development of irrigation and co-operate with any other agencies to safeguard the health and safety of the population living within and around irrigation project areas, among others. The Irrigation Development Authority Regulation, 1987 (L.I.1350) provides the procedure for managing irrigation projects, including water management within such projects.

Key International Conventions

The International Plant Protection Convention (IPPC) is an international treaty that aims to secure coordinated, effective action to prevent and to control the introduction and spread of pests of plants and plant products. It takes into consideration both direct and indirect damage by pests, so it includes weeds. It also covers vehicles, aircraft and vessels, containers, storage places, soil and other objects or material that can harbor or spread pests. The International Plant Protection Convention came into force on 3 April 1952. The Convention has been adopted by the Food and Agriculture Organization of the United Nations. Its implementation involves collaboration by National Plant Protection Organizations (NPPOs) — the official services established by governments to discharge the functions specified by the IPPC — and Regional Plant Protection Organizations (RPPOs), which can act as coordinating bodies at a regional level to achieve the objectives of the IPPC. Ghana's National Plant Protection Organization is the Plant Protection and Regulatory Services Directorate of MoFA. Ghana adopted the IPPC convention in February 1991.

Other relevant international conventions ratified by Ghana include:

- International Code of Conduct for the distribution and use of FAO pesticides;
- The Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal (adopted) i n 1989; entered into force in 1992).
- The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (adopted in 1998; entered into force in 2004);
- The Montreal Protocol on Substances that Deplete the Ozone Layer (adopted in 1987; entered into force in 1989).
- The *Codex Alimentarius*, Committee on Pesticide Residues (operational since 1966).
- The Basel Convention on Persistent Organic Pollutants (POP's) in 1998 and entered into force in 2004
- The Stockholm Convention on persistent organic pollutants in 2001, entered into force in 2004 and
- International Standards for Phytosanitary Measures (ISPM) FAO;

Institutional Framework

The key national institutions responsible for the safe management of agro-chemicals and its related matters are represented below:

Environmental Protection Agency (EPA): The Environmental protection Agency has the mandate to regulate, coordinate and manage the environment. The EPA has the oversight responsibility for pest management and control and it has the following prerogatives:

- The registration of pesticides
- The limitation or banning of the use of a pesticide if necessary
- The granting of licenses to all categories of pesticides' resellers
- The levying of penalties.

The EPA and in particular its Chemical Control and Management Centre (CCMC), is responsible for pesticides control and management. The Agency periodically provides a list of registered pesticides and banned pesticides for public consumption. The recent list is attached as a separate document. The list is periodically updated and there is the need to liaise with the Agency for any updates during project implementation.

Ministry of Food and Agriculture (MoFA): The Ministry of Food and Agriculture's (MoFA)-Plant Protection and Regulation Services Directorate is responsible for the regulation of crop pesticides use in the country. The national plant protection policy is the Integrated Pest Management (IPM) Plan. The Plant Protection and Regulation Services Directorate (PPRSD) of MoFA was established in 1965 by an Act of Parliament: Prevention and Control of Pests and Diseases of Plants Act of 1965, Act 307, which is now replaced by "Plants and Fertilizer Act, 2010 (Act 803). The PPRSD is the National Institution with mandate and capacity to organize, regulate, implement and coordinate the plant protection services (including pests' management and pesticide use) needed for the country in support of sustainable growth and development of Agriculture. The PPRSD has its headquarters in Pokuase near Accra and there are also regional officers in all the sixteen regions of the country. It also represented at the main entry and exit points throughout the country. It is not directly represented at the district level; however, it collaborates

with the district MOFA offices to carry out its functions at that level. The PPRSD is divided into four main Divisions and these include:

- Crop Pests & Disease Management Division
- Pesticide and Fertilizer Regulatory Services Division
- Ghana Seed Inspection Division
- Plant Quarantine Division

For the Agriculture sector, the Veterinary Services Directorate (VSD) is responsible for the regulation and management of livestock pests and diseases as well as veterinary pesticides and pharmaceuticals.

Ghana Standards Authority (GSA): Ghana Standards Authority (GSA) ensures that goods and services are of acceptable quality for both local and international consumers. The Authority makes routine analyses of pesticide residues in fruits and vegetables in order to facilitate the exportation of such products and also ensure public health and safety.

The GSA has central facilities in Accra and regional offices in Ho (Volta region), Koforidua (Eastern Region), Takoradi (Western and Central Regions), Kumasi (Ashanti and Brong Ahafo Regions) and Tamale (Northern sector). GSA has been supported by the World Bank funded AgSSIP and by UNIDO to bring its MRL analysis capacity up to ISO 17025 requirements.

Customs Division (CD): The Customs Division of the Ghana Revenue Authority (GRA) works in close collaboration with the EPA, VSD and PPRSD, and reviews the EPA documents, certificates/licenses to make sure they concern the importation of approved chemicals, meat, poultry and agrochemical products. The importation reports of chemical products are submitted by the CD of GRA to the EPA on a quarterly basis. The CD staff are members to various technical committees at EPA including the hazardous waste committee, the pesticide technical Committee and other projects undertaken by the EPA. The CD is also a member of the national Coordination team of the Convention of Stockholm on the POPs.

PEST AND PESTICIDE MANAGEMENT

Pests and disease vectors constitute serious hazards to public health, food security, and the general welfare of Ghana's citizenry. It is estimated that agricultural pests destroy over half of the yield of crops, fruits, ornamental plants, vegetables and livestock annually. Household pests also destroy property such as furniture items, clothing, books, etc.

There are acute and chronic health effects, and these effects may manifest as local or systemic effects. They include skin irritations, such as itching, rashes, blisters, burns, wounds, irritation of throat leading to cough or difficulty in breathing with or without wheezing or choking, chest pain, burning mouth and throat with pain on swallowing, runny nose, sore throat, headache, dizziness, sudden collapse with or without unconsciousness.

Others include eye irritation, blurred vision, lots of tears or saliva or mucus secretion and sweating, nausea, vomiting, chest infections due to aspiration of vomits, fever, abdominal pain or discomfort, diarrhoea, uncontrolled urination and defaecation, slowing of heartbeat or rapid heartbeat, weakness including muscles for breathing, muscle twitching or pains, tremors, convulsion, coma, hallucinations, pain and numbness in legs, allergic reactions. Others are problems with liver, kidney, or nerves functions, improper functioning of the heart etc.

Environmental Risk

The use of pesticides is a major source of the contamination of drinking water and groundwater. Water contamination kills fish and aquatic life. Wildlife and domestic animals can be killed by spray drift or drinking contaminated water. It also causes soil contamination. The exposure may also cause infertility and behavioural disruption. Persistence in the environment and accumulation in the food chain leads to diverse environmental impacts—loss of biodiversity in natural and agricultural settings.

Health Risk

The use of pesticides may lead to acute poisoning. Three (3) million poisonings, including 20,000 unintentional deaths, occur annually (WHO). Symptoms of acute poisoning include severe headaches, nausea, depression, vomiting, diarrhoea, eye irritation, severe fatigue and skin rashes. Chronic ill-health problems can affect women and men, girls and boys exposed to pesticides, whether because of their occupation or because they live near areas of use. Such problems can include neurological disorders, cancers, infertility and congenital disabilities and other reproductive disorders.

Hazards to Crops

According to FAO, 520 species of insects and mites, 150 plant diseases, and 113 weeds are resistant to pesticides. Resistance can create treadmill syndrome, as farmers use increasing inputs to little effect while eliminating beneficial insects, which causes secondary pest outbreaks. The high cost of pesticides can lead to falling incomes for farmers. Newer products are often safer but are more expensive. Farming communities lose knowledge of good horticultural practices and become dependent on expensive external inputs.

Pest Management Concerns and Control Measures in Ghana

Most of the pest control operations in Ghana are by the use of pesticides. Pesticides were once seen as the only answer to most of the pest problems. Pest management controls commonly used include cultural control, biological control and chemical control. This section describes the major pests and diseases associated with the following commonly grown crops in the project regions:

- Cereals (maize, rice, millet, sorghum)
- Pulses/grain legumes (cowpea, groundnut, soya bean/soybean
- Vegetables (cabbage, cucurbits (cucumber, melon, pumpkin and courgette), eggplant, lettuce, okra, onion, pepper and tomato)

Major Pests and Diseases

Table 16: Major Pests and Diseases in Maize

NO	MAJOR PESTS AND DISEASES	COMMENTS
1	Armyworms (*Spodoptera exempta*)	Attack leaves
	Fall armyworms (*Spodoptera frugiperda*)	Attack leaves
2	Larger grain borers (*Prostephanus truncatus)*	Attack stored maize grain
3	Greater grain weevil (*Sitophilus spp.*)	Attack stored maize grain
4	Stem borers (*Busseola fusca, Sesamia calamistis, Eldana saccharina*)	Destruction of leaves and boring into stems
5	Maize streak virus (a virus transmitted by insects known as *leafhoppers*)	Can be recognised by the long white streaks on maize leaves, interrupted by yellow and white sections
6	Striga (witchweed) (*Striga hermonthica, S. asiatica*)	Is a parasitic weed that grows on the roots of maize and prevents the crop from growing properly

Table 17: Major Pests and Diseases in Millet

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	Armyworms (*Spodoptera exempta*)	Eat all the aerial parts of millet, leaving only the base
2	Downy mildew (*Sclerospora graminicola)*	A most serious fungus disease of millet. Attacked plants show shorter internodes between leaves and plants.
3	Stem borers (*Busseola fusca, Sesamia calamistis, Eldana saccharina, Coniesta spp*)	Stem borer caterpillars bore into stems and disrupt the flow of nutrient fluid from roots to upper parts.

NO.	MAJOR PESTS AND DISEASES	COMMENTS
4	Ergot (*Claviceps sp./Sphacelia sp.)*	When the ergot fungus infects millet panicles, long and large black seeds develop ('sclerotia'). These seeds are poisonous to humans and to livestock
5	Striga (witchweed) (*Striga hermonthica, S. asiatica*)	Is a parasitic weed that grows on the roots of millet plants and prevents the crop from growing properly

Table 18: Major Pests and Diseases in Sorghum

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	Armyworms (*Spodoptera exempta*)	Attack leaves
2	Greater grain weevil (*Sitophilus spp.*)	Attack stored sorghum grains
3	Sorghum shoot flies (*Atherigona soccata*)	Most important insect pest of sorghum seedlings. White larvae of sorghum shoot fly bore into the seedlings and feed inside. Result in 'deadhearts' phenomenon.
4	Sorghum midges (*Contarinia sorghicola*)	Pest sucks developing seeds and removes all contents. Adults lay eggs inside flowering heads and small orange larvae that hatch feed on developing seeds.
5	Stem borers (*Busseola fusca, Sesamia calamistis, Eldana saccharina*)	Destruction of leaves and boring into stems. The same species which attach maize, millet also attach sorghum.
6	Downy mildew (*Sclerospora sorghi*)	Fungus disease causes dwarfing or reduction of upper internodes—results in 'crazy top' phenomenon.
7	Striga (witchweed) (*Striga hermonthica, S. asiatica*)	Is a parasitic weed that grows on the roots of sorghum plants and prevents the crop from growing properly

Table 19: Major Pests and Diseases in Cowpea

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	Aphids (*Aphis craccivora and other species*)	Small, round, black insects that suck the sap of the green parts (leaves, stems and green pods) of the plant

NO.	MAJOR PESTS AND DISEASES	COMMENTS
2	Cowpea storage weevils (*Callosobruchus maculates*)	Is a major storage problem. Adults make holes in the cowpea grains and lay eggs inside. Recognised by visible holes (windows) on stored cowpea grains
3	Flower thrips (*Megalurothrips sjoestedtii*)	Thrips are very small, very mobile, long black and brown insects that one can find in large numbers inside cowpea flowers. Suck the sap and cause many flowers to turn brown, die and drop off. Also feed on green pods.
4	Pod borers (*Maruca vitrata, Euchrysops sp.)*	Pod borers are key pests of cowpea at the flowering and podding stages. They are small, whitish caterpillars that bore into the flowers and green pods and eat the entire contents.
5	Sucking bugs (*Anoplocnemis spp., Clavigralla spp.* and other species)	Sucking bugs refer to a group of six insect species that attack cowpea at the podding stage. They are brown to black, with hard bugs and spiny outgrowths. Suck contents of pods and soft growing tips of stems.
6	Anthracnose disease (*Colletotrichum lindemuthianum*)	Disease attacks from stem show dark brown areas that cover the entire stem, branches, peduncles and petioles. In severe infestations, stems die.
7	Cowpea mosaic virus diseases	Aphids transmit cowpea mosaic virus (CMV). Attacked plants show mottling and poor formation of young leaves at the tips of stems. CMV affects cowpea at the vegetative, pre-flowering, flowering and podding stages
8	Cowpea wilt disease (*Fusarium oxysporum*)	Fungus disease that attacks cowpea, causing rapid wilting and death. Older plants become stunted, their leaves turn yellow and drop off and die
9	Striga (witchweed) (*Striga gesnerioides*)	Parasitic weed can attack cowpea and prevents the crop from producing any pods. Unlike the Striga that occurs in cereals, cowpea striga is smaller, has whitish-pink flowers, and only attacks pulses. It grows into the roots of cowpea and interferes with plant development.

Table 20: Pests and Diseases in Groundnut

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	Aphids (*Aphis craccivora and other species)*	Most common and important pests of groundnuts. Small, round, black or green insects that suck the sap of the plant's green parts (leaves, stems and green pods) and transmit groundnut rosette virus disease.
2	Brown groundnut hopper (*Hilda patruelis*)	It is a small sucking insect about 5mm. The body is brown with white marks. Attack groundnuts at the base of stems, injecting poisonous sap into plants which then wither and turn yellow.
3	Pod-sucking bugs (*Elasmolomus sordidus, Leptoglossus sp.)*	Two species of pod-sucking bugs attack groundnuts. These insects feed on groundnut pods that are harvested and left in the field to dry.
4	Storage beetles (*Tribolium castaneum*) and storage caterpillars (*Trogoderma grenarium* and other species)	Beetles, caterpillars and grubs attack stored groundnuts. Beetles and their larvae (grubs) bore into and damage the groundnut seeds. Moths and their larvae (caterpillars) cause extensive webbing
5	Groundnut rosette virus disease	Most important disease of groundnuts, transmitted by aphids. Attacked plants show chlorotic (yellow) mosaic patterns with dark green areas on the veins of leaves. Stem internodes are shortened, resulting in rosettes or witches' broom-like growths.
6	Leaf spot (*Cercospora spp*)	Attacked plants show necrotic spots of various sizes on leaflets—serious attack results in defoliation. The spots start as light tan, changing to reddish-brown, then to black lesions on the lower and brown on the upper surface.

Table 21:Major Pests and Diseases in Soya bean

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	Aphid (*Aphis craccivora* and other species)	Small, soft, round, black or green insects that suck the sap of the young succulent green parts (leaves, stems and green pods) of the plant
2	Storage moths (*Ephestia cantella, Corcyra cephabonica*)	Two species of moth's attack soybean seeds in storage. The caterpillars of these moths feed on the grains, causing extensive damage by weaving threads around the grains, reducing their quality.
3	Storage weevils (*Callosobruchus maculates*)	Storage weevils attack soybean during storage
4	Sucking bugs (*Anoplocnemis spp., Clavigralla spp.* and other species)	The same group of six insect species that attack cowpea also attack soybean plants
5	Anthracnose disease (*Colletotrichum truncatum*)	The disease affects all the growth stages of soybean. Attacks from the stem and later appears on pods and petioles as irregularly shaped brown areas. The infected areas then become covered with a cloud of black dust, and necrosis occurs in the leaves.

Table 22: Major Pests and Diseases in Cabbage

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	1 Diamond-back moth (DBM) (*Plutella xylostella*)	It is the most severe pest of cabbage. DBM female moth lays its eggs singly. Eggs are glued to the underside of leaves and hatch after 3-5 days into green larvae. Larvae creep to the underside of the leaf, pierce the epidermis and tunnel or bore through the leaf tissue. Progressively eat a leaf from underneath, leaving the upper cuticle intact, creating a bizarre window, which later disintegrates.
2	Webworms or cabbage borer (*Hellula undulalis*)	The cabbage webworm's light brown larvae or caterpillars bore into the main veins of the leaves of cabbages and later into the centre of the stems, where they then feed. This makes these pests very difficult to control with pesticides.

3	Cabbage aphids (*Brevicoryne brassicae*)	Usually occur in large numbers, mainly during dry spells. Sucking pests, grey or green, with soft, pear-shaped bodies often in colonies on the lower side of leaves. Suck sap causes stunting growth, and honeydew excretes on leaves
4	Cutworm (*Agrotis sp*)	Dull coloured moths lay eggs on the soil surface or stems. Mature larvae hide during the day and emerge at night to feed on crops causing damage by cutting young plant stems at the base and feeding on foliage. Larvae bend characteristically in an o-shaped when disturbed
5	Bacteria soft rot (*Erwinia carotovora*)	Is a major disease of cabbages. Attacks the leaves of cabbages and affected areas take on a water-soaked appearance and start to decay, emitting an unpleasant smell. Cabbage heads decay rapidly and turn dark
6	Root-knot nematode (*Meloidogyne spp.*)	Nematodes invade roots, causing swelling and deformation of roots (galls on roots). Stunted growth and chlorosis are above-ground symptoms
7	Black rot	Chlorotic discolouration on leaves, which turn to dark brown or black. Black discolouration of the vascular bundles and internal tissue break down.

Table 23: Major Pests and Diseases in Onion

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	Onion flies (*Delia antique*)	A major pest of onions. Small, white, headless larvae (maggots) feed just above the base of seedlings. Attacked plants die. Larvae are also found in developing onion bulbs.
2	Onion thrips (*Thrips tabaci*)	They are major pests of onions throughout Africa. In attacked onion plants, leaves show white and silvery patches, become distorted and may later wilt and die. Adult thrips are tiny, long, brownish-black insects that are very mobile and collect in large numbers at the base of onion leaves, sucking the cells of leaves.
3	3 Bacterial soft rot (*Erwinia carotovora*)	In attacked plants, leaves rot and also the entire bulb rots. It is also a severe disease in stored onions if they are not mature, are mechanically damaged during harvest, and have poor aeration and high humidity in the storeroom.
4	Downy mildew disease (*Peronospora destructor*)	Caused by a fungus that attacks onion leaves. Fungus bodies develop as purple areas on fully mature leaves. Affected leaves drop off and die
5	Mould (*Aspergillus niger*)	Unlike bacterial rot, mould cause dry rot. Immature onions, when harvested (still moist, and neck intact) and then stored without curing (sun drying) under poor conditions (without aeration and in humid conditions), black mould develops, and onions become unfit for human consumption
6	Purple blotch (*Alternaria porri*)	The disease affects all parts of the onion plant. Infected leaves and flowers show small, sunken, white areas with purple centres, which enlarge and encircle entire leaves. Tips of leaves become dry and collapse

Table 24: Major Pests and Diseases in Tomato

NO.	MAJOR PESTS AND DISEASES	COMMENTS
1	Aphids (*Aphis gossypii*)	Occasionally attack tomato heavily. Feed on the soft terminal shoots and the underside of leaves. May also transmit virus disease during feeding. Honeydew produced by aphids causes unsightly black moulds on tomatoes which reduces their market value. Attacked plants may wilt and die
2	Fruit borers (American bollworms [*Helicoverpa armigera*] and leaf-eating caterpillars (cotton leafworms [*Spodoptera littoralis*])	Different kinds of caterpillars' attack developing and mature fruits of tomatoes. The American bollworm comes in various colours. A single caterpillar can bore into m ay tomato fruits in one night. Fungi and bacteria enter these fruits through the holes and cause the fruits to rot and become worthless. The cotton leafworm feeds on the leaves of tomatoes and bores into the fruits, especially those lower down the plant
3	Fruit fly	It is an important pest of tomato at the fruiting stage. It pierces fruits and leaves rotten spots. Adult fly pierces fruit to lay eggs inside. The small white maggots or larvae develop in the fruit, and pupation occurs in the soil below the host plant.
4	Root-knot nematodes (*Meloidogyne spp.*)	Nematodes are one of the most important pests of tomatoes. These same species also attack eggplant, pepper, cabbage, carrot and other vegetables. They are microscopically small worms that live in the roots of their host and cause galls or root-knots. Some affected plants may show yellow leaves, poor growth and even wilting. Affected roots are short and have many swellings or galls. Plant becomes stunted and may die
5	Tomato mirid bugs (*Cyrtopeltis teriuis*)	Adults and nymphs of slender, dark green mired bugs feed on tender terminal stems and flower stalks of tomato plants. Inject a toxic substance/saliva into the tissues, causing small, brown necrotic spots to develop. Adult female mirids pierce tomato stems to lay eggs resulting in major damage to stems.

NO.	MAJOR PESTS AND DISEASES	COMMENTS
6	White flies (*Bemisia tabaci*)	Whitefly adults are small, white, winged insects that fly off readily when disturbed. They attack tomatoes from the seedling stage to maturity. Whitefly adults and nymphs occur under tomato leaves, sucking the sap and secreting a sticky honeydew on which black mould develops. The adult transmits the leaf curl virus disease, which causes considerable damage to tomato plants.
7	Damping-off disease (*Pythium spp.*)	Is a major disease that attacks tomato seedlings. Waterlogging creates conditions that favour the development and spread of disease. It is a soil fungus, and its attack causes young stems to rot. Affected seedlings wither and die.
8	Early (or dry) tomato blight (*Alternaria solani*)	It is a major disease during the rainy season. It is caused by a soil-borne and airborne fungus. Symptoms are brownish-black angular spots with concentric circles on the leaflets. Black or sunken brown lesions develop on stems and fruits
9	Late blight (*Phytophthora infestans*)	Symptoms show as necrotic spots on leaves which enlarge rapidly to become water-soaked areas on leaves and fruits. Infestation leads to defoliation and fruit blotches
10	10 Rots and cankers (*Phoma spp., Phomopsis spp.*)	Rots and cankers are caused by fungi and bacteria that infect tomato stems and roots. Root and stem rot fungus is present in soil and attacks roots, causing collars to rot. The bacteria that attack plants cause blight and cankers of stems, leaves and fruits
11	Tomato yellow leave curl virus (*TYLCV*)	It is the most severe disease of tomatoes. It is transmitted by whiteflies feeding on tomato leaves. Plants infected by disease are stunted and turn yellow and leaves curl. Affected flowers and fruits drop off.
12	Wilts (*Fusarium oxysporum*)	Caused by a soil-borne fungus that attacks roots through small wounds (made during transplanting or resulting from nematode attack). Plant wilt from lower leaves, and

NO.	MAJOR PESTS AND DISEASES	COMMENTS
		leaves turn yellow and die; later whole plant wilts and dies.

Pest and Diseases Problem of Agriculture

Common pests in the project areas include rodents and migratory and outbreak pests such as birds, locusts and armyworms. IPM strategies are recommended and used by some farmers as much as possible because no one control practice/measure can provide acceptable control of the target pest.

Rodents, particularly the field rats (Rattus Rattus), the small house mice (Rattus norwegicus) and multi-ammate shamba rat (Mastomys natalensis) are key pests of food crops. The most affected crops are maize, millets, paddy and cassava. The damage caused by rodents starts at early booting and continues through the mature grain stage as well as the storage stage. Maize is the most susceptible of all the crops. At the pre-harvest stage, maize is attacked at planting (the rodents retrieve sown seeds from the soil causing spatial germination).

The rodents cut and eat the fresh stems and parts of the panicle. Farmers are strongly advised to do the following to reduce potential damage to crops and the environment:

- Weeding for clean bunds and field
- Regular surveillance. The earlier the presence of rodents is observed, the cheaper and simpler any subsequent action will be, and losses will remain negligible.
- Sanitation. It is much easier to notice the presence of rodents if the store is clean and tidy.
- Proofing, i.e., making the store rat-proof to discourage rodents from entering
- Trapping. Place the traps in strategic positions.
- Use recommended rodenticide. However, bait poisons should be used if rats are present. In stores or buildings, use single-dose anticoagulant poisons, preferably as ready-made baits.
- Encourage team approach for effectiveness. The larger the area managed or controlled with poison, the more effective the impact.

Predation. Keep cats in stores and homesteads.

STRATEGIES FOR INTEGRATED PEST MANAGEMENT PLAN

A critical aspect of the IPM approach is the role of natural enemies or beneficial. Natural enemies are the predators and parasites that attack crop pests and disease organisms. Predators are hunters that usually feed on a range of insects or other animals, while parasites are often very specific to a certain pest in which they develop.

The project will adopt an Integrated Pest Management (IPM) strategy for pest control and management which is efficient and economical to protect the integrity of the environment. It aims to reduce pesticide residues in fruits and crops and maintain pests at a tolerable level while promoting the existence of natural enemies in the context of sustainable agriculture. Integrated pest management aims to combine all possible and useful control methods against the pest including incorporating minimal dosages of chemical pesticides at low toxicity. Thus, several Specific categories of pest control are: biological control; cultural (agronomic) control, reasoned chemical control, varietal selection; mechanical fight, the Genetic fight and the legislative fight.

Using the IPM strategy, the use of chemical pesticides will be the last resort during project implementation.

Preventive

Preventive control is more important for pests such as locusts. With the help of international cooperation, prospecting teams are working during the indicated periods of the year in order to follow the evolution of their populations. Surveillance of other agricultural pests is the responsibility of farmers. However, plant protection services also identify pests to determine hot spot areas that are likely to compromise food security.

At the population level, preventive control consists of the destruction of the causative agent in the fields of the target and surrounding crops. They can also be crushed using bio-mixtures such as neem grains and oil to repel insects.

The following methods can be used for preventive control:

Prophylactic measures: In many crops, seeds are used as propagation material. They can be contaminated (internally and externally) by fungi, bacteria, viruses and nematodes. These parasites will develop with the germination and growth of plants. Prophylactic measures consist of:

- The use of only seeds, seedlings, discards or tubers of known and certified origin produced by official bodies. The seeds can be disinfected, by fumigation or by coating;
- Choosing soils with good natural drainage, suitable for planting;
- Destroying the residues of previous crops that showed symptoms of pest infestation. Plant residues (stems, roots) or even fruits and tubers that remain in the plots after harvest often contain pests or diseases, thus constituting a source of infestation for the next crop. Indeed, parasites can survive during the dry season and infest the next crop. It is recommended to (i) burn stems and stubble, (ii) compost with residues;
- Rotating crops, i.e., plant crops that do not belong to the same family and have common pests (e.g. rotation of cereals with root and tuber crops). Crop rotation prevents the proliferation of diseases and pests by breaking their development cycle;
- Making physical barriers by protecting crops from pest attack with nets. Vertical nets, insect-proof plastic films, silica-based inert powders with abrasive and drying properties.

Genetic control: This control technique is based on the use of resistant or disease tolerant varieties. The cultivation of resistant varieties is the simplest and often least costly solution for the farmer in the fight against plant diseases. In the absence of adequate resistance characteristics, tolerant varieties can be used, however, they can be infected and serve as a reservoir of pathogens and therefore a source of contamination for sensitive varieties.

Cultural or agronomic control: it is carried out by the adoption of favorable cultural techniques. These include: (i) ploughing, (ii) use of appropriate cropping system, (iii) good planting date and plant stands, (iv) use of beneficial cover crops, (v) weeding, (vi) use of crop associations.

Biological control: Biological control is a method of pest control of crops (insects, mites, rodents, etc.), diseases (fungal, bacterial, viral, etc.) or weeds (weeds) by means of living organisms' antagonists, called biological control agents or auxiliaries of crops.

Biological control ensures the preservation of fauna or flora useful (create environments favorable to the development of auxiliaries.).

An auxiliary is defined as a predatory or parasitic animal that, by its way of life, assists in the destruction of pests that are harmful to crops. Most of these auxiliaries are insects (usually wasps), and a small proportion of nematodes and mites. Auxiliary organisms have demographics related to those of the populations of their "hosts". They are dependent on the density of the pest populations (disease, pest and weed).

Predation, competition and parasitism *of the auxiliaries* are the main biotic factors that influence the evolution of pests, and control the stability of their populations. When the auxiliary and pest (pest) populations are in equilibrium, they are active auxiliaries that play a regulating role and prevent outbreaks.

Environmental management is based on two complementary practices:

planting hedges: predators need this resource to reach sexual maturity and thus reproduce, providing prey / replacement hosts, shelter during work or treatment on the plot.

The creation of grass strips: the implementation of grass strips is relatively simple, inexpensive and their impact is fast. Different and complementary devices can be set up according to the auxiliaries that one seeks to promote. Grass strips make it possible to meet the specific requirements (varieties of pollen, nectar) of many auxiliaries, to give them easier access to these resources, and to attract them to the immediate vicinity of crops.

Curative

Farmers facing pest problems are getting closer to the competent MoFA services to eventually receive control advice that they will apply in the field. Also, decentralized plant protection services play a very important advisory role at this level. Neem grains and other pesticide mixtures help control the diseases and pests identified in the target crops. The healing methods are as follows:

Mechanical control: There are a number of physical processes that can reduce parasite populations or bio-aggressors when they are already installed in cultivated plots:

- *Destruction of diseased or infested plants*: This method is particularly indicated in cases where there is a disease that can disperse quickly in the plots (fungi, viruses, nematodes ...). Plants affected by the pest should be isolated, desiccated and buried or incinerated;

- *Trapping pests (insects and rodents)*: it is achieved by the installation of traps classic (trapping live animals) type box with a rocking input system. It is a very effective method but quite restrictive and time consuming (takes time). Trapping is also used to estimate a population of animals (rodents) on a plot;
- *Pickup*: It is also classified as the most direct and the quickest way to remove clearly visible pests. However, it also has equal disadvantages as it must be performed before damage to the plant has been done and before the key development of insects.

Biological control: it is also used in curative by techniques such as:

- *Inundative release of auxiliary or predatory insects, and parasitoid*: In all ecosystems, there are organisms called "auxiliaries" which are natural enemies of "pests". Biological control consists in favoring the populations of these auxiliaries by releases. This keeps the "pest" populations under control. An example is the Trichogram flood release to control sugar cane drillers.
- *Plant extracts or biopesticides*: Many plants produce insecticidal substances that can be sprayed on crops after extraction. It is a preparation based on Neem, Tobacco and papaya leaf. In Ghana, very few programs are being developed to initiate experimentation with the use of biological pesticides.

In addition, subregional initiatives led by structures such as ITRA and ICAT have led to convincing results. The use of chemical pesticides is replaced by biocidal plant extracts such as "neem" (*Azadirachta indica*), *Lannea microcarpa*, red pepper, cow dung, etc., which are used as a natural pesticide.

ITRA has particularly initiated the experimentation of the use of biological pesticides (especially extracts of the leaves of "neem" or *Azadirachta indica*) on vegetable crops. However, certain constraints have been encountered in the purification of the molecule extracted from the "neem". The difficulties of using these approaches by farmers are related to the availability of neem leaves and grains and the influence of climatic conditions in coastal areas. Other promising tests were also made from papaya leaf extracts. These different results of proven initiatives could be capitalized as part of integrated pest management in Ghana.

Reasonable chemical control: the rational use of pesticides, i.e. the application of pesticides at effective doses during treatments that are as few as desirable, carried out at the most appropriate times and with the required treatment equipment. This control method has the advantage of (i) effectively protecting its crop and harvest, (ii) respecting maximum pesticide residue limits (MRLs), (iii) improving its income by reducing the use of inputs (fertilizer and especially pesticides). Synthetic pesticides will only be used when alternative control methods are inefficient.

Alternatives to Pesticides

Alternatives to POPs (Persistent Organic Pollutants) have been developed with the aim of reducing the use of pesticides in agriculture in particular and the areas of use of these pesticides. These alternatives are the legislative or administrative struggle, cultural control, physical control, genetic control, integrated pest management, the use of bio-pesticides, biological control, the use of pesticides of the organophosphorus family, carbamates, Pyrethroids, etc.

Some forms of control are being tested and are alternatives to POPs pesticides. Many other plants (garlic, pepper, onion, tobacco, pyrethrum) are also used as bio-pesticides and research is continuing. Research is ongoing to test bio-pesticides on cashew nuts. The results of this research will make it possible to propose actions of information and sensitization of the populations on the necessity to use these biopesticides. Practices such as the use of neem grains, or bark of caïlédrat as bio-pesticides in market gardening; the use of oxen or goats' excrement to protect crops against ruminants; sands, ashes, chilli powder for the preservation of corn, and others (powders of mahogany bark, neem leaves) are mentioned as alternatives. However, the preference for chemical pesticides lies in their efficiency and availability (to treat large areas) compared to these alternative methods.

Prevention of new Pest Infestations

The project will endeavor to treat and manage any new pest infestations as soon as they are identified.

Early Detection and Eradication: a process for the reporting and identification of unusual plants and animals as already set up by MOFA will be followed. Farmers will be required to report unusual plants, animals and pest sightings to the district MoFA Extension Officers or to the nearest farmer group or association. The district Department of MoFA will carry out periodic interviews with farmers on new or strange plants/pests/animals damaging their crops to detect new infestations. A rapid response process for the management of new infestations will be available through MOFA and the EPA.

Prevention of Spread: The project will follow established MOFA practices and protocols for appropriately managing risks of all human assisted transport of declared pests.

Management of Established Pests

The project will encourage that established pest infestations are effectively managed by following protocols developed by MOFA. Priorities for pest management will be regularly reviewed. These will include the reduction of Class 3 pests (environmental weeds) where appropriate. MoFA through the District Departments of Agriculture will be required to properly document the current methods in managing established pests, so that such information can be made available to beneficiary farmers to follow and adopt.

Management of Post-Harvest Pests of Cereal Crops

Losses due to damage caused by the larger grain borer, weevils, rats/rodents, aflatoxins, and grain moths can be minimized through the following IPM strategies:

- Selection of tolerant varieties
- Timely harvest
- Dehusking and shelling
- Proper drying
- Sorting and cleaning of the produce before storage

- Cleaning & repair of storage facilities
- Use rodent guards in areas with rat problems
- Use improved granaries
- Use appropriate natural grain protectants where applicable
- Use recommended insecticides at recommended dosage
- Store grain in air-tight containers. Where airtight containers are used store these in a shady place, preferably in-doors on raised platform to allow air circulations and prevent attack by mould.
- Carry out regular inspection of the store and produce. Timely detection of any damage to the grain and/or storage structure is essential to minimise potential loss or damage

Populations of natural enemies can be increased in the field so that they help to control crop pests. Simple techniques for doing this are based on creating a conducive environment for their development and on providing attractive substances to concentrate them on infested crops. Some things that can be done include:

- Minimise the use of chemical pesticides, as these will kill the natural enemies and thus destroy their populations; if it is necessary to spray crops with pesticides, use selective rather than broad-spectrum pesticides;
- Mulch crops with dried leaves and other plant materials; mulch provides protected, cool, moist sites suitable for the breeding and resting of natural enemies such as predatory ants, spiders, centipedes and ground beetles;
- Predatory ants are attracted to sugar/water solutions; prepare a sugar solution by adding about 90kg of fine sugar to 1 litre of water; mix thoroughly until all the sugar dissolves, and then spray this solution on the leaves of the infested crop once a week or as needed; this solution will attract ants onto the crop plants where they will prey on thus eliminating the pests;
- Water solutions of the juices of ripe fruits (e.g. mango) can serve as a cheap substitute for sugar;
- Leave strips of flowering weeds around the crop field to serve as a refuge for natural enemies.

Recommended Pest Management Practices and Interventions

This section describes the recommended cultural practices and direct interventions of some crops grown in the targeted regions.

Table 25: Recommended Pest Management Practices and Interventions for Maize

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
1	Armyworms (*Spodoptera exempta*) (Pre-harvest stage)	• Use pheromone traps to detect when adult months are flying and preparing to lay eggs • During outbreaks, immediately contact PPRSD/DAES • Use approved short-term persistence pesticides for spraying young caterpillars
	Fall armyworms (*Spodoptera frugiperda*)	• Monitor crops after emergence for symptoms of Fall armyworm infestation

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
		• Use approved short-term persistence pesticides for spraying young caterpillars
2	Larger grain borers (*Prostephanus truncatus*) (Post-harvest)	• Use airtight and clean containers for storage • Store in clean, well-aerated stores with low relative humidity • Dehusk and thresh after harvest • Ensure grain is properly dried, cleaned before storage Use of an available biological control agent, a predator in grain storage areas.
3	Greater grain weevil (*Sitophilus spp*.)	• Dust with recommended insecticide and/or botanical extracts
4	Stem borers (*Busseola fusca, Sesamia calamistis, Eldana saccharina*) (Pre-harvest stage)	• Intercropping with pulses • Early sowing and early maturing varieties reduce infestation • Destroy (make compost, burn or feed livestock) crop residues • Apply neem seed cake during planting (4gm/hole) • Apply neem cake (a 50:50 mixture of neem and sawdust) at the rate of 1g per plant into the funnels in cereal stems • Use the extract botanical pesticides
5	Maize streak virus (a virus transmitted by insects known as *leafhoppers*) (Pre-harvest stage)	• Early planting • Observe the recommended time of planting to avoid the diseases • Plant certified seeds/tolerant varieties (all certified maize varieties in West Africa are streak virus-resistant)
6	Striga (witchweed) (*Striga hermonthica, S. asiatica*) and all other weeds (Pre-harvest)	• Crop rotation • Proper land preparation • Timely weeding (at 2 and 5 weeks after planting) • Use recommended herbicides when necessary • Witch weed (Striga spp) - Hand pulling before flowering to avoid seed formation. • Use of false host plants, e.g., rotation of maize with leg

Table 26: Recommended Pest Management Practices and Interventions for Cabbage

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
1	Diamondback moth (DBM) (*Plutella xylostella*) (Pre-harvest stage: Vegetative to head formation)	• Embark on field sanitation (uproot and burn stalks or feed to animals) • Plant during the rainy season to wash off young larvae Intercrop with repellent plants such as tomato or chilly pepper between rows 30 days before planting cabbage • Do not leave overgrown cabbage in the field • Scout weekly when plants are young and destroy eggs and caterpillars • Conserve and encourage natural enemies such as Trichogramma and Diadegma insulare. • Use microbial insecticides such as Bacillus thruringiensis (Bt) to control young larvae • Spray neem pesticide in the evenings – light-sensitive • When Diamondback moth population builds up, and natural control proves not to be sufficient, switch on to pesticides • Prevent pesticide resistance build-up in DBM by rotating the pesticides • Observe the pre harvesting intervals of synthetic pesticides
2	Webworms or cabbage borer (*Hellula undulalis*) (Pre-harvest- seedling to head formation)	• Embark on field sanitation (uproot and burn stalks or feed to animals) • Use biopesticides, such as Bt and neem-based insecticides • Use insect growth regulators (IGR) or other recommended pesticides
3	Cabbage aphids (*Brevicoryne brassicae*) (Pre-harvest – vegetative phase to head formation)	• Avoid planting cabbage near an aphid infested crop or on land, which a recent infested crop has been removed • Conserve and encourage natural enemies (ladybird beetles, hoverfly maggots, lacewing larvae, parasitic wasps) by enhancing diversity and avoiding broad-spectrum pesticides • Avoid application of too much nitrogen fertiliser as this makes the plant very soft, juicy and attractive to aphids but apply organic manures liberally • Rainfall and overhead irrigation wash aphids off. • Scout and monitor aphid infestation for early detection and control.

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
		• Control ants that protect aphids against attack to ensure the supply of honeydew, which they also feed on either with pesticide or by removing nesting sites such as old tree trunks, rock heaps, debris and weeds. • Prune/remove basal (lower) old leaves of the head forming cabbages as may be a source of aphid infestation. • Use water jet spray for the lower leaves to wash off aphids. • Plant solutions such as chilli, neem and garlic can also be applied to the crop. Spray with a soapy solution (local soap - alata samuna) to wash off aphids and disturb their breathing. Use soap solution as a spray by mixing and stirring well 30 ml liquid soap in 5 litres of water. Test a small area first to ensure that the soap preparation does not damage the crop plant. • Use a chemical spray with recommended and approved insecticide only when a heavy infestation occurs
4	Cutworm (*Agrotis sp*) (Pre-harvest –Seedling stage)	• Timely weed control. • Plough to expose larvae (specially Egret birds) and to bury others and prevent them from reaching the surface • Replant severe losses • In severe cases, dust around the plant with a recommended insecticide such as an Organophosphate (OP). • Dried grounded red pepper sprinkled on dampened plants deters insect attacks. Spreading red pepper powder around the base of plants can repel cutworms such as Braconid wasp larvae (Meteorus communis), Ichneumonid wasp larvae (Nepiera spp), Green Lacewing larvae (Chrysopidae). • Flooding the soil before planting will expose caterpillars to predators without blemish and not wet cabbages (no water on them)
5	Bacteria soft rot (*Erwinia carotovora*) (Pre and post-harvest –heading stage, leaves)	• Practice three years rotation with non-host crops such as cereals and pulses • Avoid waterlogged or heavy soils; do ridging • Avoid injury to plants near soil level

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
		• Avoid practices that transfer infested soil to non-infested areas (clean hoes and ploughs from soil) • Strict hygiene/ sanitation • Use resistant varies where available • Avoid planting in shaded areas that keep plants wet from dews or rains • Space rows and plants adequately so that soil dries easily • Undertake early harvesting • Store only sound cabbages
6	6 Root-knot nematode (*Meloidogyne spp.)* (Pre-harvest – all stages starting at nursery)	• Practice plant rotation with non-host, e.g., cereals, cassava, etc • Avoid infected soils grown with host crops before, e.g., tomato, garden eggs, okra, carrots, etc • Solarise (4-6 weeks) nursery soil before sowing • Use resistant variety if available • Improve soil fertility by increasing levels of organic matter to alleviate and suppress nematode of damage. • Uproot plants after harvesting and burn them • Flooding the soil for a few weeks will reduce the nematode population
7	Black rot (*Xanthomonas campestris*) (Pre- and post-harvest – heading stage, leaves)	• Deep plough • Practice seedbed/crop rotation at least for three years or more with non-crucifers, e.g., cereals and pulses. • Use resistant varieties where available. • Ensure good sanitation practices (removal and disposal of diseased plants) • Overhead irrigation may increase the rate of infection if other conditions are favourable for the disease. • Undertake early harvesting • Store only sound cabbages without blemish an

Table 27: Recommended Pest Management Practices and Interventions for Onion

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
1	Onion flies (*Delia antique*) (Pre-harvest – vegetative stage)	• Practice crop rotation with non-host crop (not from the onion family). • Infested plants should be carefully uprooted and burnt, or buried deeply. • Destroy crop debris after harvesting.
2	Onion thrips (*Thrips tabaci*) (Pre-harvest – all stages, from seedling)	• Grow tolerant varieties. • Plant early to avoid pest attacks or organise a closed season. • Irrigate regularly (twice daily). • Apply appropriate insecticides approved by EPA as a last resort (>30 thrips scouted) after AESA. • Maintain weed-free field and borders
3	Bacterial soft rot (*Erwinia carotovora*) (Post-harvest – storage)	• Cure onion bulbs before storage • Clean store before use • Create well-aerated storage conditions • Check store regularly for rotting onions (weekly) and remove them • Remove infested bulbs • Store only onions that are fully mature with collapsed necks • Avoid harvesting onions during a rainy day
4	Downy mildew disease (*Peronospora destructor*) (Pre-harvest – vegetative stage)	• Burn plant debris • Plant only healthy disease-free seeds • Keep field free from weeds • Plant in fields with well-drained soils • Avoid over-irrigation • Practice a four-year rotation • Excess nitrogen should be avoided • Rogue out affected plants • Plants that are to be used for seed production should be isolated from the main crop. • Use resistant varieties • Spray with an appropriate fungicide approved by EPA every 7-10 days (add sticker spreader) after AESA • Select field with well-drained soil
5	Mould (*Aspergillus niger*) (post-harvest – storage)	• Cure onion bulbs before storage • Clean store before use • Create well-aerated storage conditions • Check store regularly for mouldy onions (weekly) and remove them

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
		• Store only onions that are fully mature with collapsed necks
6	Purple blotch (*Alternaria porri*) (Pre-harvest – from the seedling stage on)	• Organism persists in crop residue, so gather and burn all plant residues in the field • Use seeds only from disease-free plots. • Practice long rotation (>5 years) with unrelated crops such as cabbage, tomato, maize or beans. • Treat seeds with appropriate chemicals. • Use resistant varieties when available. • Spray with appropriate EPA approved fungicide during the rainy season and strictly observe pre-harvest intervals.

Table 13: Recommended Pest Management Practices and Interventions for Tomato

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
1	Aphid (*Aphis gossypii*) (Pre-harvest – vegetative to reproductive stages)	• Neem extract sprays are recommended if populations are high, following AESA • When attacked in early growth, spray with quick-acting, short • persistent Organo-Phosphate insecticide following AESA • Spray a solution of local soap (1-2%) if the infestation is heavy)
2	Fruit borers (American bollworms [*Helicoverpa armigera*] and (Pre-harvest – fruiting stage) leaf-eating caterpillars (cotton leafworms [*Spodoptera littoralis*]) (Pre-harvest – vegetative to reproductive stage	• Grow trap crops such as pigeon pea (Cajanus cajan) and Crotalaria in and around tomato fields • As soon as young caterpillars are seen, spray with Bacillus thuringiensis-based bio-pesticides, neem seed extracts or short residual pyrethroid, after AESA • Predators and parasitoids usually control the pest • Use Bacillus thuringiensis products or neem extracts following AESA
3	Fruit fly (*Rhagoletis ochraspis*) (Pre-harvest – fruiting stage)	• All infected fruits should be gathered and destroyed • Destroy wild host plants, e.g., cherry tomatoes
4	Root-knot nematodes (*Meloidogyne spp.)* (Pre-	• Crop rotation (at least 3 years) with non-host crops (e.g., cereals, pulses, cassava etc)

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
	harvest – all stages, from seedling to fruiting)	• Plant Tagetes spp. (marigold) in alternate rows or as intercrop • Plant Tagetes spp. Or Crotalaria as fallow crop • Add organic matter to stimulate and encourage antagonistic • organisms in soil • Flood field if water can be controlled
5	Tomato mirid bugs (*Cyrtopeltis teriuis*) (Pre-harvest –vegetative stage)	• Usually, no control is necessary • Spray with a quick-acting but ephemeral carbamate or organophosphate insecticide if the damage is likely to be substantial after AESA
6	Whiteflies (*Bemisia tabaci*) (Pre-harvest – seedling to reproductive stages)	• Use yellow sticky traps to reduce populations but cannot prevent the • spread of TYLCV • Spray a solution of local soap (1-2%) if the infestation is heavy
7	Damping-off disease (*Pythium spp.*) (Pre-harvest –seedling stage)	• Use clean; hot water treated seeds • Use subsoil for nursery seedbed. Also, apply solarisation • Sterilise soil for seedboxes. Drain off excess water • Avoid overcrowding in nursery • Drench soil with copper fungicide
8	Early (or dry) tomato blight (*Alternaria solani*) (Pre-harvest – vegetative to fruiting stages)	• Remove and burn affected leaves. • Rotate crops and observe strict sanitation (no new plots alongside old ones) • Use clean, disinfected seeds • Practice staking and mulching • Spray with fungicides when environmental conditions are favourable for infection (cool and humid, for several days after rains) or at the first sign of disease and every 7-10 days after that
9	Late blight (*Phytophthora infestans*) (Pre-harvest – vegetative to fruiting stages)	• See early blight above • Grow resistant cultivars where available • Use copper fungicides after AESA in disease favouring weather • Remove and destroy infected plants detected early • Avoid wetting plants for protracted periods

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
10	Rots and cankers (*Phoma spp., Phomopsis spp.)* (Pre-harvest – vegetative to reproductive stages)	• Remove and destroy infected debris • Avoid planting in infested fields for 3 years • Adequate spacing between rows and plants • Practice staking • Use seed from uninfected fields • Hot water treated seeds 30mins at 122oF • Spray with a copper fungicide after AESA
11	Tomato yellow leave curl virus (*TYLCV*) (Pre-harvest – seedling to reproductive stages)	• Rotate crops (minimum 2 years) • Destroy weeds • Use resistant varieties • Control vector chemically with contact insecticide or 1-2% solution of • local soap (alata samina) • Rogue infected plants early, from seedbed on, and destroy • Enhance nutrition to help plants recover
12	Wilts (*Fusarium oxysporum*) (Pre-harvest – vegetative to reproductive stages)	• Destroy whole plant and roots after harvest • Use resistant varieties (e.g., Roma VF) • Follow strict field sanitation • Remove solanaceous weeds • Avoid infected fields • Use health seedlings • Controlled burning on fields • Use clean seedbeds (subsoil nurseries, solarisation) • Avoid excessive use of nitrogen fertiliser, which encourages the fungus • Practice rotation with non-solanaceous crops (minimum of 5 years)

Table 14: Recommended Pest Management Practices and Interventions for Beans (Cowpea, soybeans)

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
1	Aphids (*Aphis craccivora* and other species) (Pre-harvest stage)	• Promote build-up of indigenous natural enemies • Observe the recommended time of planting • Apply wood ash in case of a heavy attack

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
		• Carry our regular crop inspection to detect early attacks • Apply recommended insecticide when necessary
2	Flower thrips (*Megalurothrips sjoestedtii*) (Pre-harvest stage)	• Use resistant varieties if available • Adopt mixed cropping/intercropping system with cereals • Biological control • Practice crop rotation • Apply recommended selective insecticides if necessary • Apply botanical extracts (e.g., neem seed or leaf extracts in water)
3	Pod borers (*Maruca vitrata, Euchrysops sp.)* (Pre-harvest stage)	• Apply recommended insecticides or botanical extracts • Promote build-up of indigenous natural enemies • use resistant varieties if available • Biological control • Crop rotation
4	5 Sucking bugs (*Anoplocnemis spp., Clavigralla spp.* And other species)	• Use resistant varieties if available • Promote build-up of indigenous natural enemies • Mixed cropping system (Pre-harvest stage) • Biological control • Crop rotation
5	Anthracnose disease (*Colletotrichum lindemuthianum*) (Pre-harvest stage)	• Use of resistance varieties • Use of healthy seeds • Crop rotation • Seed dressing • Post-harvest tillage • Field sanitation

No.	Major pests and Diseases/Stage	Recommended cultural practice and direct interventions
		• Plant tolerant/resistant varieties
6	Mosaic virus diseases (Pre-harvest stage)	• Plant tolerant/resistant varieties if available • Effect good control of aphids
7	Striga (witchweed) (*Striga gesnerioides*) and other weeds (Pre-harvest stage)	• (see under maize) • Early and frequent weeding

Control Methods of Pest and Disease

Every pesticide produced in Ghana and imported is expected to be subjected to approval. This constitutes the primary barrier making it possible to filter the products entering the countries.. It is done by the Plant Protection and Regulatory Services Directorate (PPRSD) of the MoFA and assisted by custom officials at the entry points also in charge of pesticides control.

The control of pesticides is also done in principle at the distribution level in the towns/villages through decentralised services, which see that distributors, dealers and resellers abide by the established texts (sales permit). European markets/EU standards have defined the Maximum Residues Limits (MRL) to ensure the efficient use of pesticides for the fight against crop pests/diseases.

Ghana must comply with sanitary and phytosanitary measures (SPS) and especially the pesticides residue values available in farm products that should not exceed the acceptable maximum residue limit; otherwise, produce from Ghana will be banned.

Currently, compliance with MRL is restricted to crops earmarked for export. There are no restrictions on MRL for crop products sold locally. Indeed, West African countries accepted that the presence of residues in foodstuff is a reality.

The Ghana Standard Board laboratory is qualified for the analysis of the MRL. It is important both from an economic point of view (exports) and from a sanitary/health point of view to systematically monitor MRL for crops sold in the local markets.

Management of Post-harvest Pest

The most important post-harvest pest of pulses includes the storage weevil for cowpea and soyabean and the storage beetle and grub for groundnuts. Losses due to damage caused by these pests can be minimised through the following IPM strategies:

- Dry seeds properly immediately after harvest and before storage to prevent attack by storage pests and diseases.
- Divide seeds into batches for short term (less than three months) and long-term storage, and treat only the long-term batch, if necessary, using neem oil at a rate of 2-4 ml/ kg of seed, or other recommended pesticide.
- Clean the store properly before storing pulses there; use airtight and clean containers, and do not allow humidity to build up.

- For storing cowpea and soybean, use triple bagging with polythene bags.
- Adopt solar disinfestations by heating cowpea and soybean grains between black and transparent plastic sheets.
- Treat small quantities of pulses for storage with wood ash, groundnut oil, neem oil or black pepper powder.
- Use rodent guards in areas with rat/rodent problems.

In the case of pesticide application, the following is recommended

- The decision to use chemical pesticides should be taken only as the very last resort and should also be based on conclusions reached from an agro-ecosystem analysis (AESA).
- All pesticides should be EPA approved, and MoFA recommended.
- If it is necessary to spray crops with pesticides, use selective rather than broad-spectrum pesticides.
- All herbicides should be applied using knapsack sprayers.
- All the insecticides for storage pests of cereals/pulses are in dust form and therefore used as supplied without mixing with anything else.
- The list of pesticides can change as new products are recommended, and some of the chemicals are withdrawn.

Routine Actions

Pest Inventory - The project through the Regional and District Department of Agriculture of MoFA will collaborate with farmer groups and other stakeholders to identify the types, abundance and location of pest plants and animals by conducting interviews and surveys among farmers, and relevant district level institutions as well as CBOs/community-based farmer organizations. This information will be used for fine tuning, prevention, IPM application, training and capacity building, and other interventions.

Reliance on pesticides – farmers do not normally select crop varieties -on the basis of "creating reliance on pesticides" but more on expected economic returns. However, in order to minimize the potential losses from pests and diseases, a useful starting point is to obtain appropriate planting materials of crop varieties that have been proven, through local field trials, to demonstrate acceptable levels of resistance or tolerance to major pests and diseases. Such materials can be obtained from national agricultural research institutes or international agricultural centers such as International Institute of Tropical Agriculture (IITA).

Pesticides selection - If it is absolutely necessary to spray crops with pesticides, pesticides from the approved list will be recommended and use of selective rather than broad-spectrum pesticides will be promoted. The list of pesticides can change as new products are recommended and/or some of the chemicals are withdrawn, therefore, retailer/stock list will be consulted regularly.

Access to appropriate protective equipment- Because of the comparatively high cost of protective clothing and the inconveniences caused by the hot and humid weather in Ghana, farmers are reluctant to wear protective clothing while applying pesticides. For general use, the project will work with local service providers, input shops to develop a service market for pesticides whereby the input dealer provides or facilitates access to the services of a trained pesticide sprayer/applicator for their farmer

clients. Under this scheme, farmers will receive initial and/or ongoing training in proper application, safe use and best practices.

Application of Herbicides - All herbicides should be applied using knapsack sprayers.

Prevent reuse of pesticide containers – A major source of pesticide poisoning is careless disposal of used pesticide containers which are often collected and re-used domestically. The project will work and maintain regular programs of public awareness, education and training of all beneficiaries on the risks associated with reuse of pesticide containers.

Pre-harvest interval violations – ensure that training content in the safe and effective use of pesticides always includes adequate attention to pre-harvest intervals between the last pesticide application and harvest. Strict compliance with this interval, which will vary with the crop and pesticide, would minimize the risk of unacceptable high levels of pesticide residues in harvested products. This is particularly important for all crops (for domestic consumption and export).

Unsafe storage, transport and handling – pesticide use will be restricted to specific crops under the project. The project will therefore not encourage large use of pesticides. However, if it becomes necessary to procure and use pesticides, extreme care will be taken in the transportation, storage and handling of pesticides. Pesticides would be transported in well-sealed containers and isolated from other materials in the vehicles. Entry into and handling of the products would be restricted to only a few persons who have received adequate training in the proper management of pesticide storage and product handling. All spray operators would also be trained in the proper handling of pesticides. Small holder farmers will be encouraged to hire the services of pesticide sprayers/applicators to be established under the project as referred to above.

Application by women and children – women, especially pregnant and nursing mothers, as well as children represent a highly vulnerable group for pesticides poisoning. Experience elsewhere shows that high levels of pesticides residues can be found in human breast milk where pesticide management has been very poor. Beneficiary farm management would as much as possible, exclude women from applying pesticides and also completely prevent situations where children are exposed to pesticides.

Potential for using pesticides more than necessary – a basic principle of Integrated Pest Management is judicious use of pesticides in the context of IPM. This means that chemical pesticides will be used only as a last resort, for example, in the case of unexpected pest invasion by migratory pests such as armyworms and grasshoppers or grain eating birds. Pesticides would also only be used when it is economic to do so, on a need basis, after detailed field surveys and assessment of the extent of the pest distribution schedule to prevent pest incidence and damage.

Use lower-toxicity products – The WHO and USEPA hazard classification of pesticides (see table 6), as well as the list of products approved by the designated national authorities, would be used as the guide for the choice of pesticides for use in crop protection. As much as possible, farmers would be encouraged to avoid choosing class 1a and 1b pesticides, while concentrating on the search for pesticides only within class III. If pesticide in class II must be used, efforts would be made to ensure that adequate safety precautions are taken on safe use of products and the protection of applicators. In addition, farmers would be well supervised to do the right thing, more so because, most of the pesticides on the EPA approved lists belong to the class II. The reason, being the difficulty in accessing class III pesticides, according to reliable source from the EPA.

Avoid products and spray locations that might contaminate ground and surface water – In addition to avoiding spraying around homes, every precaution would be taken to minimize spraying near standing water bodies or streams or pouring pesticides on the ground in homes, near wells and playing grounds. In particular, spray operators would be trained on the risks associated with (a) pouring excess and leftover pesticide mixtures in rivers, streams or ponds, (b) washing pesticide application equipment in rivers, streams, ponds and other water bodies and (c) discarding empty pesticide containers in river, streams and ponds.

Monitor use and promote safe use of pesticides – As an important part of routine activities, the project will establish a monitoring and supervision plan and protocol for the safe and effective use of pesticides as well as protecting harvested produce and the environment.

Capacity Building

Awareness Creation - The project will create awareness among farmers and local communities on the importance of pest management. The project will ensure that all farmers benefiting from the project have access to information regarding declared pest plants.

Education and Training - This study has shown that training activities in the safe and effective use of pesticides need to be better coordinated within target districts. The project will organize technical consultations to support activities on the safe and efficient use of pesticides and good agricultural practices under the auspices of the MoFA and MLGDRD for farmers, local service providers, and input shops. The MLGDRD will incorporate pest management awareness into all environmental training programs. The general training content will include:

- Overview of the crop production system, crops types grown, varieties, ecological requirements for good plant growth and high yields
- Environmental factors influencing the particular crop yields in the different ecological zones in Ghana
- Patterns of crop losses and the economic aspects of pest/disease damage to crops.
- Economic and social consequences of yield losses caused by crop pests/diseases
- Elements of Good Agricultural Practices
- Fundamentals of decision making on crop protection
- Economics of crop protection methods
- Principles of Integrated Pest Management
- Pesticide use in crop protection
- Consideration of criteria for choice and use of pesticides,
- National legislation and regulations governing the importation, distribution, marketing, transportation, storage, selection and use of pesticides
- Pesticide application – techniques and application efficiency; protective clothing and safe use pictograms
- Hazards of pesticide use- Briefs on WHO hazard classification of pesticides, FAO activities in pesticide management, International commitments and agreements (PIC, POPS etc.); Pesticide residues in harvested crops and international requirements for Maximum Residue Levels and GLOBAL-GAP.
- Environmental effects of pesticide application; risks in pesticide use

Communication: The MLGDRD will communicate the content of the Pest Management Plan with the relevant agencies at the district assemblies/local government institutions, district MoFA pest management representatives. The district MoFA will inform farmer groups or individuals of its pest management policies, practices and achievements. Importantly, the project will encourage innovative communication and outreach to farmers and communities.

IMPLEMENTATION STRATEGIES

Planning

The responsibility for implementing the PMP rests with MLGDRD who will discharge the corresponding duties through different levels of sector staff. A close collaboration is required and will be established across sectors, particularly among all relevant district and regional implementing agencies and all relevant farmer-based organisations or groups. All site-specific activities that may require pesticide use and management will be identified early by the District Department of Agriculture through application of the screening guided by the Project ESMF and included in a pest management planning process to be developed in close association with MOFA and other stakeholders. The regional EPA & Department of Agriculture will compile a database of all key persons in pesticide management from the relevant district Departments of Agriculture, farmer groups, NGOs which will be shared among all stakeholders.

Education and Awareness Creation:

MLGDRD will create awareness among downstream project actors or participants (pesticide distributors/resellers, farmers, farm assistants) of the importance of pest and pesticide management in the framework of this PMP and the national IPM strategy; avenues created or available for obtaining appropriate pesticides among other things.

IPM Capacity Building and Training

MLGDRD will provide basic training in Integrated Pest Management (IPM) and Good Agricultural Practices (GAP) to beneficiary local farmers within the project areas and key NGOs providing support to farmers of an identified staple crop in the area. As much as possible, existing channels within the MoFA for pest management will be utilized and therefore no new platforms will need to be created. The MoFA extension officers will educate farmers/key NGOs in the sector on common pests and diseases associated with the food crops grown in the area such as maize, cassava, plantain and vegetables and how to control and manage such pests/diseases through IPM and GAP approaches in order to minimize the use of pesticides.

The purpose of the capacity building of beneficiary farmers in particular is to encourage farmers to develop their IPM approaches to the management of pests and diseases under the Project. Key NGOs in the sector trained in IPM will also transfer their knowledge to farmers for improved crop production. The success of IPM depends largely on developing and sustaining institutional and human capacity to facilitate informed decision making by farmers and local communities, and empowering them to integrate scientific and traditional knowledge to solve location-specific problems, and respond to market opportunities.

Farmer Field Schools (FFS), Farmer participatory research (FPR) and participatory learning (PL) approaches in capacity building efforts help to bridge this gap and make research results more understandable and useful to farmers and farm assistants. This is particularly the case in knowledge intensive disciplines such as IPM.

MLGDRD will collaborate with the local government institutions such as the MDA's and the as part of the IPM capacity building to train farmers/key NGOs in adoption of ecologically sound and environmentally friendly management practices especially among smallholder farmers in the project area. The farmers will learn cultural, biological and ecological processes underpinning IPM options, and use the newly acquired knowledge to choose compatible methods to reduce losses in production and post-harvest storage. In addition to local government institutions, there will be collaboration with the traditional authorities in the project area to deliver messages and promote IPM on the ground.

Monitoring and Evaluation

The district department of agriculture will liaise with the respective district Departments of Agriculture and zonal EPA for regular monitoring and evaluation of control programs to determine the level of progress being made in controlling the spread of any declared plant pests and the reduction of infested areas. The following monitoring indicators will be incorporated into a participatory monitoring and evaluation plan.

Impactissue/ Pest & pesticide threat/ risk	**Mitigation Measures**	**Implementation tool**	**Expected result**	**Responsibility/ Key implementing actors**
Pollution of water resources and aquatic life	Control and supervise pesticide use by farmers	Adoption of IPM approaches/ techniques	Farmers trained in IPM techniques	MLGDRD, EPA, Ministry of Food and Agriculture (MOFA)
	Water quality monitoring (Monitor pesticides in water resources)	Environmental and Social Screening	Pesticide concentration in water resources	MLGDRD, EPA and MOFA
Public health concerns from water-borne or water related diseases in project areas under irrigation		Selection of experienced and proven contractors and consultants for project designs and construction and inclusion of appropriate measures in their		MLGDRD, EPA and MOFA
	Require all contractors to design and implement measures to avoid creation of pools of stagnant water on site			MLGDRD, EPA and MOFA

Improper use of pesticides by farmers and farm assistants	Educate farmers and farm assistants on proper use of pesticides and pesticide use hazards	Pesticide hazards and use guide manual or leaflet for the project (include simple pictorial presentations)	Proper use of pesticides by farmers and farm assistants	MLGDRD, EPA and MOFA
	Control and supervise pesticide use on farms	Adoption of IPM approaches/ techniques	Farmers trained in IPM techniques	MLGDRD, EPA and MOFA
Poisoning from improper disposal of pesticide containers	1. Educate farmers, farm assistants and local communities on health hazards associated with use of pesticide Containers	1. Pesticide hazards and use guide manual or leaflet for the project	Farmers, farm assistants, FBOs, local communities educated on pesticide health hazards	MLGDRD, EPA and MOFA
	2. Properly dispose pesticide containers	2. Pesticide container retrieval and disposal plan	Pesticide container cleaning and disposal	MLGDRD, EPA and MOFA
Production and market losses from fruit fly pest and armyworm outbreaks	Educated and train farmers to adopt good agricultural practices (GAP)	Adoption of IPM techniques/ approaches	1. Farmers trained in IPM techniques and GAP	MLGDRD, EPA and MOFA
	Establish pest surveillance system	Early detection and warning system in place	Zero or minimal armyworm cases	MLGDRD, EPA and MOFA

	Apply EPA approved and Plant Protection and Regulatory Services Directorate (PPRSD) recommended pesticide if necessary	Inspection of pesticides at farm/storage gate prior to use (Project Policy)	Applied pesticides registered and approved by key stakeholders and in conformity with IPM Principles	MLGDRD, EPA and MOFA
Threat from other crop pests and diseases	Educated and train farmers to adopt good agricultural practices (GAP)	Adoption of IPM techniques/ approaches	Farmers trained in IPM techniques and GAP	MLGDRD, EPA and MOFA
	Apply EPA approved and Plant Protection and Regulatory Services Directorate (PPRSD) recommended	Inspection of pesticides at farm/storage gate prior to use (Project Policy)	Applied pesticides registered and approved by key stakeholders and in conformity with IPM Principles	MLGDRD, EPA and MOFA
Impact on post-harvest losses due to pests	1. Monitor incidence of Post- harvest pests	Post-harvest loss reduction plan based on IPM techniques in place	a.) Post harvest losses avoided or minimised b) Applied pesticides registered and approved by key stakeholders and in conformity with IPM principles	MLGDRD, EPA and MOFA
Abuses in pesticide supply and sales	Identify all pesticide distributors and resellers interested in providing services and products to farmers under the Project	Registration policy for all interested distributors and resellers under project	Only approved and licensed dealers and resellers supply pesticides under project	MLGDRD, EPA and MOFA

	Confirm status and integrity of pesticides supplied under project	a.) All pesticides are to be in the original well labeled pesticide containers prior to use b.) No decanting of pesticides under this project	a) Only approved and registered pesticides used under project b) Banned pesticides avoided c) Fake and expired pesticides avoided	MLGDRD, EPA and MOFA
General health and safety of Farmers, crops and environment	Educate farmers to adopt Good Agricultural Practices (GAP) based upon IPM techniques;	IPM techniques with emphasis on cultural and biological forms of pest control	Compliance with national IPM policy and WB policy on Pest/ pesticide management	MLGDRD, EPA and MOFA
	Provide PPEs to farmers/ farm assistants for pesticide use in the fields	Health and safety policy for farm Work	Farmers and accompanying dependents (children) protected against pesticide exposure in the fields	MLGDRD, EPA and MOFA
	Educate farmers/ farm assistants in the proper use of pesticides	Pesticide hazards and use guide manual or leaflet for the project (include simple pictorial presentations)	Farmers know and use pesticides properly; pesticide hazards and use guide leaflet or flyers produced	MLGDRD, EPA and MOFA
	Properly dispose obsolete and unused pesticides	Obsolete and unused pesticide disposal plan	obsolete and unused pesticide disposal plan prepared and implemented	MLGDRD, EPA and MOFA
	Educate farmers to obtain or purchase quantities of pesticides required at a given time and to avoid long term storage of Pesticides	**Pesticide use policy/plan**	**Only pesticides needed are purchased; long term storage of pesticides by farmers avoided**	MLGDRD, EPA and MOFA

Table : Monitoring Indicators

Area	Indicators
Training and awareness creation in IPM and GAP (Good Agronomical Practices)	Number of extension agents educated or trained on IPM and GAP Number of farmers educated or trained on IPM and GAP Number of awareness programs relating to pest management undertaken
Technology acceptance/ field application	Category and number of farmers who correctly apply the skills they had learnt. Type of New management practices adopted most by farmers.
Pesticide container disposal plan developed and implemented	Number of farmers/resellers aware of pesticide container disposal plan
Pesticide concentration in water resources	Levels of pesticides in water resources
Only approved and licensed dealers and reseller supply pesticides under project	a) Company registration documents b) Evidence of license/permit to operate in pesticides c) Evidence of location and contacts of suppliers/resellers
Compliance with national IPM policy and WB policy on Pest/ pesticide management	Number of farmers trained in IPM techniques; Number of farmers implementing IPM on their farms Frequency of chemical pesticides usage
Health and safety policy for farm Work	Quantities and types of PPEs supplied or made available under the project Number of farmers having copies of the pesticide hazard and use guide flyers;
Risk to human health	Number of annual complaints received pesticide poisoning occurring under the project

Reporting

Periodic report on the progress of pest management within the areas will be prepared by district departments of agriculture and consolidated at the respective regional, and it will form part of the environmental and social reporting framework for the project. The PMP report information will include:

- Common pests identified or declared in the project areas,
- Procurement and use of pesticides under the project;

- common pesticides used by farmers, sources of pesticides used by farmers,
- level of success of treatment of pests under the project,
- the amount and type of herbicide used,
- IPM knowledge and practices among farmers, etc.
- District departments of agriculture will be responsible for their respective district reports.

Annual Reviews

MLGDRD together with the Regional Departments of Agriculture of MoFA will undertake annual pest and pesticide control and management reviews to confirm the implementation of the control measures or programmes provided in the PMP, as part of the regular annual project performance review. Recommendations from the reviews will help the Project Coordinator refocus and plan effectively towards achieving IPM targets.

Tentative Budget

A budget estimate of USD is estimated required to implement the PMP during the project period. Details of estimates are provided in the table below. Most of these activities outlined in the table below will be implemented whiles implementing the broader project activities

Item No.	Activity/Programmed	Duration of Project					
1.0	Capacity Building	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1.1`	Orientation Workshops on PMP and IPM	20,000	-	-	-	-	20,000
1.2	Training and capacity strengthening of extension officers on good agronomic practices (GAPs), climate smart cocoa		39, 774 -		-	-	39,774
	Training and capacity strengthening of Local Facilitators		37,800				
2.1	Pesticide monitoring in surface water/land	20,000		15,000		20,000	55,000
2.2	Equipment (PPE's support	5,000	5,000	5,000	5,000	5,000	25,000
	Sub-Total	15,000	5,000	15,000	5,000	15,000	80,000
3.0	PMP Management						
3.1	Monitoring &Evaluation (Safeguards monitoring of project activities)	3000	3,000	3,000	3,000	3,000	15,000
	Sub-Total	13,000	12,000	12,000	11,000	11,000	62,000
	Grand Total						392,000

ANNEXES:

ANNEX 1: E&S STANDARD SAFEGUARDS SCREENING CHECKLIST

STANDARD SAFEGUARDS SCREENING CHECKLIST
SOCO E&S STANDARD SAFEGUARDS SCREENING CHECKLIST

Subproject Identification and Selection Stage Screening checklist

(NB: Open separate file for each proposed subproject activity)

Name of subproject:	
Location of subproject:	
Brief description of subproject:	
Subproject category/thematic area (IE: Community Public Market, Rural roads, Economic & Security Infrastructure etc)	

SUBPROJECT IDENTIFICATION AND SELECTION PHASE - PRIOR TO DETAILED SUBPROJECT DESIGN				
Questions to be answered (boxes to be ticked) prior to subprojects being added to the shortlist or included in a		**NO**	**YES**	**MAY BE**
Assess potential adverse environmental impact/risks				
1.	Could the subproject lead to irreversible environmental impacts for the beneficiaries of the subproject or for third parties?			
2.	Could the sub project If implemented have a negative and irreversible Impact on the natural resources or natural habitat?			
3.	Could the subproject If implemented have a negative Impact on any cultural resources?			

4.	Is there scope for any concerns that the project, during implementation, or once completed, may cause irreversible adverse occupational or health risks/hazards?			
Assess potential adverse social impact/risks				
5.	Does the subproject require physical displacement of households/ a whole community?			
6.	Does the subproject require economic displacement of more than 200 people?			
7.	Is the sub project likely to create or exacerbate conflict within communities or neighbouring constituencies or assemblies?			
8.	Is there a possibility that the subproject would have significant negative impact on vulnerable and/or marginalized and/or indigenous groups?			
9.	Does the subproject require compulsory or involuntary acquisition of land			
	• **If any of the questions 1 to 8 above is answered with 'Yes', the subproject <u>CANNOT</u> be funded under <u>SOCO</u>- and should not progress to a detailed design phase.** • If question 9 is answered with 'yes', special procedures need to be follow as outlined in the safeguards section in the SOCO Operations Manual (POM) • For every question answered with 'May be' the situation need to be further investigated before taking a decision to go for full subproject planning and design and before including it in any budget for SOCO funding. • Subprojects for which all answers 1-9 are 'No' - could go for detailed design.			
	Filled by DAs Safeguards Teams/ Focal Person 1. Name: _____ Position /Agency: ___ Tel/Date: _____ 2. Name: _____ Position/Agency_____	Signature:		

	Verified by: SOCO SAFEGUARDS SPECIALISTS Name: _____ Tel/Date:	Signature:

Subproject Planning and Design Phase Screening checklist

Name of subproject:	
Location of subproject:	
Detailed description of the subproject features:	
Subproject category/thematic area (IE: Community Public Market, Rural roads, Economic, Security Infrastructure etc	

#	Issues	Tick either Yes or No	
Potential Environmental Impacts/risks assessment		Yes	No
1.	Will subproject activities adversely affect natural habitats nearby, including forests, rivers or wetlands?		
2.	Will subproject activities require large volumes of construction materials (e.g. gravel, stone, water, timber, firewood)?		
3.	Will subproject activities involve use of water during or after construction, which will reduce the local availability of groundwater and surface water?		
4.	Will subproject activities affect the quantity or quality of surface waters (e.g. rivers, streams, wetlands), or groundwater (e.g. wells, reservoirs)?		

5.	Will subproject be located within or near environmentally sensitive areas (e.g. intact natural forests, mangroves, wetlands reserves)or threatened any species?		
6.	Will subproject activities lead to soil degradation, soil erosion in the area?		
7.	Whether the project involves the removal of fibrocement roofing (presence of asbestos)?		
8.	Create waste that could adversely affect local soils, vegetation, rivers and streams or groundwater?		
9.	Create pools of water that provide breeding grounds for disease vectors (for example, malaria or bilharzia)?		
10.	Will subproject activities Involve significant excavations, demolition, and movement of earth, flooding, or other environmental changes?		
11.	Will subproject activities affect historically- important or culturally-important site nearby?		
12.	Require land for its development, and therefore displace individuals, families or livelihoods or businesses from land that is currently occupied, or restrict people's access to crops, pasture, fisheries, forests or cultural resources, whether on a permanent or temporary basis?		
13.	Will subproject activities result in human health or safety risks during construction or later?		
14.	Will subproject activities trigger inward migration of people from outside the area for use of services or other purposes?		
15.	Increase tension/ conflict or disputes among or within communities?		

16.	Affect indigenous people, or be located in an area occupied by indigenous people?		
17.	Be located in or near an area where there is an important historical, archaeological or cultural heritage site?		
18.	Will subproject activities cause spreading of invasive species?		
19.	Has potential to introduce a non-native animal or plant species?		
20.	Involve directly or indirectly handling of veterinary drugs and vaccines?		
#	**Issues**	**Tick either Yes or No**	
Potential Social Impacts/risks assessment		Yes	No
21.	Does the subproject require acquisition of land?		
22.	Does the subproject require physical displacement of persons? (either less than 200 or more than 200 persons)		
23.	Does the subproject require economic or livelihood displacement of persons (either less than 200 or more than 200 people) 200 persons)?		
24.	Is the subproject likely to create or exacerbate conflict within communities, traditional authorities or neighbouring DAs?		
25.	Is there a possibility that the subproject would have significant negative impact on vulnerable and/or marginalized and/or indigenous groups?		
26.	Result in a significant change/loss in livelihood of individuals?		
27.	Cause increased settlement or degradation of surrounding areas?		
28.	Adversely affect the livelihoods and /or the rights of women or vulnerable people?		

Public Participation and Consultations and Grievance Redress Arrangements

Issues
Tick either Yes or No

29.	Has key stakeholders been extensively consulted and their concerns /ideas been included in the selection, planning and design of subproject?	Yes	No
30.	Has maintenance and management responsibilities of key stakeholders been defined and accepted by concerned parties?		
31.	Has Grievance Redress Arrangements been identified and incorporated in subproject setup?		

	Filled by: DAs Safeguards Teams/ Safeguards Focal Person 1. Name: _____ Position: _____ Tel/Date _____ 2. Name: _____ Position_____ Tel/Date_____ 3. Name: _____Position_____ Tel/Date_____	Signature:
	Verified by: 1. RCC REPO Name: _____ Tel/Date: _____ 2. SOCO Safeguards Specialists Name: _____ Tel/Date: _____	Signature: Signature:

If **Yes** to any of the above Questions 1-20 then an **ESIA** subproject report and Environmental and Social Management Plan **(ESMP)** should be developed using **TOR of ESIA (See annex 2) in Project ESMF** submitted and cleared by EPA and the World Bank.

However, if any of questions 21-29 is **YES** and hence displacement of people or livelihood may occur then it is necessary to initiate the process towards preparing a Resettlement Action plan **(ARAP)** following procedures outlined in the SOCO Resettlement Framework Policy appendixed to the Project ESMF.

ANNEX 2: SAMPLE TERMS OF REFERENCE (TOR) FOR THE CONDUCT OF ESIA AND PREPARATION OF ESMP

1.0 BACKGROUND

As part of the overall efforts to improve urban management and provision of basic urban services in cities and towns, the Government of Ghana (GoG) has designed the Ghana Secondary Cities Support Program (GSCSP). The GSCSP is Ghana Government initiative supported by the IDA with a credit of US$100 million and to be implemented over a period of five years (2019-2023). The Program constitutes a slice of the Government's broader decentralization support program (the RFG and its associated DPAT), specifically focusing on 25 MAs that manage urban development in secondary cities. The main objective of the program is to improve urban management and basic urban services in participating municipal assemblies.

The Program has three windows, namely (i) local window, (ii) regional window, and (iii) national window.

☐ Local Window - US$ 90 million, through which participating MAs received Urban Development Grants (UDGs – US$87 million) and Capacity Support Grants (CSGs

– US$3 million). While UDGs allow MAs to make investments in urban infrastructure and service delivery, CSGs enable them to invest in institutional and capacity development initiatives aimed at enhancing their urban management performance. UDGs and CSGs are supplementary to the Government grants under the RFG grants allocated to participating MAs.

- Regional Window - US$ 3 million, through which the ten RCCs are provided with funds to backstop, mentor and monitor MMDAs within their respective regional jurisdictions and ensure that the MMDAs annual DPAT assessments results are up to national average scores.
- National Window - US$ 7 million, through which a range of national-level institutions and agencies access funding in order to strengthen their policy, support and monitoring functions with respect to urban management and development, as well as funding to manage annual performance assessments (APA) of participating MAs.

Investments in urban infrastructure under the Local Window triggered two of the World Bank safeguards policies; the Environmental Assessment Policy OP 4.01 and the Involuntary Resettlement Policy OP 4.12. The management of environmental and social safeguards issues of UDG funded projects under GSCSP is to be in compliance with the Ghana's Environmental Assessment Regulations (LI 1652), Environmental and Social Action Plan (ESAP) and the World Bank approved Programme Resettlement Policy Framework (RPF). The purpose of these regulations is to help avoid potential adverse impacts and effectively mitigate and manage environmental and social issues that may arise from the implementation of sub-projects funded by the UDG component of GSCSP.

In seeking to implement UDG funded sub-projects, the Hohoe Municipal Assembly intends to comply with these frameworks and all relevant national environmental laws.

The Hohoe Municipal Assembly therefore intends to use part of the UDG-2 funds for the **Construction of 30No. Garages with Other Ancillary Facilities**

The construction works will include site clearance including clearing of a nearby forest stand, excavation of soil using heavy duty equipment, cutting of access roads, approach filling and road diversions.

These activities have the potential to generate the following safeguards risks: Disruption of normal function of land resources, potential water and air pollution, pedestrian vehicular conflicts, physical and/or economic displacement of small-scale farmers and their farms numbering 10-farmers etc.

The Hohoe Municipal Assembly in seeking to address any potential environmental and social adverse impacts of the Development Light Industrial Park intervention on the environment and people hereby intends to comply with the World Bank safeguards policies and the national regulation LI1652 by formulating this Terms of Reference (TOR) to:

☐ Select an individual consultant to provide technical services for the preparation of an Environmental and Social Management Plan (ESMP) for the Construction of 30No. Garages with Other Ancillary Facilities and

☐ Provide technical guidance for the implementation of the ESMP

2.0 ASSIGNMENT OBJECTIVE AND EXPECTED RESULTS

The objective of the ESMP is to guide the effective mitigation and management of potential environmental and social risks/impacts associated with the proposed Construction of 30No. Garages with Other Ancillary Facilities at Gbi-Godenu in Hohoe Municipal Area.

The ESMP will assist the implementation of the **Development of Light Industrial Park** interventions in a manner that any potential impacts are avoided and /or mitigated before, during and after the construction activities.

To this end, the main objective of the assignment is to provide technical services for the preparation of an environmental and social management plan (ESMP) and to assist the Hohoe Municipal Assembly with the implementation of the ESMP.

The expected results of the assignment will include:

i. Instruments for stakeholder consultation; and

ii. An Environmental and Social Management Plan (ESMP) for Development of Light Industrial Park

3.0 SCOPE OF WORK

The assignment will take place at Wegbe-Gbi- Light Industrial Area in the Hohoe Municipal Assembly. The scope of work for the assignment for the ESMP preparation will include the following:

- Provide a description of the project location including land use, physical infrastructure, quality of the living environment, cultural setting, economic and

livelihoods activities of people among others;

- Undertake an analysis of the Ghana's legal and institutional framework applicable to land acquisition and involuntary resettlement in Ghana.
- The institutional framework governing ESMP implementation. This will include;
- Government agencies responsible for natural resource conservation and water pollution management activities;
- Traditional authorities or community level governance structures that may have specific roles in ESMP implementation;
- Civil society groups/NGOs that may have a role in ESMP implementation;
- The institutional capacities of these agencies, offices, and civil society groups for carrying out
- ESMP implementation, monitoring, and evaluation; and
- Conduct extensive stakeholder engagement to raise awareness about the potential social and economic impacts (positive and negative) of the project in beneficiary communities particularly among people who will be directly impacted as well as interested parties (MA officials, Assembly members and residents of affected communities, relevant traditional authorities, relevant Utility Providing Agencies, relevant Ministries, Departments and Agencies, CSOs/NGOs etc.) to inform them about the project activities, the likely time frame and the type of impacts and mitigation measures;
- Definition of the identified displaced persons or PAPs and the criteria for determining their eligibility for compensation and other resettlement assistance.
- Identification of possible direct and indirect significant adverse impacts associated with the proposed Light Industrial Park construction;
- Assessment and evaluation of potential impacts of the proposed project on the biophysical and human environment;
- Provision of practical, socially acceptable, technically and economically feasible and environmentally sustainable measures to address the potential adverse impacts; and
- To comply with the Environmental Assessment Regulations (EAR) 1999, LI 1652 and the provisions in the World Bank Approved Resettlement Framework of the Programme
- Agency responsible for the timely release of funds to pay for compensation, agency to oversee that all affected persons have been duly compensated etc.);
- Provide a clear timetable for the ESMP Implementation Plan and cost of implementation of the Plan;
- Provide clear channels and platforms for grievance redress to address specific concerns about compensation, relocation or livelihood restoration measures among others in a timely manner. Where possible, the grievance redress system should use existing formal and/or informal grievance redress mechanisms suitable for the project purposes and complemented as needed with project-specific arrangements

designed to resolve disputes associated with the project in a timely, impartial and transparent manner;

- Provide a monitoring and evaluation plan including monitoring indicators to guide the ESMP implementation;
- Provide disclosure process for the disclosure of the ESMP document at the local, national and international levels;
- Provide detailed report on the stakeholder/ community engagement. The consultant should ensure that women and vulnerable people's perspectives are obtained, and their interests are factored into all aspects of the resettlement planning and implementation process. The report should include photographs of the stakeholder/community engagements, minutes of consultations detailing issues discussed, responses provided, records of people and institutions consulted.
- An implementation schedule should be included covering all ESMP activities from preparation through implementation to monitoring and evaluation.

4.0 METHODOLOGY

The method to be adopted for carrying out the ESMP assignment must be participatory and include:

- Development of tools for consultation and data gathering including guided questions, focused group discussion and stakeholder map showing the different stakeholders interested and affected by the project; and
- Site inspections;
- Stakeholder Consultation especially project affected persons (PAPs).
- Review of available literature;
- Land Use Studies;
- Socio-economic Studies; and
- Reporting

5.0 FORMAT OF THE ESMP REPORT

6.0 OUTPUTS/DELIVERABLES

The outputs of the assignment are:

i. A stakeholder map;
ii. Stakeholder consultation and engagement report
iii. Existing natural resource and land use status
report iv. Socio-economic survey report
v. Report on potential risk and impacts of intervention activity
vi. Proposed environmental and social mitigation/enhancement and management plan

7.0 PAYMENT SCHEDULE

Payment for the Individual Consultant's services shall be made in accordance with the intervals as
contemplated in the payment schedule below.

Deliverable	Timeline	Percentage
Inception Report	1 week from commencement of Services	10%
Draft ESMP Report	4 weeks from commencement of services	60%
Final ESMP Report	6 weeks after commencement of Services	30%

8.0 TIMEFRAME

The assignment will commence in the Third week of December, 2020 and will take a minimum of 6 weeks to complete including the submission of a final report incorporating comments from all key stakeholders.

The consultant will report to the Municipal Coordinating Director of the Hohoe Municipal Assembly. The consultant will be expected to work in close collaboration with the Safeguards Focal person and the Safeguards Team assigned by the Assembly.

9.0 QUALIFICATIONS

I. Educational ***qualifications***

A minimum of a Master's degree in Social Sciences or Environmental Science or related field

II. Work ***experience***

At least 5 years of experience in social and environmental assessment. Knowledge of the World Bank Safeguards policies and procedures as well as national environmental policies, legislation and procedures would be an advantage.

Experience facilitating and or leading efforts to develop Environmental and Social Management Systems or similar systems for managing environmental and social risks for infrastructure work.

III. Local experience

Knowledge of the local conditions is required. Working knowledge of the local language will be an added advantage.

10.0 SERVICES OR FACILITIES TO BE PROVIDED BY:

i. The Municipal Assembly

The client will provide all relevant information and documents that will enable the consultants to carry out their duties. The client will also facilitate the organization of consultation meetings with PAPs and stakeholders as part of the ESMP preparatory process and will be responsible for the disclosure of the draft ESMP.

ii. Consultant

The Consultant shall be responsible for any mobilization costs, transport, accommodation, stationery; communications; computers and accessories; translations/interpretation (if needed); insurance (as applicable) and other costs related to the undertaking of its responsibilities.

ANNEX 3:EPA REVISED REGISTER OF PESTICIDES

ENVIRONMENTAL PROTECTION AGENCY-GHANA

REVISED REGISTER OF PESTICIDES

UNDER THE EPA ACT, 1994(ACT 490)

EPA-PROVISIONAL

CHEMICALS MANAGEMENT UNIT
P. O. BOX. M326
ACCRA

AUGUST 2020

(A) Fully Registered Pesticides (FRE)
(A1a) Insecticides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Abalone 18 EC	FRE/2006/1583G January 2020	Abamectin (18g/l)	II	Insecticide for the control of red spider mite, two-spotted spider mite and tomatoes russet mite in tomatoes	Calli Ghana Limited, Accra
2.	Abamet	FRE/2099/1577G January 2020	Abamectin (92%)	II	Insecticide for the control of two-spotted mite in cotton and tomato	Rainbow AgroSciences Co. Ltd., Tema
3.	Aceta Star 46 EC	FRE/18100/1394G August 2018	Bifenthrin (30g/l) + Acetamiprid (16g/l)	II	Insecticide for the control of capsids in cocoa	Adama West Africa Ltd., Accra
4.	Actara 240SC	FRE/18227/1407G September 2018	Thiamethoxam (240g/kg)	III	Insecticide for the control of mirids in cocoa	Overseas Warehouse Ghana Ltd., Accra
5.	Afford 50 WG	FRE/2099/1657G August 2020	Pymetrozine (500g/kg)	II	Insecticide for the control of aphids and whiteflies in cucumber, tomato, sweetpotatoes and vegetables	Rainbow AgroSciences Co. Ltd., Tema
6.	Agricombi 40 EC	FRE/1902/1519G September 2019	Fenvalerate (10%) + Fenitrothion (30%)	III	Insecticide for the control of aphids, mites and weevils in cocoa, fruits and vegetables	Agrimat Ltd., Madina
7.	Agro-thoate 40 EC	FRE/1710/1226G October 2017	Dimethoate (400g/l)	II	Insecticide for the control of insect pests in vegetables	Reiss & Co. Ghana Ltd., Accra
8.	Akape 20 SC	FRE/1902/1517G October 2019	Imidacloprid (20%)	III	Insecticide for the control of insect pests in vegetables	Agrimat Ltd., Madina
9.	Akate Master	FRE/2005/1602G May 2020	Bifenthrin (27g/l)	II	Insecticide for the control of capsids in cocoa	Chemico Limited, Tema
10.	Alphacep 10 EC	FRE/1902/1488G June 2019	Alpha-cypermethrin (100g/l)	III	Insecticide for the control of insect pests in vegetables and fruits	Agrimat Ltd., Madina

EPA-PROVISIONAL

11.	Ataka Super EC	FRE/1957/1559G October 2019	Emamectin Benzoate (19.2g/l)	III	Insecticide for the control of diamondback moth and cotton bollworm in cabbage and cotton	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra
12.	Attack 1.9 EC	FRE/1804/1304G February 2018	Emamectin-benzoate (1.9%)	II	Insecticide for the control of insect pests in vegetables	Agrimat Limited, Madina
13.	Aventall 300WG	FRE/18139/1420G November 2018	Indoxacarb (300g/kg)	III	Insecticide for the control of insect pests in fruits, vegetables, rice and cotton	Jingbo Agrochemicals Tech. Gh. Co. Ltd., Accra
14.	Bastion Extra	FRE/19202/1482G March 2019	Imidacloprid (3%)	II	Insecticide for the control of rice hoppers, aphids, thrips, whiteflies, termites, beetles and soil borne insects in cereals, vegetables, fruits and cotton	Macrofertil Ghana Ltd., Accra
15.	Belt Expert 480SC	FRE/18185/1307G April 2018	Flubendiamide (240g/l) + Thiacloprid (240g/l)	II	Insecticide for the control of insect pests in cotton	RMG Ghana Ltd., Accra
16.	Betallic Super	FRE/1825/1337G July 2018	Pirimiphos methyl (400g/l) + Permethrin (75g/l)	II	Insecticide for the control of insect pests in maize and cowpea	Bentronic Productions, Kumasi
17.	Bomec EC	FRE/19202/1455G February 2019	Abamectin (18g/l)	II	Insecticide for the control of aphids, caterpillars, whiteflies, grasshoppers and bollworms in vegetables and fruits	Macrofertil Ghana Ltd., Tema
18.	Bonlambda 2.5 EC	FRE/19149/1458G February 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Bon Agro Co. Ltd., Kumasi
19.	Box 18 EC	FRE/20145/1598G May 2020	Abamectin (1.8%)	II	Insecticide for the control of bollworms, red spider mites, cabbage worm, psyllas in soybean, cotton, and tangerine	Jubaili Agrotec Ltd., Kumasi

EPA-PROVISIONAL

20.	Buffalo Supa 40EW	FRE/1723/1211G October 2017	Acetamiprid (400g/l)	III	Insecticide for the control of insect pests in vegetables and fruit crops	Thomhcof Company Limited, Kumasi
21.	Bypel 1	FRE/19133/1576G November 2019	*Perisrapae Granulosis* virus + *Bacillus thuringiensis* (5%)	II	Bio-insecticide for the control of whiteflies and worms in vegetables and fruits	Abbnak Agro Services, Kumasi
22.	Callifan Super 200 EC	FRE/1906/1451G February 2019	Acetamiprid (100g/l) + Bifenthrin (100g/l)	II	Insecticide for the control of mirids in cocoa	Calli Ghana Co. Ltd., Accra
23.	Calthio Mix 485WS	FRE/1906/1445G February 2019	Imidacloprid (350g/kg) + Thiram (100g/kg) + Metalaxyl (35g/kg)	II	Insecticide/fungicide for the control of insect pests and fungal diseases in maize	Calli Ghana Co. Ltd., Accra
24.	Campaign	FRE/18185/1281G January 2018	*Metharhizium anisoplae* (ICIPE 69)	U	Bio-insecticide for the control of thrips in pepper	RMG Ghana Ltd., Accra
25.	Carinho WP	FRE/18202/1377G August 2018	Carbendazim (500g/kg)	II	Insecticide for the control of leaf spot, leaf mould and stem rot in vegetables	Macrofertil Gh. Ltd., Tema
26.	Chlorlet 48EC	FRE/18145/1430G December 2018	Chlorpyrifos-ethyl (48%)	II	Insecticide for the control of insect pests in rice and cotton	Jubaili Agrotec Ltd., Kumasi
27.	Colam 247 ZC	FRE/1899/1311G April 2018	Thiamethoxam (141g/l) + Lambda-cyhalothrin (106g/l)	II	Insecticide for the control of insect pest in rice, tomato, cotton, beans, cabbage and watermelon	Rainbow AgroSciences Co. Ltd., Tema
28.	Condor SL	FRE/1825/1331G July 2018	Imidacloprid (20%)	II	Insecticide for the control of insect pests on vegetables	Bentronics Productions
29.	Condifor Super	FRE/1843/1352G July 2018	Imidacloprid (20%)	II	Insecticide for the control of insect pests in vegetables	Kumark Company Limited, Kumasi
30.	Confidor 200 OD	FRE/20185/1518G January 2020	Imidacloprid (200g/l)	III	Insecticide for the control of mirids in cocoa	RMG Ghana Limited, Accra
31.	Conti-halothrin 2.5EC	FRE/1978/1573G October 2019	Lambda-cyhalothrin (60%)	II	Insecticide for the control of insect pests in vegetables and pulses	Five Continents Imp. & Exp. Ltd., Accra
32.	Conti-zol	FRE/1978/1572G October 2019	Diazinon (25g/l)	II	Insecticide for the control of insect pests in vegetables	Five Continents Imp. & Exp. Ltd., Accra

EPA PROVISIONAL

33.	Control 5WDG	FRE/1804/1305G February 2018	Emamectin benzoate (5%)	II	Insecticide for the control of aphids, worms and borers in vegetables	Agrimat Limited, Madina
34.	Cydim Super EC	FRE/1802/1261G January 2018	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for the control of aphids, caterpillars, whiteflies, grasshoppers and bollworms in vegetables	Agrimat Limited, Madina
35.	Cymethoate Super EC	FRE/2005/1641G July 2020	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for control of aphids, caterpillars, whiteflies, grasshoppers, bollworms in vegetables and cotton	Chemico Ltd., Tema
36.	Cypadem 43.6EC	FRE/1957/1554G October 2019	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for the control of insect pests in vegetables and field crops	Wynca Sunshine Agric Prod & Trading Co. Ltd., Accra
37.	Cypercal 50 EC	FRE/2006/1580G January 2020	Cypermethrin (50g/l)	II	Insecticide for the control of insect pests in cotton	Calli Ghana Company Ltd., Accra
38.	Cypersect Super EC	FRE/1825/1333G July 2018	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for the control of aphids, caterpillars, whiteflies, grasshoppers and bollworms in vegetables	Bentronics Productions, Kumasi
39.	D-Ban Super 48 EC	FRE/1843/1350G July 2018	Chlorpyrifos (48%)	II	Insecticide for the control of insect pests in vegetables	Kumark Co. Ltd., Kumasi
40.	Dean 62 EC	FRE/19202/1462G March 2019	Imidacloprid (50g/l) + Emamectin benzoate (12g/l)	II	Insecticide for the control of moth, caterpillars, whiteflies, aphids and ants in cereals, vegetables and sugarcane	Macrofertil Ghana Ltd., Tema
41.	Decis Forte 100 EC	FRE/20183/1636G June 2020	Deltamethrin (100g/l)	II	Insecticide for the control of insect pests in fruits and vegetables	Bayer West-Central Africa S.A., Accra/ OmniFert Ltd., Labone
42.	Devaxam 25 WG	FRE/1710/1229G October 2017	Thiamethoxam (15%)	II	Insecticide for the control of insect pests in vegetables	Reiss & Co. Ghana Ltd., Accra

EPA-PROVISIONAL

43.	Diazol 50 EW	FRE/20100/1623G May 2020	Diazinon (500g/l)	II	Insecticide for the control of insect pests in vegetables	Adama West Africa Ltd., Accra
44.	Dimeking 400EC	FRE/1899/1435G December 2018	Dimethoate (400 g/l)	II	Insecticide for the control of insect pests in fruits, cotton and vegetables	Rainbow AgroSciences Company Limited, Accra
45.	Dimex 400 EC	FRE/17202/1204G October 2017	Dimethoate (400g/l)	II	Insecticide for the control of aphids, fruit flies and leaf miners in vegetables, fruits and pineapples	Macrofertil Gh. Ltd., Tema
46.	Dimiprid 20 SL	FRE/1710/1228G October 2017	Imidacloprid (200g/l)	II	Insecticide for the control of insect pests in vegetables	Reiss & Co. Ghana Ltd., Accra
47.	Dursban 4E	FRE/1805/1383G August 2018	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of scale, borers, cockroaches and mosquitoes	Chemico Limited
48.	Ekuapa 2.5 EC	FRE/1823/1303G February 2018	Lambda- cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Thomas Fosu Enterprise, Kumasi
49.	Ema Star 112EC	FRE/19100/1542G October 2019	Emamectin benzoate (48g/l) + Acetamiprid (64g/l)	II	Insecticide for the control of whiteflies, diamondback moth, aphids in okra and eggplant	Adama West Africa Ltd, Accra
50.	Eradicoat T GH	FRE/19125/1535G October 2019	Maltodextrin (282g/l)	III	Insecticide for the control of insect pests in fruits, vegetables and Fall armyworm in maize	Positiveware Trading Company Limited, Accra
51.	Evict EC	FRE/1953/1476G March 2019	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of insect pests in vegetables and pulses	L'espoir Co. Ltd., Accra
52.	Evisect S50 SP	FRE/1906/1446G February 2019	Thiocyclam oxalate (500g/kg)	II	Insecticide for the control of leaf miner in oil palm	Calli Ghana Co. Ltd., Accra
53.	Evite 340 WP	FRE/18139/1418G November 2018	Tebufenozide (300g/kg) + Emamectin benzoate (40g/kg)	II	Insecticide for the control of armyworms, bollworms, corn borers, plutella of cabbage and cereals	Jingbo Agro. Tech. Gh. Co. Ltd., Accra.

EPA-PROVISIONEL

54.	Farin 200 EC	FRE/19250/1509G August 2019	Chlorpyrifos-ethyl (200g/l)	II	Insecticide for the control of fruit borers, whiteflies, thrips, caterpillars and stem borers in pepper, tomato, soybean and oil palm	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
55.	Fastrack 10 SC	FRE/1902/1487G June 2019	Alpha-cypermethrin (100g/l)	III	Insecticide for the control of insect pests in vegetables and fruits	Agrimat Ltd., Madina
56.	Fenitrothion 50 EC	FRE/1902/1515G September 2019	Fenitrothion (50%)	III	Insecticide for the control of chewing, boring and sucking insects in fruits, vegetables and cereals	Agrimat Ltd., Madina
57.	Fipro 50 EC	FRE/1908/1532G October 2019	Fipronil (500g/l)	II	Insecticide for the control of insect pests in vegetables and cereals	Dizengoff (Ghana) Limited, Accra
58.	Fixe 50 SC	FRE/18202/1376G August 2018	Fipronil (50g/l)	II	Insecticide for the control of caterpillars, weevils, fire ants, termites in vegetables	Macrofertil Gh. Ltd., Tema
59.	Flash Akate	FRE/2005/1603G May 2020	Sulfoxaflor (240g/l)	II	Insecticide for the control of mirids in cocoa	Chemico Limited, Tema
60.	Frankofen 20 EC	FRE/1939/1490G June 2019	Fenvalerate (200g/l)	II	Insecticide for the control of insect pests in vegetables	Frankatson Ltd., Accra
61.	Furadan 3G	FRE/1805/1384R August 2018	Carbofuran (3%)	II	Insecticide for the control of insect pests in rice, vegetables and oil palm	Chemico Ltd., Tema
62.	Galil 300SC	FRE/19100/1543G October 2019	Imidacloprid (250g/l) + Bifenthrin (50g/l)	II	Insecticide for the control of mirids in cocoa	Adama West Africa Ltd, Accra
63.	Golan 20SL	FRE/1908/1531G October 2019	Acetamiprid (200g/l)	II	Insecticide for the control of insect pests in vegetables, citrus, cotton, coffee and maize	Dizengoff (Ghana) Limited, Accra
64.	Hitcel	FRE/1810/1299G February 2018	Profenofos (40%) + Cypermethrin (4%)	III	Insecticide for the control of insect pests in field crops	Reiss & Co (Ghana), Accra

EPA-PROVISIONAL

65.	Hoprole 30 WG	FRE/1899/1324G May 2018	Indoxacarb (95%)	II	Insecticide for the control of diamondback moth, beetles, caterpillars and cabbage moth in cabbage, tomatoes and cowpea	Rainbow AgroSciences Co. Ltd., Tema
66.	Impact 25 EC	FRE/19250/1508G August 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of armyworm in pepper and soybean	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
67.	Insector T 45	FRE/19202/1467G March 2019	Imidacloprid (350g/kg) + Thiram (100g/kg)	III	Insecticide/fungicide for the control of aphids, leafhoppers, insect pests and fungal diseases in cereals	Macrofertil Ghana Ltd., Tema
68.	Inspire 30 EC	FRE/1806/1371G August 2018	Etofenprox (303.68g/l)	III	Insecticide for the control of mirids in cocoa	Calli Ghana Co. Ltd., Accra
69.	Karto 2.5 EC	FRE/1710/1227G October 2017	Lambda- cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Reiss & Co. Ghana Ltd., Accra
70.	KD 215 EC	FRE/2005/1642G July 2020	Chlorpyrifos (200g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of insect pests in cotton	Chemico Limited, Tema
71.	KD 415 EC	FRE/1805/1382G August 2018	Chlorpyrifos (400g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of scale and borers in cereals and vegetables	Chemico Limited
72.	Kilsect 2.5 EC	FRE/1825/1330G July 2018	Lambda-cyhalothrin (25g/l)	II	Insecticide for control of insect pests in vegetables	Bentronics Productions
73.	K-Optimal EC	FRE/17202/1205G October 2017	Acetamiprid (20g/l) + Lambda-cyhalothrin (16g/l)	II	Insecticide for the control of insect pests in vegetables	Macrofertil Gh. Ltd., Tema
74.	Klopar 24 SC	FRE/18133/1316G April 2018	Chlorfenapyr (240g/l)	II	Insecticide for the control of mites, armyworm, diamondback moth and cotton bollworm in vegetables	Abnark Agro Services Enterprise, Kumasi
75.	Lambda-M 2.5 EC	FRE/1927/1526G October 2019	Lambda- cyhalothrin (25g/l)	III	Insecticide for control of pests in vegetables and flowers	Multivet Ghana Limited, Accra

EPA-PROVISIONAL

76.	Lambad 2.5 EC	FRE/1881/1408G August 2018	Lambda-cyhalothrin (25g/l)	III	Insecticide for the control of insect pests in cereals and vegetables	B. Kaakyire Agrochemical Co. Ltd., Kumasi
77.	Lambdacot EC	FRE/1758/1255G November 2017	Lambda- cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables and pulses	Afcott Ghana Ltd., Accra
78.	Lambda Plus	FRE/1930/1477G March 2019	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of insect pests in vegetables and pulses	Natosh Enterprise, Kumasi
79.	Lambdaking 2.5EC	FRE/1899/1423G December 2018	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of insect pests in vegetables	Rainbow AgroSciences Company Limited, Tema
80.	Lambda Super 2.5 EC	FRE/1843/1349G July 2018	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in stored cereals, cowpea and soybean	Kumark Company Limited, Kumasi
81.	Lamsate EC	FRE/20145/1600G May 2020	Dimethoate (300g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of aphids, thrips, planthoppers, whiteflies in cowpea, soybean, cotton, maize, sorghum, millet, melons and yams	Jubaili Agrotec Ltd., Kumasi
82.	Leadrole 80 WG	FRE/2099/1645G August 2020	Ethiprole (40%) + Imidacloprid (40%)	II	Insecticide for the control of aphids, brown plant hopper and whiteflies in cotton, vegetables and rice	Rainbow AgroSciences Co. Ltd., Tema
83.	Levo 2.4SL	FRE/1908/1529G October 2019	Oxymatrin (2.4%)	III	Insecticide for the control of insect pest in vegetables and fruit crops	Dizengoff Ghana Ltd., Accra
84.	Lufu 150SC	FRE/2043/1589G January 2020	Thiamethoxam (100g/l) + Deltamethrin (50g/l)	II	Insecticide for the control of capsids in cocoa	Kumark Co. Ltd., Kumasi
85.	Master 2.5EC	FRE/1822/1412G October 2018	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Annoh & Sons Enterprise, Accra
86.	Marshal 480 EC	FRE/1805/1385G August 2018	Carbosulfan (480g/l)	II	Insecticide for the control of scale, nematodes and symphylids in pineapple	Chemico Limited, Tema

EPA-PROVISIONAL

87.	Mektin 1.8EC	FRE/1908/1530G October 2019	Abamectin (18g/l)	II	Insecticide for the control of leaf miners, spider mites, caterpillars and thrips in citrus, cotton, vegetables and maize	Dizengoff Ghana Ltd., Accra
88.	Methoate 40EC	FRE/1825/1332G July 2018	Dimethoate (400g/l)	III	Insecticide for the control of insect pests in vegetables and fruit crops	Bentronics Productions. Kumasi
89.	M-Fos 48 EC	FRE/1927/1481G March 2019	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in vegetables and outdoor public health purposes	Multivet (Gh) Ltd., Accra
90.	Miricon EC	FRE/2014/1608G June 2020	Pyrethrum (12g/l) + Deltamethrin (6g/l)	II	Insecticide for the control of mirids in cocoa	Afropa (Ghana) Ltd., Accra
91.	Monceren GT 390 FS	FRE/18185/1309G April 2018	Imidacloprid (233g/l) + Thiram (107g/l) + Pencycuron (50g/l)	II	Insecticide/fungicide for the control of insect pests, rhizoctonia and fusarium in cotton and for seed treatment	RMG Ghana Ltd., Accra
92.	Movento 100 SC	FRE/20183/1635G June 2020	Spirotetramat (100g/l)	III	Insecticide for the control of mealy bugs in pineapple and pawpaw	Bayer West-Central Africa S.A., Accra/ Miqdadi Gh. Ltd., Spintex
93.	Nemaran 3GR	FRE/1899/1313R April 2018	Carbofuran (3%)	II	Insecticide for the control of insect pests in vegetables, sugarcane, cotton, rice and groundnut	Rainbow AgroSciences Co. Ltd., Tema
94.	Nomax 150SC	FRE/19206/1527G September 2019	Alpha-cypermethrin (75g/l) + Teflubenzuron (75g/l)	II	Insecticide for the control of mirids in cocoa	Josann Agro Consult (J.A.C) Ltd., Accra
95.	Nutrel SL	FRE/18137/1417G November 2018	Hydrolysed Protein (24%)	U	Insecticide for the control of insect pests in cereals, citrus and manago	Miqdadi Ghana Ltd., Accra
96.	Okumakate SC	FRE/2035/1594G February 2020	Thiamethoxam (200g/l)	II	Insecticide for the control of capsid bugs in cocoa	K. Badu Agrochemicals, Kumasi
97.	Pawa 2.5 EC	FRE/1805/1381G August 2018	Lambda- cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Chemico Limited. Tema

EPA-PROVISIONAL

98.	Perfecto 175 SC	FRE/1910/1485G June 2019	Imidacloprid (125g/l) + Lambda-cyhalothrin (50g/l)	II	Insecticide for the control insect pests in vegetables and cereals	Reiss & Co (Gh) Ltd., Accra
99.	Plan D 2.5 EC	FRE/1802/1400G August 2018	Lambda- cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Agrimat Limited, Madina
100.	Polytrin 50 EC	FRE/1825/1290G January 2018	Cypermethrin (50%)	II	Insecticide for the control of insect pests in vegetables	Bentronic Productions, Kumasi
101.	Porselen 5 SG	FRE/1899/1366G August 2018	Emamectin-benzoate (5%)	III	Insecticide for the control of worms and other insect pest in cabbage	Rainbow AgroSciences Co. Ltd., Tema
102.	Protect 1.9 EC	FRE/1908/1528G October 2019	Emamectin-benzoate (1.9%)	III	Insecticide for the control of insect pests in cotton, vegetables and maize	Dizengoff (Ghana) Limited, Accra
103.	Proteus 170 O-TEG	FRE/18185/1308G April 2018	Thiacloprid (150g/l + Deltamethrin (20g/l)	II	Systemic insecticide for the control of mirids in cocoa	Bayer West-Central Africa S.A./ OmniFert Ltd., Labone
104.	Punto SL	FRE/1899/1427G December 2018	Imidacloprid (200g/l)	II	Insecticide for the control of aphids and whiteflies in egg-plant, tomatoes and sweetpotatoes	Rainbow AgroSciences Company Limited, Accra
105.	Pyrical 5G	FRE/1906/1447G February 2019	Chlorpyrifos-ethyl (50g/kg)	II	Insecticide for the control of insect pests in vegetables	Calli Ghana Company Ltd., Accra
106.	Pyrical 480 EC	FRE/1706/1244G November 2017	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in pineapples	Calli Ghana Co. Ltd., Tema
107.	Rainlambda 2.5 EC	FRE/2099/1651G August 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Rainbow Agrosciences Co. Ltd., Tema
108.	Rainlambda Plus EC	FRE/1899/1426G December 2018	Dimethoate (300g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of leaf feeding beetles, leaf sucking bugs, pod sucking bugs and pod borers in cowpea and soybean	Rainbow AgroSciences Co. Ltd., Tema

EPA-PROVISIONAL

109.	Rimon 10 EC	FRE/20100/1619G May 2020	Novaluron (100g/l)	III	Insecticide for the control of insect pests in cabbage, tomato and pepper	Adama West Africa Ltd., Accra
110.	Rocky Super 2.5 EC	FRE/20242/1614G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables and pulses	Syntapak Co. Ltd., Kumasi
111.	Ronfos 550 EC	FRE/2099/1646G August 2020	Profenofos (500g/l) + Lufenuron (50g/l)	III	Insecticide for the control of pod borers, bollworm, beet armyworm, leaf moths in kidney bean, tomato and cabbage	Rainbow AgroSciences Co. Ltd., Tema
112.	Sanitox 20EC	FRE/1822/1411G October 2018	Fenvalerate (200g/l)	II	Insecticide for the control of insect pests in vegetables and cowpea	Annoh and Sons, Accra
113.	Savahaler WP	FRE/18202/1376G August 2018	Methomyl (250g/kg)	II	Insecticide for the control of insect pests in vegetables, fruits, cotton and soybean	Macrofertil Gh. Ltd., Tema
114.	Seed Shield	FRE/1957/1552G October 2019	Imidacloprid (350g/l)	III	Insecticide for the control of insect pests in field crops	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra.
115.	Select Plus 315EC	FRE/1710/1233G October 2017	Profenofos (300g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of aphids, bollworms, leafworms and armyworms in cotton, vegetables and cereals	Reiss & Co. Ghana Ltd., Accra
116.	Shocker 20 EC	FRE/18226/1363G July 2018	Bifenthrin (200g/l)	II	Insecticide for the control of insect pests in vegetables and pulses	Rapid Lion Gh. Ltd., Kumasi
117.	Sinoban EC	FRE/1822/1410G October 2018	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in vegetables	Annoh and Sons, Accra
118.	Sivanto Energy 085 EC	FRE/18185/1310G April 2018	Flupyradifurone (75g/l) + Deltamethrin (10 g/l)	II	Insecticide for the control of mirids in cocoa	RMG Ghana Ltd., Accra
119.	Spartan 300 OD	FRE/2099/1650G August 2020	Imidacloprid (210g/l) + Beta-cyfluthrin (90g/l)	II	Insecticide for the control of armyworm, stem borer and	Rainbow AgroSciences Company Ltd., Tema

EPA-PROVISIONAL

					bollworms in rice and maize	
120.	Striker 2.5 EC	FRE/19202/1462G March 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of aphids, bollworms and diamondback moth in cereals and vegetables	Macrofertil Ghana Ltd., Tema
121.	Success Appat	FRE/2005/1643G July 2020	Spinosad (0.24g/l)	U	Insecticide for the control of fruitflies in citrus, mango and vegetables	Chemico Ltd., Tema
122.	Sumico 20 EC	FRE/1843/1346G July 2018	Fenvalerate (200g/l)	II	Insecticide for the control of insect pests in vegetables	Kumark Company Limited, Kumasi
123.	Sumitox 20 EC	FRE/18226/1362G July 2018	Fenvalerate (200g/l)	II	Insecticide for the control of insect pests in vegetables and cowpea	Rapid Lion Gh. Ltd., Kumasi
124.	Sumitex 40 EC	FRE/1843/1351G July 2018	Dimethoate (400g/l)	II	Insecticide for the control of mealybugs, mites, thrips, greenflies and borer larvae in vegetables and pineapples	Kumark Company Limited, Kumasi
125.	Sunhalothrin 2.5EC	FRE/2057/1586G January 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables and pulses	Wynca Sunshine Agric Products & Trading Co., Ltd, Accra
126.	Sun-Lambda EC	FRE/1957/1557G October 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of diamondback moth and cotton bollworms in cabbage and cotton	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
127.	Sunpyram 20WG	FRE/2057/1584G January 2020	Nitenpyram (20%)	II	Insecticide for the control of chewing and sucking insect pests in tree crops	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra
128.	Sunpyrifos 48 EC	FRE/1957/1555G October 2019	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in crops	Wynca Sunshine Agric Prod & Trading Co., Ltd., Accra

EPA-PROVISIONAL

129.	Sun-Thiame WDG	FRE/1957/1558G October 2019	Thiamethoxam (25%)	II	Insecticide for the control of planthoppers and aphids in rice and cotton	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
130.	Super Tiger 2.5 EC	FRE/2067/1613G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Jakess Agrochemical Co. Ltd., Kumasi
131.	Tanalith e 3310	FRE/1843/1372G August 2018	Cupric oxide (11.29%) + Arsenic pentoxide (17.3%) + Chromium trioxide (30.29%)	II	Insecticide for wood treatment	Du Paul Wood Treatment Gh. Limited, Takoradi
132.	Termikill 20EC	FRE/1710/1234G October 2017	Chlorpyrifos ethyl (200g/l)	II	Insecticides for the control of insect pest in vegetables	Reiss & Co. Ghana Ltd., Accra
133.	Termiking 480EC	FRE/1899/1428G December 2018	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests of vegetables and field crops	Rainbow AgroSciences Co. Ltd., Accra
134.	Thodan Super 35SC	FRE/1810/1297G February 2018	Acetamiprid (2%) + Lambda-cyhalothrin (1.5%)	IV	Insecticide for the control of mirids in cocoa	Reiss & Co (Ghana), Accra
135.	Thunder 145 OD O-TEQ	FRE/18185/1431G December 2018	Imidacloprid (100g/l) + Beta-cyfluthrin (45g/l)	II	Insecticide for the control of leaf eating insects and bollworms in cotton	RMG Ghana Limited, Accra
136.	Tihan 175-OD-TEQ	FRE/18185/1432G December 2018	Flubendiamide (100g/l) + Spirotetramat (75g/l)	III	Insecticide for the control of lepidoptera and sucking pest in cotton and vegetables	RMG Ghana Limited, Accra
137.	Tornado EC	FRE/20145/1596G May 2020	Dimethoate (40%)	II	Insecticide for the control of insect pest in rice, cotton, citrus and vegetables	Jubaili Agrotec Ltd., Kumasi
138.	Tricel 48 EC	FRE/1910/1483G June 2019	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of cutworms and aphids in cereals and cotton	Reiss & Co (Gh) Ltd., Accra
139.	Verate 200 EC	FRE/1999/1501G June 2019	Fenvalerate (200g/l)	II	Insecticide for the control of stalk borer, bollworms, cotton stainers in cotton, maize and sorghum	Rainbow AgroSciences Co. Ltd., Tema
140.	Vertigo 100 EC	FRE/19250/1512G August 2019	Cypermethrin (100g/l)	II	Insecticide for the control of armyworm, thrips, whiteflies and	PT. Dalzon Chemicals Indonesia Ghana

EPA PROVISIONAL

					fruit sucking bugs in onion and soybean	External Office, Accra
141.	Vigilant 25 EC	FRE/1910/1484G June 2019	Bifenthrin (25g/l)	II	Insecticide for the control of aphids, bollworm, jassids, whiteflies, mites and hoppers in cotton and mango	Reiss & Co (Gh) Ltd., Accra
142.	Viper 46EC	FRE/1906/1441G February 2019	Acetamiprid (16g/l) + Indoxacarb (30g/l)	II	Insecticide for the control of lepidoptera, sucking and biting insects	Calli Ghana Co. Ltd., Accra
143.	Viper Super 80EC	FRE/1806/1370G August 2018	Indoxacarb (60g/l) + Acetamiprid (20g/l)	II	Insecticide for control of cocoa mirids	Calli Ghana Co. Ltd., Accra
144.	Wonder 2.5 EC	FRE/18147/1294G January 2018	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of insect pests of vegetables	Errands4u, C4 - 68, DTD, Madina, Accra
145.	Zerofly Screen	FRE17125/1215G October 2017	Deltamethrin (4g/kg)	II	Insecticide for the control of insect pests on livestock	Vestergaard Frandsen West Africa, Accra

EPA-PROVISIONAL

(A) Fully Registered Pesticides (FRE)
(A1b) Insecticides for public health purposes

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Actellic 300 CS	FRE/1706/1251G November 2017	Pirimiphos-methyl (300g/l)	III	Insecticide for public health purposes	Calli Ghana Co. Ltd., Accra
2.	Actellic Gold Dust	FRE/1906/1439G February 2019	Pirimiphos-methyl (16g/kg) + Thiamethoxam (3.6g/kg)	III	Insecticide for the control of *Sitophilus zeamais* and *Sitophilus granalius L.* in stored produce	Calli Ghana Co. Ltd., Accra
3.	Cypex Maxi Smoke Generator	FRE/1802/1402G August 2018	Potassium Chlorate (20% w/w) + Cypermethrin (13.5% w/w)	II	For general indoor disinfection	Agrimat Limited, Madina
4.	Dusfos 480 EC	FRE/1825/1285G January 2018	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for outdoor public health purposes	Bentronic Productions, Kumasi
5.	Fendona 5SC	FRE/18206/1268G January 2018	Alpha-cypermethrin (50g/kg)	III	Insecticide for public health purposes	Josann Agro Consult (J.A.C) Ltd., Accra
6.	Ficam VC 80WP	FRE/19183/1569G October 2019	Bendiocarb (80%)	II	Insecticide for public health purposes	Bayer West-Central Africa S.A, Accra
7.	Goliath Gel	FRE/19206/1454G February 2019	Fipronil (0.05%)	III	Insecticide for the control mosquitoes, housefly and cockroaches	Josann Agro Consult Ltd., Accra
8.	Hercules Extra 20 SC	FRE/1802/1401G August 2018	Fipronil (200g/l)	II	Insecticide for public health purposes	Agrimat Limited, Madina
9.	Hercules 50 SC	FRE/1802/1260G January 2018	Fipronil (50g/l)	II	Insecticide for public health purposes	Agrimat Ltd., Madina
10.	Inesfly SP Coating	FRE/17104/1216G October 2017	Alpha-cypermethrin (0.7%) + D-Allethrin (1%) + Pyriproxyfen (0.063%)	IV	Insecticide coating for public health purposes	Inesfly Africa Ltd., Accra
11.	Inesfly Floor Cleaner	FRE/17104/1217G October 2017	Alpha-cypermethrin (1.0%) + D-Allethrin (1.0%) + Pyriproxyfen (0.01%)	IV	Insecticide for public health purposes	Inesfly Africa Ltd., Accra
12.	Inesfly Body Repellent	FRE/18154/1406G August 2018	Pyrethrum extract (1.2%) + Piperonyl butoxide (0.3%) + Ethanol (7.5%)	III	Insecticide for repelling mosquitoes	Inestfly Africa Ltd., Accra

EPA PROVISIONAL

13.	Kakalika Gel	FRE/2008/1610G May 2020	Fipronil (0.05%)	III	Insecticide for the control of cockroaches	Dizengoff Ghana Ltd., Accra
14.	K-Othrine 250WG	FRE/19183/1568G October 2019	Deltamethrin (250g/kg)	II	Insecticide for public health purposes for the control of mosquitoes	Bayer West-Central Africa S.A, Accra
15.	Pyriforce 480 EC	FRE/17202/1210G October 2017	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for outdoor public health purposes	Macrofertil Gh. Ltd., Tema
16.	Pyrinex 48 EC	FRE/20100/1620G May 2020	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for wood treatment and the control of insect pests in crops	Adama West Africa Ltd., Accra
17.	Suncombi 30EC	FRE/1957/1553G October 2019	Fenitrothion (25%) + Fenvalerate (5%)	II	Insecticide for public health purposes	Wynca Sunshine Agric Products & Trading Co., Limited, Accra
18.	Terminus 480 EC	FRE/1816/1269G January 2018	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for outdoor public health	Kurama Company Limited, Accra
19.	Total Flying/ Crawling insecticide	FRE/1898/1405G August 2018	Parallethrin (0.1%) + Cypheniothrin (0.14%) + Deltamethrin (0.17%) + Tetramethrin (0.3%)	II	Insecticide for public health	Total Gh. Ltd., Accra
20.	Vectobac G	FRE/1802/1264G January 2018	*Bacillus thuringiensis*, serotype H-14, 3000 *Units/mg*	IV	Insecticide for the control of mosquito larvae	Agrimat Limited, Madina
21.	VectoBac 12AS	FRE/1802/1262G January 2018	*Bacillus thuringiensis, serotype H-14, 3000 Units/mg*	IV	Insecticide for the control of mosquito larvae	Agrimat Limited, Madina
22.	Vectolex WG	FRE/1802/1263G January 2018	*Bacillus sphaericus (3000 ITU/mg)*	IV	Insecticide for the control of mosquito larvae	Agrimat Limited, Madina

EPA-PROVISIONAL

(A) Fully Registered Pesticides (FRE)
(A1c) Insecticides for Stored Produce

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Agro Blaster	FRE/1876/1283G January 2018	Pyrethrum (1%)	II	Insecticide for the control of insect pests in stored grains	Equatorial Healthcare Services Ltd., Accra
2.	Ateco Super 25 EC	FRE/1843/1348G July 2018	Pirimiphos- methyl (250g/l)	II	Insecticide for the control of insect pests in stored cereals, cowpea and soybean	Kumark Company Limited, Kumasi
3.	Dastoxion T	FRE/17166/1192R October 2017	Aluminium phosphide (57%)	Ib	Insecticide for the control of insect pests in stored produce	Dasimah Enterprise, Kumasi
4.	Degesch Plate	FRE/20185/1637R July 2020	Magnesium phosphide (56%)	Ib	Insecticide for the control of insect pests in stored produce	RMG Ghana Ltd., Accra
5.	Phostoxin Bag	FRE/20185/1638R July 2020	Aluminium phosphide (57%)	Ib	Insecticide for the control of insect pests in stored produce	RMG Ghana Ltd., Accra
6.	Protex 57TB	FRE/1826/1279R January 2018	Aluminium phosphide (57%)	Ib	Insecticide for the control of insect pests in stored produce	The Candel Ltd., Accra
7.	Super Agro Blaster	FRE/1876/1282G January 2018	Pyrethrum (10%)	II	Insecticide for the control of insect pests in stored grains	Equatorial Healthcare Services Ltd., Accra
8.	Temaphos	FRE/2005/1631R May 2020	Aluminium phosphide (56%)	Ib	Insecticide for the control of insect pests in stored produce	Chemico Ltd., Tema
9.	Thomaxin P	FRE/1890/1302R February 2018	Aluminium phosphide (57%)	Ib	Insecticide for the control of insect pests in stored produce	Thomas Fosu Ent., Kumasi
10.	Zerofly Storage Bag	FRE/17125/1214G October 2017	Deltamethrin (3g/kg)	III	Insecticide for the control of insect pests in stored grains	Vestergaard Frandsen West Africa, Accra

EPA-PROVISIONAL

(A) Fully Registered Pesticides (FRE)
(A2) Fungicides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Acticide EPW	FRE/1920/1493G June 2019	Diuron (20%) + Carbendazim (9%) + 2-octyl-2H-isothiazol-3-one (2.8%)	II	Fungal and algal paint preservative	BBC Industrials Company Ltd., Accra
2.	Aflasafe GH01	FRE/20217/1632G June 2020	Four atoxigenic *Aspergiluss flavus* strain (0.0005%)	IV	Fungicide for the control of aflatoxins in maize, groundnuts and sorghum	International Institute of Tropical Agriculture (IITA), Accra
3.	Aflasafe GH02	FRE/20217/1633G June 2020	Four atoxigenic *Aspergiluss flavus* strain (0.0005%)	IV	Fungicide for the control of aflatoxins in maize, groundnuts and sorghum	International Institute of Tropical Agriculture (IITA), Accra
4.	Agrithane 80WP	FRE/1802/1399G August 2018	Mancozeb (800g/kg)	III	Fungicides for the control of leaf spots, mildew, leaf blight and scab in vegetables	Agrimat Limited, Madina
5.	Agro Comet 72 WP	FRE/1810/1298G February 2018	Copper (I) oxide (60%) + Metalaxyl (12%)	III	Fungicide for the control of *Phytophthora spp.* in cocoa	Reiss & Co (Ghana), Accra
6.	Amistar Top 325 SC	FRE/20185/1607G May 2020	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of leaf spots, mildew, leaf blight, scab, Anthracnose and rust in beans, pea, tomatoes and pepper	RMG (Ghana) Ltd., Accra
7.	Athlete 80WP	FRE/19202/1464G March 2019	Fosetyl-aluminium (800g/kg)	III	Fungicide for the control of mildew and *Phytophtora sp., Pythium plasmopara* and *Bremia sp.* in pineapples and fruit trees	Macrofertil Ghana Ltd., Tema
8.	Banjo Forte 400SC	FRE/19100/1541G October 2019	Fluazinam (200g/l) + Dimethorph (200g/l)	III	Fungicide for the control of *Phytophthora megakarya* in cocoa	Adama West Africa Ltd., Accra
9.	Benco 80 WP	FRE/1825/1336G July 2018	Mancozeb (800g/kg)	III	Fungicide for control of leaf spots, mildew, leaf blight and in vegetables, fruits and ornamentals	Bentronics Productions, Kumasi

EPA-PROVISIONAL

10.	Bosun 300SC	FRE/18139/1419G November 2018	Boscalid (20%) + Kresoxim-methyl (10%)	III	Fungicide for the control of powdery mildew, anthracnose, mould, rust and leaf spots in vegetables and fruits	Jingbo Agrochemicals Tech. Gh. Co., Ltd., Accra.
11.	Caldo Bordeles Valles 20WP	FRE/18137/1436G December 2018	Bordeaux mixture (Copper (II) Sulphate + Ca (OH_2) (200g/kg)	III	Fungicide for the control of diseases in vegetables and fruits	Miqdadi Company Limited, Accra
12.	Callet 50 WP	FRE/20145/1599G May 2020	Carbendazim (50%)	III	Fungicide for the control of *Pyricularia oryzae* in paddy rice	Jubaili Agrotec Ltd., Kumasi
13.	Calliete 80 WP	FRE/1706/1246G November 2017	Fosetyl-aluminium (800g/kg)	III	Systemic fungicide for the control of *phytophtor*a in pineapple	Calli Ghana Co. Ltd., Accra
14.	Callis 400 OL	FRE/1706/1245G November 2017	Thiophanate-methyl (400g/l)	III	Fungicide for the control of yellow and black sigatoka in bananas	Calli Ghana Co. Ltd., Accra
15.	Champion WP	FRE/2005/1606G May 2020	Copper Hydroxide (77%)	III	Fungicide for the control of *Phytophtora megakarya* and *Phytophtora palmivora* in cocoa and coffee	Chemico Limited, Tema
16.	Chemoliette 80 WP	FRE/2005/1627G May 2020	Fosetyl-aluminium (800g/kg)	III	Systemic fungicide for the control of *phytophtora* disease in pineapple	Chemico Ltd., Tema
17.	Conti-Zeb	FRE/1978/1571G October 2019	Mancozeb (800g/kg)	III	Fungicide for the control of leafspots, mildew, leaf blight and scab in vegetables and fruits	Five Continents Imports & Exports Ltd., Accra
18.	Cuprofix 30 Disperss	FRE/2005/1630G May 2020	Mancozeb (30%) + Metallic copper (12%)	II	Fungicide for the control of powdery mildew, anthracnose, leaf and fruit spots in vegetables	Chemico Ltd., Tema
19.	Cuprozin 35WP	FRE/2008/1587G January 2020	Copper oxychloride (35%)	II	Fungicide for the control of diseases in vegetables	Dizengoff Ghana Ltd., Accra
20.	Curenox 50WP	FRE/18137/1437G December 2018	Copper Oxychloride (50%)	III	Fungicide for the control of diseases in fruits and vegetables	Miqdadi Company Limited, Accra

EPA-PROVISIONAL

21.	Damazeb 80WP	FRE/19250/1510G August 2019	Mancozeb (800g/kg)	III	Fungicide for the control of diseases in soybean, groundnut, coffee, pepper, banana, melon, tomato and tuber crops	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
22.	Dizcozeb 80 WP	FRE/1908/1524G September 2019	Mancozeb (800g/kg)	III	Fungicide for the control of leaf spot, mildew, leaf blight and scab in vegetables, fruits, ornamentals and field crops	Dizengoff Ghana Ltd., Accra
23.	Dizole 250 EC	FRE/1899/1364G August 2018	Difenoconazole (250g/l)	III	Fungicide for the control of leaf blight and leaf spot in banana, carrots and tomatoes	Rainbow Agro Sciences Co. Ltd., Tema
24.	Delco 75WP	FRE/1843/1373G July 2018	Copper Hydroxide (75%)	III	Fungicide for the control of blackpod disease in cocoa	Kumark Company Limited, Kumasi
25.	Fantic Plus 69WP	FRE/1906/1448G February 2019	Cuprous oxide (60%) + Benalaxyl-M (9%)	III	Fungicide for the control of *Phytophtora megakarya* in cocoa	Calli Ghana Co. Ltd., Accra
26.	Five Star 325 SC	FRE/1899/1329G May 2018	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of brown spot, blackspot, rust and white mould in cabbage, cowpea, soybean, bulb vegetables, groundnut and sweetpotatoes	Rainbow AgroSciences Co. Ltd., Tema
27.	Folicur 250 EW	FRE/19185/1473G March 2019	Tebuconazole (250g/l)	II	Fungicide for the control of black and yellow sigatoka in plantain and banana	RMG Ghana Limited, Accra
28.	Goldazim 500 SC	FRE/1816/1272G January 2018	Carbendazim (500g/l)	III	Systemic fungicide for the control of diseases in fruits and vegetables	Kurama Company Limited, Accra
29.	Impulse 800 EC	FRE/19185/1471G March 2019	Spiroxamine (800g/l)	II	Fungicide for the control of black and yellow sigatoka in plantain and banana	RMG Ghana Limited, Accra
30.	Ivory 80WP	FRE/1906/1440G February 2019	Mancozeb (800g/kg)	III	Fungicide for the control of diseases in vegetables and fruits	Calli Ghana Co. Ltd., Accra

EPA-PROVISIONAL

31.	Kentan 40WG	FRE/2006/1581G January 2020	Copper Hydroxide (400g/kg)	III	Fungicide for the control of blackpod disease in cocoa	Calli Ghana Company Limited, Accra
32.	Kilazeb 80 WP	FRE/1843/1355G July 2018	Mancozeb (800g/kg)	III	Fungicide for the control of leaf spots, mildew, leaf blight and scab in vegetables and fruits	Kumark Co. Ltd., Kumasi
33.	Kocide 2000 WP	FRE/1706/1248G November 2017	Cupric hydroxide (53.8%)	III	Fungicide for the control of diseases in cocoa	Calli Ghana Co. Ltd., Accra
34.	Mancozan 80 WP	FRE/17202/1193G October 2017	Mancozeb (640g/kg) + Metalaxyl (80g/kg)	III	Fungicide for the control of blight, leafspot and scab in vegetables	Macrofertil Gh. Ltd., Tema
35.	Mancozan Super WP	FRE/19202/1465G March 2019	Mancozeb (640g/kg) + Metalaxyl (80g/kg)	II	Fungicide for the control of blight, leafspot and scab in fruits and vegetables	Macrofertil Gh. Ltd., Tema
36.	Mandazim WP	FRE/20145/1595G May 2020	Mancozeb (63%) + Carbendazim (12.5%)	III	Fungicide for the control of late leaf spot and peanut rust in groundnuts	Jubaili Agrotec Ltd., Kumasi
37.	Maneb 80 WP	FRE/1822/1413G November 2018	Maneb (80%)	III	Fungicide for control of fungal diseases in vegetables, cereals, citrus, avocados and mangoes	Annoh & Sons Enterprise, Achimota-Accra
38.	Manlax	FRE/1899/1424G December 2018	Mancozeb (64%) + Metalaxy (8%)	III	Fungicide for the control of downy mildew, late and early blight in lettuce, onions and sweetpotatoes	Rainbow AgroSciences Company Limited, Tema
39.	Metalm 72WP	FRE/1816/1273G January 2018	Cuprous oxide (60%) + Metalaxyl (12%)	III	Fungicide for the control of black pod disease in cocoa	Kurama Company Limited, Accra
40.	Nativo 300 SC	FRE/19185/1472G March 2019	Tebuconazole (200g/l) + Trifloxystrobin (100g/l)	III	Fungicide for the control of fungal diseases in vegetables	RMG Ghana Ltd., Accra
41.	Ortiva Top	FRE/2006/1582G January 2020	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for control of leaf spot and *Anthracnose* of tomatoes	Calli Ghana Co. Ltd., Accra
42.	Prozole 250 EC	FRE/1999/1494G June 2019	Propiconazole (250g/l)	III	Fungicide for the control of diseases in rice and pineapple	Rainbow Agrosciences Company Limited, Tema
43.	Rainmancoz 80WP	FRE/1999/1537G September 2019	Mancozeb (800g/kg)	III	Fungicide for the control of downy mildew, anthracnose and rust in vegetables,	Rainbow AgroSciences Co. Ltd., Tema

EPA-PROVISIONAL

					rice, citrus and mango	
44.	Raintop-M 70 WP	FRE/2099/1615G May 2020	Thiophanate-methyl (700g/kg)	III	Fungicide for the control of diseases in vegetables, fruits and ornamentals	Rainbow AgroSciences Co. Ltd., Tema
45.	Ridomil Gold Plus 66 WP	FRE/20185/1639G July 2020	Cuprous oxide (60%) +Metalaxyl-M (6%)	III	Fungicide for the control of blackpod disease in cocoa	RMG Ghana Ltd., Accra
46.	Royal Cop 77 WP	FRE/1843/1372G July 2018	Copper Hydroxide (77%)	III	Fungicide for the control of blackpod disease in cocoa	Kumark Company Limited, Kumasi
47.	Shavit F 715 WP	FRE/20100/1616G May 2020	Folpet (700g/kg) + Triadimenol (15g/kg)	III	Fungicide for the control of *Alienaria solani*, *Phytophtora spp.*, *Septoria lycopesici* in vegetables, field crops and ornamentals	Adama West Africa Ltd., Accra
48.	Skystar 280SC	FRE/1899/1434G December 2018	Azoxystrobin (20%) + Propiconazole (8%)	III	Fungicide for the control of leaf spots, mildew, leaf blight, scab and anthracnose in vegetables	Rainbow AgroSciences Company Limited, Tema
49.	Sphinx star 480WDG	FRE/18100/1315G April 2018	Chlorothalonil (400g/l) + Dimethomorph (80g/l)	III	Fungicide for the control of diseases in vegetables	Adama West Africa Ltd, Accra
50.	Sulphur 80 WP	FRE/1902/1522G September 2019	Sulphur (80%)	III	Fungicide for the control of blight, leafspot, rust, downy mildew and scab in vegetables	Agrimat Ltd., Madina
51.	Sun-Anil SC	FRE/1957/1549G October 2019	Pyrimethanil (50g/l)	III	Contact fungicide for the control of downy mildew of tomatoes and cucumber	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra.
52.	Suncozeb 80WP	FRE/1957/1550G October 2019	Mancozeb (800kg/kg)	III	Fungicide for the control of leaf spots, mildew, leaf blight and scab in vegetables	Wynca Sunshine Agric Products & Trading Co Ltd, Accra
53.	Sun-Vege	FRE/2057/1579G January 2020	Dimethorph (50%)	III	Fungicide for the control of downy mildew and early blight in cucumber	Wynca Sunshine Agric Products & Trading Co Ltd, Accra
54.	Sustain	FRE/18185/1280G January 2018	*Trichoderma asperellum* TRC (900)	U	Bio-fungicide for the control of root knot nematodes in beans	RMG Ghana Ltd., Accra

EPA-PROVISIONAL

55.	Top Cop	FRE/1805/1387G August 2018	Sulphur (50%) + Copper (8%)	III	Fungicide / miticide for the control of diseases in vegetables	Chemico Limited, Tema
56.	Topsect 70WP	FRE/1825/1296G January 2018	Thiophanate-methyl (70%)	III	Fungicide for the control of fungal diseases in crops	Bentronic Productions, Kumasi
57.	Trimangol 80WP	FRE/1805/1388G August 2018	Maneb (80%)	III	Fungicide for the control of leaf spots, downy mildew, fruit rot in cereals and vegetables	Chemico Limited. Tema
58.	Trustar 85WG	FRE/1899/1328G May 2018	Azoxystrobin (49%) + Tebuconazole (36%)	IV	Fungicide for the control of diseases in rice, soybean, tomato and banana	Rainbow AgroSciences Co. Ltd., Tema
59.	Vamos 500SC	FRE/19100/1540G October 2019	Fluazinam (500g/l)	III	Fungicide for the control of *Phytophthora megakarya* in cocoa	Adama West Africa Ltd., Accra
60.	Volley 88 OL	FRE/19206/1453G February 2019	Fenpropimorph (880g/l)	II	Fungicide for the control of *Mycosphaerella musicola and Mycosphaerella fijiensis* in banana	Josann Agro Consult Ltd., Accra
61.	Zeb-care 80 WP	FRE/20145/1597G May 2020	Mancozeb (80%)	III	Fungicide for the control of diseases in fruits and vegetables	Jubaili Agrotec Ltd., Kumasi

EPA-PROVISIONAL

(A) Fully Registered Pesticides (FRE)
(A3) Herbicides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	2, 4-D Super Herb	FRE/2067/1612G May 2020	2, 4-D Amine Salt (720g/l)	II	Herbicide for the control of broadleaf weeds in cereals, sugarcane and tree crops	Jakess Agrochemical Co. Ltd., Kumasi
2.	Adom 48 SL	FRE/1767/1258G December 2017	Glyphosate (410g/l)	III	Herbicide for the control of grasses and broadleaf weeds in cereals and vegetables	Jakess Agro Company Ltd, Kumasi
3.	Adupa Wura SL	FRE/1825/1288G January 2018	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in arable crops	Bentronic Productions, Kumasi
4.	Adwumamu Hene 41SL	FRE/1930/1478G March 2019	Glyphosate (41%)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals and vegetables	Natosh Enterprise, Kumasi
5.	Adwuma Wura 480 SL	FRE/1843/1344G July 2018	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Kumark Company Limited, Kumasi
6.	Afuo Wura 48SL	FRE/19108/1533G October 2019	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals and vegetables	WAAF Agro Ltd., Techiman
7.	Agil 100 EC	FRE/20100/1622G May 2020	Propaquizafop (100g/l)	III	Herbicide for the control of grasses in pineapple, cotton, groundnut, soybean, vegetables and yam	Adama West Africa Ltd., Accra
8.	Agristomp 500EC	FRE/1902/1521G October 2019	Pendimethalin (500g/l)	III	Herbicide for the control of weeds in maize, rice, cotton and soybean	Agrimat Ltd., Madina
9.	Agro 2,4-D 72 SL	FRE/1710/1230G October 2017	2, 4-D Amine (720g/l)	II	Selective herbicide for the control of broadleaf weeds and sedges in cereals and sugarcane	Reiss & Co. Ghana Ltd., Accra
10.	Agro-Ametryn 500SC	FRE/1710/1234G October 2017	Ametryn (500g/l)	II	Herbicide for the control of annual broadleaf weeds and grasses in fruits and sugarcane	Reiss & Co. Ghana Ltd., Accra
11.	Alion 500 SC	FRE/18185/1306G April 2018	Indaziflam (500g/l)	III	Herbicide for the control of grasses and broadleaf weeds in	RMG Ghana Ltd., Accra

EPA PROVISIONAL

					banana, oil palm, rubber and citrus	
12.	Alligator 400 EC	FRE/17202/1195G October 2017	Pendimethalin (400g/l)	III	Herbicide for the control of grasses in rice	Macrofertil Gh. Ltd., Tema
13.	Amazone 10 WP	FRE/1906/1452G February 2019	Pyrazosulfuron-ethyl (100g/kg)	U	Herbicide for the control of grasses and broadleaf weeds in rice	Calli Ghana Co. Ltd., Accra
14.	Amino 72 SL	FRE/1805/1380G August 2018	2, 4-D Amine (720g/l)	III	Selective herbicide for the control of broad-leaved weeds and sedges in cereals and sugarcane	Chemico Limited, Tema
15.	Aminespray 720SL	FRE/1899/1433G December 2018	2,4-D Amine (720g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds in cereals, sugarcane and citrus	Rainbow AgroSciences Co. Ltd., Tema
16.	Aminoforce 72SL	FRE/18145/1320G May 2018	2,4-D Amine (720g/l)	II	Herbicide for the control of broadleaf weeds and sedges in cereals and tree crops	Jubaili Agrotec Ltd., Kumasi
17.	Anna	FRE/ 1822/1414G November 2018	2,4-D Amine (720g/l)	II	Selective herbicide for control of weeds in rice, maize, sorghum	Annoh and Sons Enterprise, Accra
18.	Anigramo Super 20 SL	FRE/18122/1278R January 2018	Paraquat dichloride (200g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses	Asantepon Farms, Kade
19.	Aniphosate 41 SL	FRE/18122/1277G January 2018	Glyphosate (410g/l)	III	Herbicide for annual, perennial broadleaf weeds and grasses in cereals and vegetables	Asantepon Farms, Kade
20.	Arsenal Gen 2SL	FRE/18206/1266G January 2018	Imazapyr (250g/l)	II	Selective post emergence herbicide for the control of grasses in cereals	Josann Agro Consult (J.A.C) Ltd., Accra
21.	Baccara 435 EC	FRE/1906/1444G February 2019	Propanil (260g/l) + 2,4 D Amine (175g/l)	II	Herbicide for the control of broadleaf weeds and grasses in rice	Calli Ghana Company Ltd., Accra
22.	Basagran 480 SL	FRE/18206/1265G January 2018	Bentazon (480g/l)	II	Herbicide for the control of broadleaf weeds in beans, groundnut and maize	Josann Agro Consult (J.A.C) Ltd., Accra
23.	Bastnate 200 SL	FRE/1999/1500G June 2019	Glufosinate-ammonium (200g/l)	II	Herbicide for the control of annual and perennial broadleaf weeds in banana, plantain, mango and pineapple	Rainbow AgroSciences Company Limited, Tema
24.	Benapa 460 SL	FRE/1899/1326G May 2018	Bentazone (400g/l) + MCPA (60g/l)	II	Contact and selective post-emergence herbicide for the control of grasses in rice, maize, sorghum and sugarcane	Rainbow Agrosciences Co. Ltd., Tema
25.	Benaxone	FRE/1825/1334G July 2018	Paraquat (276g/l)	II	Herbicide for the control of annual, perennial grasses and	Bentronics Productions, Kumasi

EPA-PROVISIONAL

					broadleaf weeds	
26.	Best Up 480 SL	FRE/19250/1511G August 2019	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize, rubber, oil palm, coffee and rice	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
27.	Bextra 72SL	FRE/1825/1289G January 2018	2, 4-D Amine (720g/l)	II	Selective herbicide for the control of broadleaf weeds in maize, rice and sorghum	Bentronic Productions, Kumasi
28.	Bisonrice 400SC	FRE/1899/1375G August 2018	Bispyribac sodium (400g/l)	III	Selective herbicide for the control of grasses and broadleaf weeds in rice	Rainbow Agro Sciences Co. Ltd., Tema
29.	Bonamine 720 SL	FRE/19149/1460G February 2019	2,4-D Amine (720g/l)	II	Herbicide for the control of broadleaf weeds and grasses in rice and maize	Bon Agro Co. Ltd., Kumasi
30.	Bonsate 480 SL	FRE/19149/1459G February 2019	Glyphosate (480g/l)	III	Herbicide for the control of annual and perennial weeds on non-crop lands	Bon Agro Co. Ltd., Kumasi
31.	Butaforce EC	FRE/18145/1322G May 2018	Butachlor (500g/l)	III	Pre-emergent herbicide for the control of grasses and broadleaf weeds in rice, soybean, cotton and vegetables	Jubaili Agrotec Ltd., Kumasi
32.	Butaplus EC	FRE/1843/1354G July 2018	Butachlor (50%)	II	Pre-emergence herbicide for soyabean, cotton, rice, groundnuts and vegetable	Kumark Co. Ltd., Kumasi
33.	Bylor 500 EC	FRE/2099/1647G August 2020	Butachlor (500g/l)	III	Herbicide for the control of annual grasses and broadleaf weeds in groundnut and rice	Rainbow AgroSciences Co. Ltd., Tema
34.	Calliherbe 720 SL	FRE/1906/1443G February 2019	2,4-D Amine (720g/l)	II	Herbicide for the control of broadleaf weeds in cereals and tree crops	Calli Ghana Co. Ltd, Accra
35.	Canphosate SL	FRE/18147/1292G January 2018	Glyphosate (360g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds	Errands4u, C4 - 68, DTD, Madina, Accra
36.	Canquat Super SL	FRE/18147/1293R January 2018	Paraquat dichloride (20%)	II	Herbicide for control of grasses and broadleaf weeds in cereals and vegetables	Errands4u, C4 - 68, DTD, Madina, Accra
37.	Capizad EC	FRE/17202/1209G October 2017	Haloxyfop-R-methyl (104g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Macrofertil Gh. Ltd., Tema
38.	Caritek 80 WP	FRE/1999/1536G October 2019	Diuron (800g/kg)	II	Herbicide for the control of annual, perennial grasses and	Rainbow AgroSciences Co. Ltd., Tema

EPA PROVISIONAL

					broadleaf weeds in pineapple	
39.	Chemopax 500 SC	FRE/2005/1605G May 2020	Ametryn (485g/l) + Trazine (15g/l)	II	Herbicide for the control of annual, perennial grasses and broadleaf weeds in pineapple, sugarcane, banana and cassava	Chemico Limited, Tema
40.	Chemosate 480 SL	FRE/2005/1626G May 2020	Glyphosate (360g/l)	III	Herbicide for the control of annual and perennial weeds in various crops	Chemico Ltd., Tema
41.	Chemostom 550 EC	FRE/2005/1604G May 2020	Pendimethalin (500g/l)	III	Pre-emergent herbicide for the control of annual grasses and broadleaf weeds in cereals, cotton and soybean	Chemico Limited, Tema
42.	Chemovar 80 WP	FRE/1805/1393G August 2018	Bromacil (800g/kg)	III	Herbicide for the control of grasses and broadleaf weeds in pineapples	Chemico Limited, Tema
43.	Chemoxone SL	FRE/1805/1391G August 2018	Paraquat dichloride (200g/l)	II	Herbicide for the control of broadleaf weeds and grasses	Chemico Limited, Tema
44.	Chemuron 80 WP	FRE/1805/1392G August 2018	Diuron (800g/kg)	III	Herbicide for the control of grasses in pineapples, citrus and mangoes	Chemico Limited, Tema
45.	Cleanspray 80 SG	FRE/1999/1499G June 2019	2,4-D Amine (800g/kg)	II	Herbicide for the control of annual broadleaf weeds and grasses in millet	Rainbow AgroSciences Co. Ltd., Tema
46.	Condax WP	FRE/1978/1570G October 2019	Bensulfuron-methyl (30%)	III	Systemic herbicide for the control of annual and perennial broadleaf weeds in rice	Five Continents Imp. & Exp. Ltd., Accra
47.	Conti-quat	FRE/1978/1574R October 2019	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in field crops	Five Continents Imp. & Exp. Ltd., Accra
48.	Corta 480 EC	FRE/19202/1468G March 2019	Triclopyr (480g/l)	III	Herbicide for the control of broadleaf weeds in oil palm, rice and sugarcane	Macrofertil Ghana Ltd., Tema
49.	Cotbond 560 SL	FRE/1758/1256G November 2017	Propanil (360g/l) + 2, 4-D Amine salt (200g/l)	II	Herbicide for the control of grasses and weeds in rice	Afcott Ghana Ltd., Accra
50.	Conti-sul WP	FRE/1865/1274G January 2018	Acetolachlor (25%) + Bensulfuron-methyl (5%)	III	Herbicide for the control of annual, perennial weeds in rice	Five Continents Imports & Exports, Accra
51.	Dekel 170 EC	FRE/19100/1548G October 2019	Propaquizafop (50g/l) + Oxyfluorfen (120g/l)	III	Herbicide for the control of grasses and broadleaf weeds in onion, legume and cotton	Adama West Africa Ltd., Accra
52.	Dinamic Plus 500EC	FRE/1906/1524G October 2019	Amicarbazone (100g/l) +	III	Herbicide for the control of grasses,	Calli Ghana Ltd., Accra

EPA-PROVISIONAL

			Propisochlor (400g/l)		broadleaf weeds and sedges in arable crops	
53.	Diuron Plus	FRE/1843/1356G July 2018	Diuron (80%)	III	Herbicide for the control of annual and perennial grasses and broadleaf weeds in pineapples, citrus and mangoes	Kumark Co. Ltd., Kumasi
54.	Diuron 80WP	FRE/1902/1516G October 2019	Diuron (80%)	III	Herbicide for the control of grasses in cotton and sugarcane	Agrimat Ltd., Madina
55.	Eduodzi 480 SL	FRE/1999/1505G June 2019	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in vegetables and cereals	Rainbow AgroSciences Co. Ltd., Tema
56.	Eduodzi 757 SG	FRE/1999/1506G June 2019	Glyphosate (757g/kg)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds	Rainbow AgroSciences Co. Ltd., Tema
57.	Erase 480 SL	FRE/20213/1655G August 2020	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in arable crops	Crop Doctor, Kumasi
58.	Ervextra 720 SL	FRE/19202//1469G March 2019	2, 4-D Amine (720g/l)	II	Selective herbicide for the control of broadleaf weeds in rice, maize, oil palm, coconut, rubber and sugarcane	Macrofertil Ghana Ltd., Tema
59.	Fenfen 240 EC	FRE/1999/1498G June 2019	Oxyfluorfen (240g/l)	IV	Herbicide for the control of annual, perennial broadleaf weeds and grasses in groundnut, fruit trees, onion and cotton	Rainbow AgroSciences Company Limited, Tema
60.	ForceUp SL	FRE/18145/1319G May 2018	Glyphosate (41%)	III	Herbicide for the control of weeds	Jubaili Agrotec Ltd., Kumasi
61.	Forpine 80 WP	FRE/1899/1364G August 2018	Bromacil (80%)	III	Herbicide for the control of weeds in pineapples and citrus	Rainbow Agro Sciences Co.Ltd., Tema
62.	Fos-lade Super 15 EC	FRE/1890/1300G February 2018	Fluazifop-p-butyl (150g/l)	III	Selective herbicide for the control of annual, perennial grasses in broadleaf crops	Thomas Fosu Enterprise, Kumasi
63.	Frankosulfuron	FRE/1939/1489G June 2019	Nicosulfuron (40g/l)	III	Herbicide for the control of grasses in maize	Frankatson Limited, Accra
64.	Gallant Super	FRE/1805/1390G August 2018	Haloxyfop (108g/l)	III	Post emergence herbicide for the control of broadleaf weeds in vegetables	Chemico Limited
65.	Garlon 4E	FRE/1905/1575G November 2019	Triclopyr (480g/l)	III	Herbicide for use as tree killer and the control of broadleaf weeds	Chemico Limited. Tema
66.	Glycel 41SL	FRE/1910/1515G July 2019	Glyphosate (410g/l)	II	Herbicide for the control of grasses and broadleaf weeds in	Reiss & Co. (Ghana) Ltd., Accra

EPA-PROVISIONAL

					cereals and vegetables	
67.	Glycot 41 SL	FRE/1758/1253G November 2017	Glyphosate (410g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals	Afcott Ghana Limited, Accra
68.	Glyfos 41SL	FRE/1802/1403G August 2018	Glyphosate (410g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Agrimat Limited, Madina
69.	Glygold 41 SL	FRE/1953/1475G March 2019	Glyphosate (410g/l)	III	Herbicide for the control of perennial grasses, broadleaf weeds, sedges and aquatic weeds in arable crops	L'espoir Co. Ltd., Accra
70.	Glyking 480 SL	FRE/1999/1502G June 2019	Glyphosate (480g/l)	III	Herbicide for the control annual, perennial grasses and broadleaf weeds on non-crop and farm lands	Rainbow AgroSciences Co. Ltd., Tema
71.	Glyphader 75 SG	FRE/17202/1197G October 2017	Glyphosate (757g/kg)	III	Herbicide for the control of grasses and broadleaf weeds in cereals and vegetables	Macrofertil Gh. Ltd., Tema
72.	Glyphader 480 SC	FRE/17202/1202G October 2017	Glyphosate (480g/l)	III	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	Macrofertil Gh. Ltd., Tema
73.	Glyphogan 480 SL	FRE/20100/1617G May 2020	Glyphosate IPA (480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals and vegetables	Adama West Africa Ltd., Accra
74.	Glyphosate 95% Technical	FRE/1857/1397G August 2018	Glyphosate Ammonium Salt (95 % Min)	III	Herbicide for the control of broadleaf weeds and grasses in maize	Wynca Sunshine Agric Products & Trading, Accra
75.	Glyphosate 88% Technical	FRE/1857/1398G August 2018	Glyphosate Ammonium Salt (88 % Min)	III	Herbicide for the control of broadleaf weeds and grasses in maize	Wynca Sunshine Agric Products &Trading, Accra
76.	Gramoquat Super	FRE/2043/1601R May 2020	Paraquat (200g/l)	II	Herbicide for the control of grasses and broadleaf weeds in cereals and vegetables	Kumark Co. Ltd., Kumasi
77.	Guardforce OD	FRE/18145/1429G December 2018	Nicosulfuron (4%)	III	Herbicide for the control of annual grass weeds	Jubaili Agrotec Ltd, Kumasi
78.	Halaxy 108 EC	FRE/1899/1314G April 2018	Haloxyfop-P-Methyl (108g/l)	IV	Herbicide for the control of annual and perennial weeds in cereals, leafy vegetables, pineapple, soybean and cowpea	Rainbow AgroSciences Co. Ltd., Tema

EPA PROVISIONAL

79.	Herbaking 720 SL	FRE/1999/1497G June 2019	2,4-D Amine (720g/l)	II	Herbicide for the control of broadleaf weeds and grasses in sorghum, maize, coffee and citrus	Rainbow AgroSciences Company Limited, Tema
80.	Herbazol	FRE/1945/1507G June 2019	2,4-D Amine (760g/l)	II	Herbicide for the control of broadleaf weeds and sedges in cereals and tree crops	J. K Duku Enterprise, Kumasi
81.	Herbextra 72 SL	FRE/1843/1340G July 2018	2,4-D Amine (720g/l)	II	Selective herbicide for the control of broadleaf weeds in rice, maize, sorghum, millet and sugarcane	Kumark Co. Ltd., Kumasi
82.	Herbimais WG	FRE/17202/1198R October 2017	Atrazine (750g/kg) Nicosulfuron (40g/kg)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in maize	Macrofertil Gh. Ltd., Tema
83.	Herbisuper S	FRE/17202/1199G October 2017	Acetachlor (300g/l) + Simazine (200g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in maize	Macrofertil Gh. Ltd., Tema
84.	Hero Super 108 EC	FRE/1843/1373G August 2018	Haloxyfop methyl (108g/l)	III	Herbicide for the control of annual grasses in vegetables and pulses	Kumark Co. Ltd., Kumasi
85.	Kabaherb SL	FRE/1881/1409G October 2018	2,4-D Amine Salts (720g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in rice	B. Kaakyire Agrochemical Co. Ltd., Kumasi
86.	Kabasate 41SL	FRE/1881/1416G October 2018	Glyphosate (410g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	B. Kaakyire Agrochemical Co. Ltd., Kumasi
87.	Kalach 360 SL	FRE/1706/1249G November 2017	Glyphosate (360g/l)	III	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	Calli Ghana Co. Ltd., Accra
88.	Kalach Extra 70SG	FRE/1706/1250G November 2017	Glyphosate (700g/kg)	III	Herbicide for the control of grasses and broadleaf weeds in cereals and vegetables	Calli Ghana Co. Ltd., Accra
89.	Komanda	FRE/1927/1480G March 2019	Glyphosate (410g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize, sugarcane and fruit trees	Multivet (Gh) Ltd., Accra
90.	Kumnwura SL	FRE/1825/1284G January 2018	Glyphosate (410g/l)	III	Herbicide for the control of annual and perennial broadleaf weeds and grasses	Bentronic Productions, Kumasi
91.	Kurasate 360 SL	FRE/1816/1271G January 2018	Glyphosate (360g/l)	III	Herbicide for the control of grasses and broadleaf weeds	Kurama Company Limited, Accra

EPA-PROVISIONAL

92.	Kwatrikwa 20 SL	FRE/1802/1404G August 2018	Paraquat (20%)	II	Herbicide for the control of annual, perennial grass and broadleaf weeds	Agrimat Limited, Madina
93.	Ladaba 75 SG	FRE/17202/1200G October 2017	Glyphosate (757g/kg)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals, vegetables and plantation crops	Macrofertil Gh. Ltd., Tema
94.	Lagon 575SC	FRE/19185/1474G March 2019	Aclonifen (500g/l) + Isoxaflutole (75g/l)	III	Pre-emergent herbicide for the control of grasses and broadleaf weeds in maize	RMG Ghana Limited, Accra
95.	Landlord 360 SL	FRE/18185/1317G April 2018	Glyphosate (360g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in crops	RMG Ghana Ltd., Accra
96.	Laudis 630 SC	FRE/20183/1634G June 2020	Tembotrione (420g/l) + Isoxadifen-ethyl (210g/l)	III	Herbicide for the control of grasses and broadleaf weeds in maize	Bayer West-Central Africa S.A, Accra
97.	Maestro 960 EC	FRE/1999/1496G June 2019	Metolachlor (960g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize	Rainbow AgroSciences Company Limited, Tema
98.	Maxitol 865 SL	FRE/19250/1514G August 2019	2, 4-D Amine Salt (865g/l)	II	Herbicide for the control of broadleaf weeds and sedges in cereals, sugarcane and tree crops	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
99.	Mega Super	FRE/1843/1372G August 2018	Bispyribac-sodium (400g/l)	III	Herbicide for the control of annual grasses in rice	Kumark Co. Ltd., Kumasi
100.	Multi 2, 4-D SL	FRE/1927/1479G March 2019	2,4-D Amine Salt (720g/l)	II	Herbicide for the control of annual broadleaf weeds in maize and rice	Multivet (Gh.) Ltd., Accra
101.	Nico 40OD	FRE/18139/1421G November 2018	Nicosulfuron (40g/l)	III	Herbicide for the control of grasses and broadleaf weeds in cereals	Jingbo Agrochemicals Tech. Gh. Co. Ltd., Accra.
102.	Nico Plus OD	FRE/1843/1353G July 2018	Nicosulfuron (4%)	III	Herbicide for the control of grasses and broadleaf weeds in cereals and vegetables	Kumark Company Limited, Kumasi
103.	Nicocal 40 OD	FRE/1825/1338G July 2018	Nicosulfuron (400g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Bentronic Productions, Kumasi
104.	Nicogan 40 OD	FRE/20100/1624G May 2020	Nicosulfuron (40g/l)	III	Herbicide for the control of annual and perennial broadleaf weeds and grasses in maize	Adama West Africa Ltd., Accra

EPA PROVISIONAL

105.	Nicoherb 40 OD	FRE/1945/1461G February 2019	Nicosulfuron (40g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	J. K Duku Enterprise, Kumasi
106.	Nicoking 40 OD	FRE/1999/1537G October 2019	Nicosulfuron (400g/l)	II	Herbicide for the control of annual, perennial grasses and broadleaf weeds in maize, rice and soybean	Rainbow AgroSciences Co. Ltd., Tema
107.	Nicoking 75WG	FRE/1899/1367G August 2018	Nicosulfuron (750g/kg)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in maize	Rainbow AgroSciences Co. Ltd., Tema
108.	Nicoking Super 230 OD	FRE/2099/1644R August 2020	Atrazine (200g/l) + Nicosulfuron (30g/l)	III	Herbicide for the control of broadleaf weeds and grasses in maize	Rainbow AgroSciences Co. Ltd., Tema
109.	Nicotop 4% OD	FRE/20213/1656G August 2020	Nicosulfuron (40g/l)	II	Herbicide for the control of annual grasses and broadleaf weeds in maize	Crop Doctor, Kumasi
110.	Nnoboa 41 SL	FRE/1945/1457G February 2019	Glyphosate (41%)	III	Herbicide for the control of annual, perennial grasses and broadleaf in cereals and vegetables	J. K Duku Enterprise, Kumasi
111.	Nominee 400 SC	FRE/2005/1629G May 2020	Bispyribac-sodium (400g/l)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedges in rice	Chemico Ltd., Tema
112.	Nwura Wura 360SL	FRE//1757/1218G October 2017	Glyphosate (360g/l)	III	Herbicide for the control of grasses and broadleaf weeds	Wynca Sunshine Agric Prod & Trading Co. Ltd., Accra
113.	Oboafo 480 SL	FRE/17202/1208G October 2017	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Macrofertil Gh. Ltd., Tema
114.	Ogyefo 72 SL	FRE/1890/1301G February 2018	2,4-D Amine (720g/l)	II	Herbicide for the control of post emergent annual weeds in rice	Thomas Fosu Enterprise, Kumasi
115.	Orizo Plus SL	FRE/1826/1323G May 2018	Propanil (360g/l) + 2,4-D Amine salts (200g/l)	II	Selective herbicide for the control of grasses and broadleaf weeds in rice	The Candel Company Limited, Accra
116.	Panicummax Cleaner 100EC	FRE/18139/1422G November 2018	Quizalofop-P-Ethyl (100g/l)	II	Systemic herbicides for control of *Panicum maximum*, annual and perennial weeds	Jingbo Agrochemicals Technology, Gh. Ltd., Accra
117.	Paracot SL	FRE/1758/1254R November 2017	Paraquat dichloride (200g/l)	II	Non-selective herbicide for the control of grasses and broadleaf weeds in maize, sorghum,	Afcott Ghana Ltd., Accra

EPA-PROVISIONAL

					yam, cassava and sugarcane	
118.	Pencal 500 EC	FRE/1906/1449G February 2019	Pendimethalin (500g/l)	II	Herbicide for the control of grasses and broadleaf weeds in rice and maize	Calli Ghana Co. Ltd., Accra
119.	Pendico 50 EC	FRE/1910/1486G June 2019	Pendimethalin (500g/l)	III	Herbicide for the control of broadleaf weeds in cereals, cotton and soybean	Reiss & Co (Gh) Ltd., Accra
120.	Pendigan 400 CS	FRE/18100/1276G January 2018	Pendimethalin (400g/l)	II	Herbicide for the control of grasses and broadleaf weeds in cereals and vegetables	Adama West Africa Ltd., Accra
121.	Pendipax	FRE/2099/1588G January 2020	Pendimethalin (500g/l)	II	Herbicide for the control of annual grasses and broadleaf weeds in maize and sugarcane plantation	Rainbow AgroSciences Co. Ltd., Tema
122.	Pendi Plus 400 EC	FRE/2043/1590G January 2020	Pendimethalin (40%)	III	Herbicide for the control of annual grasses and broadleaf weeds in maize, onion, cotton and rice	Kumark Co. Ltd., Kumasi
123.	Pointer 276 SL	FRE/19250/1513R August 2019	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual, perennial grasses and broadleaf weeds in soybean, corn, oil palm, rubber and rice	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
124.	Power 41 SL	FRE/1945/1456G February 2019	Glyphosate (41%)	III	Herbicide for the control of annual, perennial grasses and broadleaf in cereals and vegetables	J. K Duku Enterprise, Kumasi
125.	Pronil Plus SL	FRE/1825/1335G July 2018	Propanil (360g/l) + 2, 4 D Amine Salt (200g/l)	III	Selective herbicide for the control of annual and perennial grasses and broadleaf weeds in rice	Bentronics Productions. Kumasi
126.	Propacal- Plus 480EC	FRE/1843/1342G July 2018	Propanil (240g/l) + 2, 4-D isobutylate (240g/l)	II	Selective herbicide for the control of annual and perennial grasses and broadleaf weeds in rice	Kumark Co. Ltd., Kumasi
127.	Propaforce Plus EC	FRE/18145/1321G May 2018	Propanil (36%) + 2, 4-D Isobutyl Ester (20%)	III	Herbicide for the control of weeds in rice	Jubaili Agrotec Ltd., Kumasi
128.	Ricetop	FRE/1899/1425G December 2018	Propanil (360g/l) + 2,4 D Amine (200g/l)	III	Herbicide for the control of *Amaranthus retroflexus, Digitaria spp., Echinochloa spp., Panicum spp.* in rice	Rainbow AgroSciences Company Limited, Tema
129.	Ricecare 240 SC	FRE/1899/1327G May 2018	Penoxsulam (240g/l)	IV	Herbicide for the control of broadleaf	Rainbow Agrosciences Co. Ltd., Tema

EPA-PROVISIONAL

					weeds and sedges in field crops	
130.	Ricenice 360 EC	FRE/1999/1495G June 2019	Propanil (360g/l)	III	Herbicide for the control of *Amaranthus retroflexus, Digitaria spp.,* and *Echinochloa spp.* in rice	Rainbow AgroSciences Co. Ltd., Tema
131.	Ricestar 300 WP	FRE/2005/1628G May 2020	Bispyribac-sodium (180g/kg) + Bensulfuron-methyl (120g/kg)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedges in rice	Chemico Limited, Tema
132.	Ricestar 320 EC	FRE/2099/1649G August 2020	Pretilachlor (300g/l) + Pyribenzoxim (20g/l)	II	Herbicide for the control of annual weeds in paddy rice and transplanting rice fields	Rainbow AgroSciences Company Ltd., Tema
133.	Ridmax 75SG	FRE/2099/1648G August 2020	Glyphosate (750g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in non-crop lands	Rainbow AgroSciences Company Ltd., Tema
134.	Ridmax 510 SL	FRE/1899/1325G May 2018	Glyphosate IPA (300g/l) + 2,4-D IPA (210g/l)	III	Herbicide for the control of annual, perennial weeds in field crops	Rainbow AgroSciences Co. Ltd., Tema
135.	Rid Out 480 SL	FRE/1999/1503G June 2019	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds on non-crop and farm lands	Rainbow AgroSciences Co. Ltd., Tema
136.	Rid Over 757 SG	FRE/1999/1504G June 2019	Glyphosate ammonium (75.7%)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in arable and plantation crops	Rainbow AgroSciences Co. Ltd., Tema
137.	Rigold 432 EC	FRE/17202/1207G October 2017	Propanil (360g/l) + Triclopyr (72g/l)	III	Herbicide for the control of grasses and broad leaf weeds in rice	Macrofertil Gh. Ltd., Tema
138.	Rondo 48SL	FRE/1710/1232G October 2017	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Reiss & Co. Ghana Ltd., Accra
139.	Rondo 75.7SG	FRE/1710/1231G October 2017	Glyphosate (757g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in vegetables and cereals	Reiss & Co. Ghana Ltd., Accra
140.	Roundup 450 Turbo	FRE/17202/1201G October 2017	Glyphosate (450g/l)	III	Herbicide for the control of annual grasses and broadleaf weeds in cereals and vegetables	Macrofertil Gh. Ltd., Tema

EPA PROVISIONAL

141.	Sharp 480 SL	FRE/1843/1341G July 2018	Glyphosate (480g/l)	III	Herbicide for the control of annual and perennial grasses and broadleaf weeds in cereals	Kumark Co. Ltd., Kumasi
142.	Shye Nwura SL	FRE/1825/1287G January 2018	Glyphosate (41%)	III	Herbicide for the control of annual and perennial broadleaf weeds and grasses	Bentronic Productions, Kumasi
143.	Sikosto 360 SL	FRE/1816/1270G January 2018	Glyphosate (360g/l)	III	Non-selective herbicide for the control of annual, perennial grasses and broadleaf weeds	Kurama Company Limited, Accra
144.	Sinosate 41 SL	FRE/1825/1291G January 2018	Glyphosate (41%)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses	Natosh Enterprise, Kumasi
145.	Special 30 WP	FRE/17202/1206G October 2017	Diuron (560g/kg) + Bromacil (240g/kg)	II	Herbicide for control of weeds in pineapple	Macrofertil Gh. Ltd., Tema
146.	Squad	FRE/1906/1450G February 2019	Pendimethalin (300g/l) + Clomazone (150g/l)	II	Herbicide for the control of grasses and broadleaf weeds in rice	Calli Ghana Co. Ltd., Accra
147.	Starm Plus 36EC	FRE/1902/1520G October 2019	Propanil (36%)	III	Herbicide for the control of grasses in cotton and rice	Agrimat Ltd., Madina
148.	Stellar Star	FRE/19206/1522G October 2019	Topramezone (50g/l) + Dicamba (160g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize	Josann Agro Consult (J.A.C) Ltd., Accra
149.	Stomp 445 CS	FRE/18206/1267G January 2018	Pendimethalin (445g/l)	II	Herbicide for the control of broadleaf weeds and grasses in maize, cotton and tomatoes	Josann Agro Consult (J.A.C) Ltd., Accra
150.	Sun Agogo 33EC	FRE/1957/1561G October 2019	Pendimethalin (33%)	III	Herbicide for the control of grasses and broadleaf weeds in cereals and vegetables	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra.
151.	Sun-Anico OF	FRE/1957/1551R October 2019	Atrazine (20%) + Nicosulfuron (3%)	III	Herbicide for the control of broadleaf weeds and grasses in maize	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
152.	Sun 2,4-D Amine 72SL	FRE/2057/1578G January 2020	2, 4-D Amine (720g/l)	II	Herbicide for the control of broadleaf weeds, grasses and sedges in cereals and sugarcane	Wynca Sunshine Agric Products & Trading Co. Ltd., Accra
153.	Sun 2,4-D PRO 560 EC	FRE/1757/1222G October 2017	2, 4-D Amine (360g/l) + Propanil (200g/l)	II	Herbicide for the control of broadleaf weeds and grasses	Wynca Sunshine Agric Products & Trading Co., Ltd., Accra
154.	Sun- Bromacil 80WP	FRE/1857/1359G July 2018	Bromacil (800g/kg)	III	Herbicide for the control of broadleaf weeds and grasses in pineapples	Wynca Sunshine Agric Products & Trading Co., Limited, Accra

EPA-PROVISIONAL

155.	Sunbuzin 70WP	FRE/1957/1566G October 2019	Metribuzin (700g/kg)	III	Herbicide for the control of broadleaf weeds in soybean	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra.
156.	Sun- Diuron 80WP	FRE/1857/1360G July 2018	Diuron (800g/kg)	III	Herbicide for the control of weeds in pineapples, mangoes and cashew	Wynca Sunshine Agric Products & Trading Co., Limited, Accra
157.	Sunfuron 40OD	FRE/1957/1565G October 2019	Nicosulfuron (40g/l)	III	Herbicide for the control of broadleaf weeds in maize	Wynca Sunshine Agric Prdts & Trading Co. Ltd, Accra
158.	Sunfuron 75WDG	FRE/1757/1224G October 2017	Nicosulfuron (750g/kg)	III	Herbicide for the control of broadleaf weeds in cereals and vegetables	Wynca Sunshine Agric Products & Trading Co., Ltd., Accra
159.	Sunfuron 80WP	FRE/1757/1223G October 2017	Nicosulfuron (800g/kg)	III	Herbicide for the control of broadleaf weeds in cereals and vegetables	Wynca Sunshine Agric Products & Trading Co., Ltd., Accra
160.	Sun-Gallop	FRE/1957/1564G October 2019	Haloxyfop-P-methyl (108g/l)	III	Pre-emergence herbicide for the control of annual broadleaf weeds in cereals and beans	Wynca Sunshine Agric Prdts & Trading Co. Ltd, Accra
161.	Farmsate 360SL	FRE/1957/1562G October 2019	Glyphosate (360g/l)	III	Herbicide for the control of annual, perennial grasses in onion, garlic, tulips and cotton	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra.
162.	Sunphosate 360 SL	FRE/1757/1220G October 2017	Glyphosate (360g/l)	III	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	Wynca Sunshine Agric Products & Trading Co., Ltd., Accra
163.	Sunphosate 757 G	FRE/1757/1221G October 2017	Glyphosate (757g/kg)	III	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	Wynca Sunshine Agric Products & Trading Co., Ltd., Accra
164.	Sunphosate Plus	FRE/1957/1560G October 2019	Glyphosate (30%) + MCPA (6%)	III	Herbicide for the control of broadleaf weeds and grasses in rubber and citrus plantations	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
165.	Sunphosate Ultra SL	FRE/1957/1563G October 2019	Glufosinate Ammonium (200g/l)	III	Non-selective systemic herbicide for the control of weeds in rubber and citrus plantations	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra.
166.	Target 240 SL	FRE/1899/1312G April 2018	Imazethapyr (240g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in soybean and cowpea	Rainbow AgroSciences Co. Ltd., Tema
167.	Topstar 400SC	FRE/19183/1567G October 2019	Oxadiargyl (400g/l)	III	Pre-emergent herbicide for the control of annual, perennial grasses and broadleaf weeds in rice	Bayer West-Central Africa S.A, Accra

EPA PROVISIONAL

168.	Vezir 240 SL	FRE/20100/1618G May 2020	Imazethapyr (240g/l)	III	Herbicide for the control of annual and perennial broadleaf weeds in cereals and vegetables	Adama West Africa Ltd., Accra
169.	Voila EC	FRE/18202/1379G August 2018	Pretilachlor (225g/l) + Pyribenzoxim (15g/l)	III	Herbicide for the control of grasses and broadleaf weeds and sedges in rice	Macrofertil Gh. Ltd., Tema
170.	Weedcot SL	FRE/1758/1257G November 2017	2, 4-D Amine (720g/l)	II	Selective herbicide for the control of broadleaf weeds in cereals	Afcott Ghana Ltd., Accra
171.	Weed Magic 41 SL	FRE/1825/1295G January 2018	Glyphosate (41%)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Bentronic Productions, Kumasi
172.	Weed Out SL	FRE/1825/1286G January 2018	Glyphosate (410g/l)	III	Herbicide for the control of annual and perennial broadleaf weeds and grasses	Bentronic Productions, Kumasi
173.	Weed Up	FRE/1822/1415G November 2018	Glyphosate (41%)	III	Herbicide for the control of annual and perennial grasses and broadleaved weeds	Annoh and Sons Agro-chem, Accra
174.	Weed Well SL	FRE/1843/1343G July 2018	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Kumark Company Limited, Kumasi
175.	Wiper 720 SL	FRE/20100/1625G May 2020	2, 4-D Amine Salt (720g/l)	II	Herbicide for the control of broadleaf weeds in maize, rice and sugarcane	Adama West Africa Ltd., Accra
176.	Wynsate	FRE/1857/1318G April 2018	Glyphosate (360g/l)	III	Herbicide for the control of grasses and broadleaf weeds and grasses	Wynca Sunshine Agric Products & Trading, Accra
177.	XTRA-D	FRE/19108/1533G October 2019	2, 4-D Amine (720g/l)	II	Herbicide for the control of broadleaf weeds in cereals and tree crops	WAAF Agro Ltd., Techiman
178.	Zoomer 390 SC	FRE/18100/1395G August 2018	Glyphosate (360g/l) + Oxyfluorfen (300g/l)	III	Herbicide for the control of annual and perennial broadleaf weeds and grasses	Adama West Africa Ltd., Accra

EPA-PROVISIONAL

(A) Fully Registered Pesticides (FRE)
(A4) Plant Growth Regulators

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Callel 480 SL	FRE/1706/1247G November 2017	Ethephon (280g/l)	III	Plant Growth Regulator for degreening of pineapple	Calli Ghana Co. Ltd., Accra
2.	Callel 5% PA	FRE/1906/1442G February 2019	Ethephon (5%)	III	Plant Growth Regulator for degreening of pineapple	Calli Ghana Co. Ltd., Accra
3.	Chemophon 480 SL	FRE/1805/1386G August 2018	Ethephon (480g/l)	III	Plant growth regulator for degreening of pineapples	Chemico Limited, Tema
4.	Ethemax 480 SL	FRE/1799/1225G October 2017	Ethephon (480g/l)	III	Plant Growth Regulator for degreening of vegetables	Rainbow AgroSciences Co. Ltd., Tema
5.	Flower Up 40SL	FRE/1857/1396G August 2018	Ethephon (40%)	III	For the acceleration of maturation in tomatoes and banana	Wynca Sunshine Agric Products & Trading Co. Ltd., Accra
6.	Hevetex	FRE/19202/1466G March 2019	Ethephon (5%)	III	Ethylene generator for stimulation of latex production	Macrofertil Ghana Ltd., Tema
7.	Mat 480 SL	FRE/17202/1194G October 2017	Ethephon (480g/l)	III	Plant growth regulator for de-greening of pineapples	Macrofertil Gh. Ltd., Tema
8.	RyzUp 40 SG	FRE/1780/1252G November 2017	Gibberellic acid 1.279 billion ITU/l	U	Plant growth regulator for banana	Challux Ltd., Accra

EPA-PROVISIONAL

(A) Fully Registered Pesticides (FRE)
(A5) Molluscicide

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor

(A) Fully Registered Pesticides (FRE)
(A6) Nematicides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Carbodan 3G	FRE/1843/1347G July 2018	Carbofuran (3%)	II	Nematicide/ Insecticide for the control of nematodes in vegetables	Kumark Company Limited, Kumasi
2.	Velum Prime 400 SC	FRE/19185/1470G March 2019	Fluopyram (400g/l)	III	Nematicide for the control of nematodes in pepper, tomatoes and okro	Bayer West-Central Africa S.A, Accra/ Miqdadi Co. Ltd., Accra

(A) Fully Registered Pesticides (FRE)
(A7) Adjuvants

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Break-thru S240	FRE/17157/1213G October 2017	Polyether-polymethylsiloxane-copolymer (1000g/l)	U	Surfactant to improve the spreading, wetting and penetration of water-based pesticide formulations on leaves of vegetables, fruits and arable crops	Evonik West Africa, Accra
2.	EOS	FRE/20100/1621G May 2020	White summer spray oil (800g/l)	U	Adjuvant for the control against purple scale, wax scale, powdery mildew and sooty mould in citrus and for public health use	Adama West Africa Ltd., Accra

EPA-PROVISIONAL

(A) Fully Registered Pesticides (FRE)
(A8) Biocides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Nalco 303MC	FRE/20200/1591G January 2020	1-(2-hydroxyethyl)-2-alkyl (C-18)-2-imidazoline	U	Diesel biocide	Nalco Champion, Gh., Ltd, Accra
2.	PermaClean PC-11	FRE/20200/1593G January 2020	2,2 Dibromo-3-nitrilopropionamide	U	Control bacteria fouling of ultrafiltration units, non potable reverse osmosis membranes and peripheral systems	Nalco Champion, Gh., Ltd, Accra
3.	PermaClean PC-56	FRE/20200/1592G January 2020	5-Chloro-2-methyl-4-isothiazoline-3-one + 2-Methyl-4-isothiazoline-3-one	U	For controlling bacteria fouling of ultrafiltration units, non potable reverse osmosis membranes and peripheral systems	Nalco Champion, Gh., Ltd, Accra
4.	Promex CHS-3	FRE/1920/1491G June 2019	Dihydroxy-2, 5-dioxahexane 20% + 5- chloro-2-methyl-4-isothiazolin-3-one (1%)	II	For controlling bacteria and fungi in aqueous solution	BBC Industrials Company Ltd., Accra
5.	Promex DB-20	FRE/1920/1492G June 2019	2, 2-Dibromo-3-nitrilopropionamide (20%)	II	For controlling bacteria and fungi in aqueous solution	BBC Industrials Company Ltd., Accra

EPA-PROVISIONAL

(B) Provisionally Cleared Pesticides (PCL)

(B1) Insecticides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Abafos Super	PCL/20249/1614G May 2020	Abamectin (5g/l) + Chlorpyrifos (495g/l)	II	Insecticide for the control of cotton bollworm, rice stem borer, leaf roller and leaf miner in cotton, rice and vegetables	Karida Agro Trading Co. Ltd., Kumasi
2.	Acati Power SL	PCL/19228/1455G October 2019	Thiamethoxam (200g/l)	II	Insecticide for the control of mirids in cocoa	Alive Industries, Accra
3.	Actaladiz 240SC	PCL/2008/1541G January 2020	Thiamethoxam (200g/l)	II	Insecticide for the control of mirids in cocoa	Dizengoff Ghana Ltd., Accra
4.	Agoo	PCL/20190/1740G July 2020	Bt (55%) + Monosultap (45%)	III	Insecticide for the control of diamondback moth and fall armyworm in maize and cabbage	Matrix Innovation, Accra
5.	Agro Clean	PCL/20269/1731G June 2020	Alkyl Polyglucoside (370g/l)	III	Insecticide for the control of fall armyworm, caterpillar and sucking insect pests in maize and sweet pepper	Countryman Premium Co. Ltd., Kumasi
6.	Agropy 5 EW	PCL/20197/1616G March 2020	Pyrethrum (50g/l)	II	Insecticide for the control of mirids in cocoa	Yayra Glover Ltd., Suhum
7.	Akate Aduro 27 EC	PCL/2008/1549G January 2020	Bifenthrin (27g/l)	II	Insecticide for the control of capsid bugs in cocoa	Dizengoff Ghana Ltd., Accra
8.	Akate Asa	PCL/19196/1459G October 2019	Bifenthrin (3%)	II	Insecticide for the control of mirids in cocoa	Pear River Co. Ltd., Accra
9.	Akate Blowman	PCL/20244/1727G June 2020	Thiamethoxam (250g/l)	II	Insecticide for the control of mirids in cocoa	Faskay Co. Ltd., Accra
10.	Akate Brafo 40 EC	PCL/2006/1510G January, 2020	Acetamiprid (20g/l) + Bifenthrin (20g/l)	II	Insecticide for the control of mirids in cocoa	Calli Ghana Company Limited, Accra
11.	Akate Hene	PCL/20254/1726G June 2020	Bifenthrin (30g/l) + Acetamiprid (15g/l)	II	Insecticide for the control of mirids in cocoa	Rhema Agro-Chemicals Limited, Accra
12.	Akate Kaptain	PCL/20207/1617G March 2020	Etofenprox (300g/l)	II	Insecticide for the control of mirids on cocoa	Soiless Limited, Accra
13.	Akate Star 3.5EC	PCL/19232/1454G October 2019	Bifenthrin (35g/l)	II	Insecticide for the control of mirirds in cocoa	Alu Africa Ltd., Accra
14.	Akatiwura	PCL/20242/1646G July 2020	Thiamethoxam (240g/l)	II	Insecticide for the control of mirirds in cocoa	Syntapak Company Limited, Kumasi

EPA PROVISIONAL

15.	AF Confidence	PCL/20245/1604G March 2020	Bifenthrin (15g/l)	II	Insecticide for the control of mirids on cocoa	New Okaff Industries Ltd., Kumasi
16.	Atea Power	PCL/20213/1628G March 2020	Bifenthrin (25g/l)	II	Insecticide for the control of tea mosquito bug and nut borer in cashew	Crop Doctor, Kumasi
17.	Away	PCL/20149/1633G May 2020	Emamectin-benzoate (1.9%)	II	Insecticide for the control thrips, aphids, whiteflies and caterpillar in leafy vegetables, mango, citrus, pawpaw and tomato	Bon Agro Co. Ltd., Kumasi
18.	Ba-Pyrifos 48%EC	PCL/2081/1535G January 2020	Chlorpyrifos (480g/l)	II	Insecticide for the control of coleoptera, diptera, homoptera and lepidoptera in rice and vegetables	B. Kaakyire Agrochemicals, Kumasi
19.	Best Ematin	PCL/20265/1638G May 2020	Emamectin-benzoate (3g/l)	II	Insecticide for the control of insect pests in vegetables, cowpea, groundnut, maize and rice	YMDY Co. Ltd., Kumasi
20.	Bif 30 ULV	PCL/19177/1458G October 2019	Bifenthrin (3.0 ± 0.3%)	II	Insecticide for the control of insect pests of cocoa	Spenshell Co, Ltd., Accra
21.	Biopest	PCL/20213/1676G May 2020	*Bacillus thuringiensis* (32000IU/mg)	III	Insecticide for the control of diamondback moth, beetles, maize borer, armyworm, tobacco budworm in cabbage and other vegetables	Crop Doctor, Kumasi
22.	Bon Optimal EC	PCL/20149/1679G May 2020	Acetamiprid (2%) + Lambda-cyhalothrin (1.5%)	II	Insecticide for the control of aphids, whiteflies and leaf miners in vegetables	Bon Agro Co. Ltd., Kumasi
23.	Bonpyrifos 48 EC	PCL/20149/1729G June 2020	Chlorpyrifos (480g/l)	II	Insecticide for the control of insect pests in vegetables	Bon Agro Co. Ltd., Kumasi
24.	Centrole 20SG	PCL/2099/1540G January 2020	Dinotefuran (200g/kg)	II	Insecticide for the control of brown planthopper and rice planthopper in rice	Rainbow AgroSciences Co. Ltd., Tema
25.	Chemaprid Super 60EC	PCL/1905/1470G November 2019	Acetamiprid (30g/l) + Lambda-cyhalothrin (30g/l)	II	Insecticide for the control of insect pests in vegetables	Chemico Limited, Tema
26.	Chemomectin 50SG	PCL/1905/1471G November 2019	Emamectin-benzoate (50g/kg)	II	Insecticide for the control of Fall armyworm in maize	Chemico Limited, Tema
27.	Cisthrin	PCL/1999/1479G November 2019	Deltamethrin (12.5g/l)	II	Insecticide for the control of borers, aphids, bollworm, cutworm, mango weevil and strainers in maize, cassava, yam, sorghum, groundnuts and vegetables	Rainbow AgroSciences Co. Ltd., Tema
28.	Crownpyrifos 48EC	PCL/19229/1495G January 2020	Chlorpyrifos (480g/l)	II	Insecticide for the control of leaf	Agro Crown West Africa

EPA PROVISIONAL

					miners, thrips, caterpillars, beetles, flies, bugs and moth in vegetables	Co. Ltd., Kumasi
29.	Diz-Lambda 2.5EC	PCL/2008/1546G January 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Dizengoff Ghana Ltd., Accra
30.	Diz-Pyrifos 480 EC	PCL/2008/1545G January 2020	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in vegetables	Dizengoff Ghana Ltd., Accra
31.	DimeCrown 400 EC	PCL/19229/1496G January 2020	Dimethoate (400g/l)	II	Insecticide for the control of insect pests in vegetables'	Agro Crown West Africa Co. Ltd., Kumasi
32.	Double Cide	PCL/20249/1607G May 2020	Chlorpyrifos (300g/l) + Cypermethrin (25g/l)	II	Insecticide for the control of leaf roller, stem borer, thrips and aphids in rice, maize and vegetables	Karida Agro Trading Co. Ltd., Kumasi
33.	Dresscare DS	PCL/20145/1702G May 2020	Imidacloprid (20%) + Metalaxyl-M (20%) + Tebuconazole (2%)	II	Insecticide/fungicide for seed treatment	Jubaili Agrotec Ltd., Kumasi
34.	Eagrowclaw	PCL/20264/1659G May 2020	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of aphids and other insect pests in okro and other vegetables	Kesai Eagrow Ghana Co. Ltd., Comm. 11, Tema
35.	EmaCare	PCL/1945/1439G October 2019	Emamectin-benzoate (1.92%)	II	Insecticide for the control of Fall Armyworm in maize	Jubaili Agrotec Limited, Kumasi
36.	Ex-icute	PCL/20262/1502G January 2020	Clove oil (6%) + Sesame oil (5%) + Rosemary oil (3%)		Insecticide for the control of Fall Army worm in maize	Nanam Ventures, Tema
37.	Furabak 3%G	PCL/2081/1528R January 2020	Carbofuran (3%)	II	Insecticide/ nematicide for the control of cane beetles, aphids, rice stem borers and nematodes	B. Kaakyire Agrochemicals, Kumasi
38.	Grosudine Super 50SC	PCL/20242/1647G May 2020	Imidacloprid (30g/l) + Bifenthrin (20g/l)	II	Insecticide for the control of aphids, thrips, bollworms, grasshoppers and diamondback moth in vegetables	Syntapak Co. Ltd., Kumasi
39.	Imicare SL	PCL/20145/1704G May 2020	Imidacloprid (200g/l)	II	Insecticide for the control of plant hoppers, aphids and whiteflies in rice and tomato	Jubaili Agrotec Ltd., Kumasi
40.	Imunit	PCL/20206/1520G January 2020	Alpha-cypermethrin (75g/l) +Teflubenzuron (75g/l)	II	Insecticide for the control of Fall Armyworm in maize	Josann Agro Consult Ltd., Accra
41.	J-Furan 3G	PCL/20145/1707R May 2020	Carbofuran (3%)	II	Insecticide for the control of sugarcane shoot borer in sugarcane	Jubaili Agrotec Ltd., Kumasi
42.	Kabatex 400 EC	PCL/2099/1722G June 2020	Dimethoate (400g/l)	II	Insecticide for the control of insect pests	Rainbow AgroSciences

EPA PROVISIONAL

					in fruits and vegetables	Co. Ltd., Tema
43.	Kilambda 25 EC	PCL/20249/1746G July 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of diamondback moth, cabbage, bollworm and leaf miner in cabbage	Karida Agro Trading Co. Ltd., Kumasi
44.	Kinglambda	PCL/20258/1696G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables, rice, maize, cotton, groundnut and cowpea	Agrohao Ghana Co. Ltd., Kumasi
45.	Kingpyrifos	PCL/20258/1698G May 2020	Chlorpyrifos (480g/l)	II	Insecticide for the control of insect pests in vegetables and wood treatment	Agrohao Ghana Co. Ltd., Kumasi
46.	Kingtak	PCL/20258/1699G May 2020	Emamectin-benzoate (1.9g/l)	II	Insecticide for the control of aphids, worms and borers in tomato, maize and cabbage	Agrohao Ghana Co. Ltd., Kumasi
47.	Konmidor 200 SL	PCL/20249/1757G August 2020	Imidacloprid (200g/l)	II	Insecticide for the control of insect pests in cereals and vegetables	Karida Agro Trading Co. Ltd., Kumasi
48.	Knock Out	PCL/20149/1634G May 2020	Bifenthrin (30g/l) + Acetamiprid (16g/l)	II	Insecticide for the control of insect pests in vegetables, mango, eggplant and citrus	Bon Agro Co. Ltd., Kumasi
49.	Lambda Nek	PCL/20265/1636G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of diamondback moth and bollworm in vegetables	YMDY Co. Ltd., Kumasi
50.	Lamdoc 25 EC	PCL/20213/1677G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in fruits and vegetables	Crop Doctor, Kumasi
51.	Laracare	PCL/20145/1703G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of leaf miners, aphids and bollworm in citrus and cotton	Jubaili Agrotec Ltd., Kumasi
52.	Leopard 20 SL	PCL/19137/1473G November 2019	Imidacloprid (200g/l)	II	Insecticide for the control of mango hopper, aphids, leafminers, jassids in mango, okra and groundnut	Miqdadi Co. Ltd., Accra
53.	Macho 43.6 EC	PCL/20213/1675G May 2020	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for the control of aphids, jassids, mealybugs, thrips, whiteflies, mites and fruitflies in in tomato and okra	Crop Doctor, Kumasi
54.	Magicforce Gold	PCL/19145/1438G October 2019	Lambda-cyhalothrin (15g/l) + Acetamiprid (20g/l)	II	Insecticide for the control of beet army worm, aphids, stem borers, beetles, leafhoppers, bollworm, leaf miner,	Jubaili Agrotec Ltd., Kumasi

EPA-PROVISIONAL

					diamond back moth in cabbage, cucumber, okra, pepper, maize, sorghum, rice, legumes, mango and citrus	
55.	Mitecare EC	PCL/20145/1705G May 2020	Acetamiprid (15g/l) + Abamectin (3g/l)	II	Insecticide for the control of insect pests and mites in cotton, citrus, vegetables, legumes and cereals	Jubaili Agrotec Ltd., Kumasi
56.	Nova BTK	PCL/1905/1464G October 2019	*Bacillus thuriengensis* (32000iu/mg)	III	Insecticide for the control of fall armyworm in maize	Chemico Ltd., Tema
57.	Omniprid	PCL/20239/1719G May 2020	Lambda-cyhalothrin (15g/l) + Acetamiprid (20g/l)	II	Insecticide for the control of aphids in cabbage and cotton	OmniFert Ltd., Labone-Accra
58.	Organic Farming Aid (OFA)	PCL/20266/1639G May 2020	Acetic acid (2.3%)	III	Insecticide/fungicide for the control of Fall armyworm, other insect pests and *Phytophthora* rot in maize, vegetables, fruits and tree crops	HJA Africa Ltd., Accra
59.	Organic JMS Stylet Oil	PCL/2008/1547G January 2020	White Mineral Oil	U	Insecticide/ fungicide for the control of aphids, mites, thrips, powdery mildew, botrytis and rust in vegetables and fruits	Dizengoff Ghana Ltd., Accra
60.	Orizon 120 SC	PCL/2008/1544G January 2020	Acetamiprid (100g/l) + Abamectin (20g/l)	II	Insecticide for the control of insect pests and soil nematodes in vegetables and citrus	Dizengoff Ghana Ltd., Accra
61.	Ozoneem 1EC	PCL/19216/1460G October 2019	Azadirachtin (1%)	II	Insecticide for the control of fall armyworm, diamondback moth in maize, okra and cabbage	Karsam Macro Ltd., Kumasi
62.	Pilatara 240 SC	PCL/20165/1650G May 2020	Thiamethoxam (240g/l)	II	Insecticide for the control of insect pests in sweet potatoes and cotton	Syntapak Co. Ltd., Kumasi
63.	Protocol EC	PCL/20121/1690G May 2020	Acetamiprid (15g/l) + Lambda-cyhalothrin (20g/l)	II	Insecticide for the control of insect pests in rice, maize, cotton, beans and leafy vegetables	Altimate Agrochemicals Co. Ltd., Somanya
64.	Pyrethrum 5EW	PCL/19257/1469G November 2019	Pyrethrum (50g/l)	II	Insecticide for the control of chewing and sucking insect pests in outdoor and protected crops	Nkye Kya Ltd., Accra
65.	Redox Super SL	PCL/20242/1649G May 2020	Imidacloprid (200g/l)	II	Insecticide for the control of aphids, whiteflies and mealybugs in vegetables	Syntapak Co. Ltd., Kumasi

EPA-PROVISIONAL

66.	Reeva	PCL/20137/1645G May 2020	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of bollworms, jassids, thrips, stem borers and gall midge in cotton and rice	Miqdadi Gh. Ltd., Accra
67.	Rocket 20EC	PCL/20145/1600G March 2020	Chlorpyrifos-ethyl (20%)	II	Insecticide for the control of insect pest in cotton, citrus and vegetables	Jubaili Agrotec Ltd., Kumasi
68.	Rockot Extra 75 WG	PCL/1999/1482G November 2019	Thiamethoxam (750g/kg)	III	Insecticide for the control of insect pests in rice, cotton, vegetables and sugarcane	Rainbow AgroSciences Co. Ltd., Tema
69.	Seed Care	PCL/20145/1553G March 2020	Imidacloprid (10%) + Thiram (10%)	II	Insecticide/fungicide for rice plant hopper and rice blast in rice	Jubaili Agrotec Ltd., Kumasi
70.	Seizer EC	PCL/20100/1620G March 2020	Bifenthrin (100g/l)	II	Insecticide for the control of mirids in cocoa	Adama West Africa Ltd., Accra
71.	Spur 19.6 EC	PCL/20249/1749G July 2020	Emamectin-benzoate (19.6g/l)	II	Insecticide for the control of caterpillars and aphids in tomato, garden eggs and onion	Karida Agro Trading Co. Ltd., Kumasi
72.	Spur Powder	PCL/20249/1609G May 2020	Emamectin-benzoate (5%)	II	Insecticide for the control of bollworm, rice stem borer and plant hopper in cabbage, rice and maize	Karida Agro Trading Co. Ltd., Kumasi
73.	Steng Super 315 EC	PCL/20242/1648G May 2020	Dimethoate (300g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of aphids, bollworms and diamondback moth in vegetables and cereals	Syntapak Co. Ltd., Kumasi
74.	Stink EC	PCL/2081/1529G January 2020	Dimethoate (30%) + Lambda-cyhalothrin (1.5%)	II	Insecticide for the control of aphids, leafhoppers, borers and weevils in vegetables, cotton and sweet potato	B. Kaakyire Agrochemicals, Kumasi
75.	Strike 1.9EC	PCL/2081/1532G January 2020	Emamectin-benzoate (19.2g/l)	II	Insecticide for the control of leaf-eating beetle, spiny bollworm and pink bollworm in okro	B. Kaakyire Agrochemicals, Kumasi
76.	Striker Super 70 EC	PCL/2081/1533G January 2020	Acetamiprid (50g/l) + Emamectin-benzoate (20g/l)	II	Insecticide for the control of Fall Armyworm in maize	B. Kaakyire Agrochemicals, Kumasi
77.	Sultan 400SL	PCL/2099/1539G January 2020	Bisultap (400g/l)	II	Insecticide for the control of armyworm and stem borers in maize and rice	Rainbow AgroSciences Co. Ltd., Tema
78.	Supertop EC	PCL/2043/1525G January 2020	Acetamiprid (20g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of insect pests in tomato	Kumark Co. Ltd., Kumasi
79.	Sunpri-Lam 25EC	PCL/1957/1449G October 2019	Cypermethrin (2.5%) + Chlorpyrifos (22.5%)	II	Insecticide for the control of aphids, jassids, thrips, whiteflies, bollworms and cutworm in	Wynca Sunshine Agric. Products &

EPA-PROVISIONAL

					eggplant, cotton, tomatoes and lettuce	Trading Co. Ltd., Accra
80.	Sun-Prida	PCL/1957/1452G October 2019	Imidacloprid (200g/l)	II	Insecticide for the control of aphids in cowpea and tomato	Wynca Sunshine Agric. Prod & Trading Co. Ltd., Accra
81.	Termifos 48 EC	PCL/20249/1760G August 2020	Chlorpyrifos (480g/l)	II	Insecticide for the control of mealybugs, thrips, leaf miners and aphids in vegetables and for wood treatment	Karida Agro Trading Co. Ltd., Kumasi
82.	Termichem 5SC	PCL/2005/1694G May 2020	Fipronil (50g/l)	II	Insecticide for the control of termites on wood	Chemico Limited, Tema
83.	Termitec	PCL/20234/1709G May 2020	Imidacloprid (5%)	II	Insecticide for the control of termites in eucalyptus	Miro Forestry Ltd., Agogo
84.	Thiara 240 SC	PCL/20242/1655G May 2020	Thiamethoxam (240g/l)	II	Insecticide for the control of jassids, aphids and whiteflies in cotton	Syntapak Co. Ltd., Kumasi
85.	Transform Akate	PCL/20270/1742G July 2020	Sulfoxaflor (240g/l)	U	Insecticide for the control of mirids and shield bugs in cocoa	Agri Plus Horizon Farms Ltd., Accra
86.	Trivor 310 DC	PCL/20100/1516G January 2020	Acetamiprid (186g/l) + Pyriproxyfen (124g/l)	II	Insecticide for the control of mirids in cocoa	Adam West Africa Ltd., Accra
87.	Uphold 360SC	PCL/1905/1465G October 2019	Methoxyfenozide (300g/l) + Spinetoram (60g/l)	III	Insecticide for the control of fall armyworm in maize	Chemical Limited, Tema
88.	Warrior Super 26EC	PCL/2081/1534G January 2020	Sophora flavescen plant extract (25%) + Emamectin-benzoate (1%)	III	Insecticide for the control of fall armyworm in maize	B. Kaylie Agrochemicals, Kumasi
89.	Withoate 40EC	PCL/19137/1474G November 2019	Dimethoate (400g/l)	II	Insecticide for the control of aphids, jassids and beetles in sweet potato and vegetables	Midday Co. Ltd., Accra
90.	WormAtak EC	PCL/2014/1762G August 2020	Teflubenzuron (50g/l) + Cypermethrin (20g/l)	III	Insecticide for the control of Fall Armyworm (FAW) in maize	Afropop Gh. Ltd., Accra
91.	Zinda 50 EC	PCL/20249/1753G August 2020	Diazinon (50%)	II	Insecticide for the control of insect pests in cereals, groundnut and vegetables	Karda Agro Trading Co. Ltd., Kumasi
92.	Zukadoc 46 EC	PCL/20213/1738G July 2020	Indoxacarb (30g/l) + Acetamiprid (16g/l)	III	Insecticide for the control of insect pests in okro	Crop Doctor, Kumasi

EPA-PROVISIONAL

(B) Provisionally Cleared Pesticides (PCL)

(B1a) Insecticides for Public Health Purposes

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Agrifog Maxi Smoke Generator	PCL/19173/1467G November 2019	Deltamethrin (14%)	III	Insecticide for the control of household insect pests	Agromania Co. Ltd., Accra
2.	Cytrol 104 ULV	PCL/20212/1618G March 2020	Cypermethrin (10%w/v)	II	Insecticide for the control of mosquito larvae	Divine Business Ventures, Accra
3.	Dulux Mosquito Protect	PCL/19115/1456G October 2019	Deltamethrin (0.1w/w)	II	Insecticide for the control of mosquitoes and other public health purposes	M & K Co., Ltd., Accra
4.	Flower Fresh Perfumed Moth Repellent	PCL/20246/1741R July 2020	Paradichlorobenzene (99%)	III	Insecticide for the control of cloth moth, their larvae and eggs	Sojy CChem Ghana Ltd., Accra
5.	Fludora Fusion	PCL/20183/1732G July 2020	Clothianidin (500g/kg) + Deltamethrin (62.5g/kg)	II	Insecticide for indoor residual spraying against mosquitoes	Bayer West-Central Africa S.A, Accra
6.	HHL Technology Vital Protection	PCL/20268/1716R June 2020	Permethrin (6%)	II	Insecticidal treatment against biting, flying and crawling insect pests in textiles/fabrics	Myma Logistics Ltd., Airport City, Accra
7.	Out Mosquito Coil	PCL/20231/1663G May 2020	Dimefluthrin (0.033%)	II	Mosquito coil for the control of mosquitoes	Suncity Ltd., Accra
8.	Out Insecticide Spray	PCL/20231/1663G May 2020	Dimefluthrin (0.55%) + Cyphenothrin (0.45%) + Beta-cypermethrin (0.55%) + Tetramethrin (0.45%)	II	Insecticide spray for the control of flying and crawling insects	Suncity Ltd., Accra
9.	Pesticine	PCL/20236/1658G May 2020	Beta-cyfluthrin (25g/l)	II	Insecticide for public health purposes for the control of household insect pests	Treatol Ghana Limited, Accra
10.	SumiShield 50WG	PCL/20209/1606G March 2020	Clothianidin (500g/kg)	III	Insecticide for public health purposes for the control of anopheles mosquitoes	Worldwide Healthcare Ltd., Accra

EPA-PROVISIONAL

(B) Provisionally Cleared Pesticides (PCL)

(B1b) Insecticides for stored produce

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Enviroguard 3% ULV	PCL/2010/1666G May 2020	Bifenthrin (30g/l)	II	Insecticide for the control of storage insect pests of cocoa	Reiss & Co. (Ghana) Ltd., Accra

EPA-PROVISIONAL

(B) Provisionally Cleared Pesticides (PCL)

(B2) Fungicides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	AgroSar 70WP	PCL/19179/1453G October 2019	Copper Hydroxide (70%)	III	Fungicide for the control of blackpod disease in cocoa	Moor Co. Ltd., Accra
2.	Arrest 325 SC	PCL/19189/1468G November 2019	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of leafspot, leaf blight, blast, black spot, rust and brown spot in cereals and vegetables	Matrix Innovation Ltd., Accra
3.	Banko D 450 SC	PCL/2006/1511G January 2020	Chlorothalonil (400g/l) + Difenoconazole (50g/l)	III	Fungicide for the control of *Alternaria sp.*, *Phytophthora* and Anthracnose in vegetables and mango	Calli Ghana Co. Ltd., Accra
4.	BBS Master WP	PCL/20263/1554G March 2020	Oxolinic Acid 20%)	III	Fungicide for the control of bacterial blackspot (BBS) disease in mango	Bomart Farms, Doboro
5.	Bonzeb	PCL/20149/1680G May 2020	Mancozeb (800g/kg)	III	Fungicide for the control of early blight in tomato	Bon Agro Co. Ltd., Kumasi
6.	Bon Victory WP	PCL/20149/1728G June 2020	Mancozeb (640g/kg) + Metalaxyl (80g/kg)	III	Fungicide for the control of diseases in vegetables	Bon Agro Co. Ltd., Kumasi
7.	Comet Plus 475EC	PCL/20206/1522G January 2020	Fenpropimorph (375g/l) + Pyraclostrobin (100g/l)		Fungicide for the control of black and yellow sigatoka in banana	Josann Agro Consult Ltd., Accra
8.	Fomestop IGR	PCL/19256/1457G October 2019	Triadimenol (1%)	II	Fungicide for the control of white rot in rubber plants	Ghana Rubber Estates Ltd., Takoradi
9.	Forum R	PCL/20206/1631G May 2020	Copper oxychloride (67.2%w/w) + Dimethomorph (6.0%w/w)	II	Fungicide for the control of *Phytophthora palmivora*, *Phytophthora megakarya* in cocoa	Josann Agro Consult (J.AC.) Ltd., Accra
10.	Frankozeb 80 WP	PCL/2039/1629G March 2020	Mancozeb (800g/kg)	III	Fungicide for the control of wide spectrum diseases including leaf blight, leaf spot, scab and rust in cereals, vegetables, ornamentals and fruit trees	Frankatson Ltd., Accra
11.	Germ Kill 50 WP	PCL/20249/1756G August 2020	Copper oxychloride (350g/kg) + Metalaxyl (150g/kg)	III	Fungicide for the control of diseases in fruits and vegetables	Karda Agro Trading Co. Ltd., Kumasi
12.	Guardian Xtra WP	PCL/1999/1478G November 2019	Carbendazim (80%)	II	Fungicide for control of *Botrytis, sclerotinia* and blue	Rainbow AgroSciences Co. Ltd., Tema

					mould in beans, onions, tomatoes and citrus	
13.	Kabendazim 50WP	PCL/2081/1530G January 2020	Carbendazim (50%)	III	Fungicide for the control of anthracnose, leaf spots and other fungal diseases in vegetables and cereals	B. Kaylie Agrochemicals, Kumasi
14.	Kingstar WG	PCL/2099/1622G March 2020	Azoxystrobin (60%) + Cyproconazole (24%)	III	Fungicide for the control of diseases in maize, rice, groundnut and vegetables	Rainbow AgroSciences Co. Ltd., Tema
15.	Mangoda 10 WG	PCL/20249/1754G August 2020	Difenoconazole (100g/kg)	II	Fungicide for the control of fungal diseases in fruits and vegetables	Karda Agro Trading Co. Ltd., Kumasi
16.	Mirage 450 EC	PCL/20100/1515G January 2020	Prochloraz (450g/l)	III	Fungicide for the control of fusarium wilt in cowpea	Adam West Africa Ltd., Accra
17.	Omnizeb 80 WP	PCL/20239/1714G May 2020	Mancozeb (800g/kg)	III	Fungicide for the control of late blight and downy mildew in sweetpotatoes and cucumber	OmniFert Ltd., Lavone-Accra
18.	Orvego	PCL/20206/1521G January 2020	Ametoctradin (300g/l) + Dimethomorph (225g/l)	II	Fungicide for the control of blackpod disease in cocoa	Josann Agro Consult Ltd., Accra
19.	Phylum	PCL/20137/1555G March 2020	Propiconazole (25g/l)	III	Fungicide for the control of brown rust, stem rust, sheath blight, leafspot and rust in rice and groundnut	Mi dadi Ltd., Spintex
20.	Proch	PCL/20249/1608G May 2020	Prochloraz (267g/l) + Tebuconazole (133g/l)	III	Fungicide for the control of rice blast, blackspot and banana freckle disease in rice, tree crops and banana	Karda Agro Trading Co. Ltd., Kumasi
21.	Rescue 76WP	PCL/2008/1550G January 2020	Propineb (70g/l) + Cymoxanil (6g/l)	II	Fungicide for the control of fungal diseases in crops	Diego Ghana Ltd., Accra
22.	Shaolin 62.5WG	PCL/1999/1480G November 2019	Cyprodinil (37.5%) + Fludioxonil (25%)	II	Fungicide for the control of fungal diseases in tomato, mango, green pepper, carrot and pawpaw	Rainbow AgroSciences Co. Ltd., Tema
23.	Scope 370 WP	PCL/20213/1737G July 2020	Mancozeb (320g/kg) + Azoxystrobin (50g/kg)	III	Fungicide for the control of leafspot in tomato	Crop Doctor, Kumasi
24.	Splendid 800 EC	PCL/2099/1721G June 2020	Spiroxamine (800g/l	U	Fungicide for the control of black sigatoka in banana	Rainbow AgroSciences Co. Ltd., Tema
25.	Sun-Azodi	PCL/1957/1450G October 2019	Azoxystrobin (250g/kg)	II	Fungicide for the control of downy mildew and white mould in tomato	Wynca Sunshine Agric Products & Trading Co. Ltd., Accra

26.	Sun-Cotala WP	PCL/1957/1445G October 2019	Copper hydroxide (770g/kg)	III	Fungicide for the control of angular leaf spot in cucumber	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
27.	Sunkopper 77WP	PCL/1957/1446G October 2019	Mancozeb (480g/kg) + Metalaxyl (100g/kg)	III	Fungicide for the control of downy mildew in cucumber	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
28.	Sun-Lonil WP	FRE/2057/1585G January 2020	Chlorothalonil (75%)	III	Fungicide for the control of downy mildew and early blight in cucumber and tomatoes	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
29.	Swift 77 WP	PCL/20213/1627G March 2020	Copper hydroxide (77%)	III	Fungicide for the control of blackpod disease in cocoa	Crop Doctor, Kumasi
30.	Top Pro	PCL/20249/1750G July 2020	Chlorothalonil (75%)	II	Fungicide for the control of early blight, downy mildew in cucumber	Karda Agro Trading Co. Ltd., Kumasi
31.	X-Glider	PCL/19137/1475G November 2019	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of anthracnose in watermelon	Midday Co. Ltd., Accra

EPA-PROVISI