



Republic of Ghana

COCOBOD & Tree Crop Development Authority

Ghana Tree Crop Diversification Project



ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

May 2023

LIST OF ACRONYMS

AER	Annual Environmental Report	GTCD	Ghana Tree Crop Diversification Authority
IA	Implementing Agencies	HIV	Human Immunodeficiency Virus
AIDS	Acquired Immunodeficiency Syndrome	IA	Individual Agent
APFOG	Apex Farmers Organization of Ghana	IPM	Integrated Pest Management
CAPEAG	Cashew Processors and Exporters Association of Ghana	ISFM	Integrated Soil Fertility Management Technologies
CBA	Cashew Buyers Association	ISO	International Organization for Standardization
CCSVD	Cocoa Swollen Shoot Virus Disease	KMA	Kwaebibirim Municipal Assembly
C-ESMP	Contractor's ESMP	LI	Legislative Instrument
CFA	Coconut Farmers Association	METASIP	Medium-Term Agricultural Sector Investment Plan
CHED	Cocoa Health and Extension Division	MGCSP	Ministry of Gender, Children & Social Protection
CIAG	Cashew Industry Association of Ghana	MoH	Ministry of Health
CLG	Crop Life Ghana	MDAs	Ministries, Departments and Agencies
CMS	Cocoa Management Systems	MLNR	Ministry of Lands and Natural Resources
CoC	Codes of Conduct	MMDAs	Metropolitan, Municipal and District Assemblies
COCOBOD	Ghana Cocoa Board	MOFA	Ministry of Food and Agriculture
CoFAG	Coconut Farmers Association of Ghana	MoGCSP	Ministry of Gender, Children and Social Protection
COPEAG	Coconut Producers and Exporters Association of Ghana	MoTI	Ministry of Trade and Industry
CRI	Crop Research Institute	NADMO	National Disaster Management Organisation
CRIG	Cocoa Research Institute of Ghana	NGO	Non-Governmental Organization
CSIR	Council for Scientific and Industrial Research	NO	Nursery Operator
CSSVD	Cocoa Swollen Shoot Virus Disease	OPRI	Oil Palm Research Institute
DCS	Directorate of Crop Services	PAP	Project Affected Person
DoA	Department of Agriculture	PCU	Project Coordination Unit
DOVVSU	Domestic Violence and Victims Support Unit	PIU	Project Implementation Unit
EA	Environmental Assessment	PDO	Programme Development Objective
EAA	Environmental Assessment and Audit	PFAG	Peasant Farmers Association of Ghana
ED	Education Directorate	PGEI	Plant Genetics Research Institute
EHSD	Environmental Health and Sanitation Department	PID	Project Information Document
E&S	Environmental and Social	PPD	Physical Planning Department
EPA	Environmental Protection Agency	PPE	Personal Protective Equipment
ESF	Environmental and Social Framework	RAP	Resettlement Action Plan
ESMF	Environmental and Social Management Framework	RPF	Resettlement Policy Framework
ESMP	Environmental and Social Management Plan	ROAA	Rubber Outgrowers and Agents Association
ESMS	Environmental and Social Management Systems	ROGA	Rubber Out Growers Association
ESS	Environmental and Social Standard	SARI	Savanna Agricultural Research Institute

FBO	Farmer Based Organisation	SEA/SH	Sexual Exploitation and Abuse and Sexual Harassment
FC	Forestry Commission	SME	Small and Medium-Scale Enterprise
FDA	Food and Drugs Authority	SWCDD	Social Welfare and Community Development Department
FONG	Farmer Organisation Network in Ghana	SWIMS	Social Welfare Information System
FORIG	Forestry Research Institute of Ghana	TA	Technical Assistance
ESSs	Environment and Social Standards	TCDA	Tree Crops Development Authority
FSD	Forest Services Division	TCDC	Tree Crops Development Centres
GBV	Gender-Based Violence	TCSC	Tree Crops Service Centres
GDP	Gross Domestic Product	WAMA	West Akim Municipal Assembly
GFAP	Ghana Federation of Agricultural Producers	WAS	Wenchi Agricultural Station
GHS	Ghana Health Service	WD	Wildlife Division
GNCOFA	Ghana National Cocoa Farmers Association	WF	Women Farmers
GNFS	Ghana National Fire Service	WMA	Wenchi Municipal Assembly
GoG	Government of Ghana	WoF	Wives of Farmers
GRC	Grievance Redress Committee	WL	Women Laborers
GRM	Grievance Redress Mechanism	WMCCFMU	Wenchi Municipal Cooperative Cashew Farmers and Marketing Union Limited
GPS	Ghana Police Service	WRC	Water Resources Commission
GS	Ghana Standard	VCs	Value Chains

EXECUTIVE SUMMARY

Background

The Government of Ghana (GoG) intends to diversify and expand the economy by modernising agriculture, accelerating industrialisation, and prioritising climate resilience and mitigation. This will be done in line with the Investment for Food and Jobs (Medium-Term Development Plan, 2018–2021) and the ‘Ghana Beyond Aid’ reform agenda by implementing the Ghana Tree Crop Diversification Project (GTCDP) through the Tree Crops Development Authority (TCDA) and Ghana Cocoa Board (COCOBOD), collaborating with the World Bank.

The GTCDP, among others, will support the existing capacity of COCOBOD and strengthen the nascent organisational capacity of TCDA. It will provide optimal enabling environments through the legalisation and operationalisation of tree crop regulations and agribusiness policies. It will also support and enable local farmers, traders, and processors to generate jobs and profits from the production of the four selected tree crops, i.e., cocoa, cashew, rubber and coconut.

This ESMF seeks to establish a process of environmental and social screening which will guide COCOBOD and TCDA – the implementing agencies – to identify, assess and mitigate the environmental and social impacts and risks of the proposed interventions. The ESMF also determines the institutional arrangements and coordination to be followed during project implementation, including those relating to capacity building to enhance the implementation of this ESMF.

Project Justification

Agriculture constitutes 19.7% of Ghana's Gross Domestic Product (GDP), 30% of export earnings, and a significant source of inputs for manufacturing. In 2020 and 2021, the sector grew by 7.3% and 8.4%, respectively. The tree crop industry in Ghana contributes to the country's agricultural exports and economic growth but has great potential for economic diversification and job creation. The challenges in the sector, however, include low productivity, product quality, processing and value-added capacity, weak supply chains and value chain governance, poor infrastructure, weak system for tracking products, and a dearth of financial services for value chain actors.

Project Description

The GTCDP Development Objective (PDO) is to improve productivity, add value, social and climate resilience for the four selected tree crops among project beneficiaries concentrated in eleven (11) selected districts within five (5) regions, which already have substantial cocoa, cashew, rubber, and coconut coverage. The PDO will be achieved through the following four components:

- Component 1: Institutional Strengthening and Value Chain Governance.
- Component 2: Improving Tree Crops Productivity and Climate Resilience.
- Component 3: Support for Post-Harvest Management, Value Addition and Market Access.
- Component 4: Project Coordination, Management, Monitoring and Evaluation.

The specific project activities with E&S concerns under the various components are provided below.

Component 1:

- Installation of value chains digitisation equipment for traceability of:
 - Value chain actors in cashew, coconut, and rubber; and
 - Financing logistics for operationalisation of COCOBOD's associated agencies (computers, tablets, basic connectivity and vehicles), etc.
- Establishment of integrated area-based child labour prevention and response system

Component 2:

- Establishing and refurbishing laboratory structures and installations, etc. and their operation for the development of resistant plant varieties by identified research institutions;
- Rehabilitation of CSSVD-affected farms (about 25,000 ha), applying new research techniques of cutting, spraying, etc., with compensation to participating farmers
- Establishment of Tree Crops Development Centres (TCDCs) as commercial nurseries for cashew, coconut and rubber plant varieties.
- Establishment of Tree Crops Service Centres (TCSCs)-certified agricultural input distribution channels for farmers.

Component 3:

- Support to SMEs with technical assistance and finance to establish enterprises that will enhance post-harvest management, quality processing and value addition of cocoa, cashew and coconut.

Component 4:

- Establishment of PCU at TCDA for coordination, management, and project M&E and development of E&S capacity building plan for effective implementation of the ESMF
- Establishment of PIU at COCOBOD for coordination, management, and project M&E and development of E&S capacity building plan for effective implementation of the ESMF.

Policy, Legal, Regulatory and Institutional Framework

The GTCDP is prepared under the World Bank Environmental and Social Framework (ESF) which requires the Borrower to prepare an ESMF in conformance with the requirements of the ESF, specifically the ESS1. The eight (8) ESSs assessed to be relevant to GTCDP comprise:

- ESS1: Assessment and Management of Environmental and Social Risks and Impacts;
- ESS2: Labour and Working Conditions;
- ESS3: Resource Efficiency and Pollution Prevention and Management;
- ESS4: Community Health and Safety;
- ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- ESS8: Cultural Heritage; and
- ESS10: Stakeholder Engagement and Information Disclosure

Whereas the ESS2, ESS5 and ESS10 will be addressed comprehensively in a Labour Management Plan (LMP), Resettlement Policy Framework (RPF) and Stakeholder Engagement Plan (SEP), respectively, the ESMF sets the stage to ensure that the environmental and social risks and impacts (ESRIs) associated with the implementation of the GTCDP activities are properly assessed, managed and monitored throughout the project cycle.

The key E&S instruments to be prepared for the subprojects under the GTCDP based on the Environmental Assessment Regulations, 1999 (LI 1652) will include Initial Assessment, Preliminary Environmental Assessment (PEA), Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP). A number of other relevant legal and regulatory requirements have also been reviewed in Chapter 3 of the ESMF.

Environmental and Social Baseline Conditions

The baseline conditions present a brief description of the existing environment, comprising the bio-physical and socioeconomic conditions of the project districts and regions. The geographical areas for the project intervention are in eleven (11) districts within five (5) regions with substantial cocoa, cashew, rubber and coconut coverage (Table 3.1). The table also provides the population of the project districts and the respective commodity/tree crop farmers as well as the targeted project land area in the districts.

Table 1 *GTCDP Distribution - Regions, Districts and Population*

Commodities	Region	District	Population	Commodity Farmer Population	Total Land Area (Km ²)	Land Targeted (Ha)
Cashew	Savanna	Bole	115,800	21,509	6,239	96,310
		Sawla-Tuna-Kalba	112,664	26,889	4,173	46,010
	Bono	Wenchi	124,758	63,840	1,067	49,390
		Tain	115,568	39,414	1,898	19,530
	Bono East	Techiman Municipal	243,335	27,365	639	11,190
		Techiman North	102,529	33,052	420	3,894

Commodities	Region	District	Population	Commodity Farmer Population	Total Land Area (Km²)	Land Targeted (Ha)
Rubber	Eastern	Kwaebibirem	121,698	2000	804	8,580
Coconut		Kwaebibirem	121,698	1500	804	1,000
		Suhum	126,403	500	359	1,000
Cocoa			West Akim	120,145	13,500	468
	Western North	Bia East	53,073	8,500	795	10,000
		Bia West	115,881	8,400	1,344	10,000

M – Males, F – Female

Source: Population and Housing Census 2021; Ghana Agriculture Census 2021

The bio-physical information cover relief, topography, eco-vegetational zones and forest and wildlife reserves and parks.

Bono Region – The project districts - Tain and Wenchi both fall within the moist semi-deciduous forest and the guinea savannah woodland vegetation zones. The land generally rises from about 30m to over 61m ASL. The Bui National Park is within the region, bisected by the Black Volta. The Sawsaw and Yaya Forest Reserves are in these districts.

Bono East Region – The main relief of Techiman North District and Techiman Municipality are highlands (579m and lowlands about 305m ASL). The vegetation is guinea-savanna woodland, semi-deciduous, and the transitional zones. The region houses the Digya National Park, which has diverse wildlife species with over 236 species of birds, elephants, and at least six primate species.

Eastern Region – The topography of Kwaebibirem and West Akim Municipalities ranges between 60m and 460m ASL, with the highest point around the Atewa Range, while the Suhum Municipality ranges between 80m and 240m ASL. The areas lie within the moist semi-deciduous forest zone (Kwaebibirem and West Akim), and deciduous forest and the transitional zone (Suhum Municipality). The region has significant plant diversity with at least 1,100 plant species including 56 that are threatened with extinction in the Atewa Forest Range.

Savannah Region - Bole and Sawla-Tuna-Kalba are in the savannah high plains (guinea savannah). The topography ranges between 160m and 300m ASL (Bole) and 300m and 400m ASL (Sawla-Tuna-Kalba). The Mole National Park in the region houses over 93 mammal species including elephant population, hippos, buffalo, and warthogs. The Bole Forest district has two reserves – KeniKeni and Yerada Forest Reserves.

Western North Region - The topography of the greater part of the region ranges between 240m and 300m ASL, with a few lowland areas that do not exceed 150m ASL. The region is home to diverse wildlife species in the Bia National Park and Bia Resource Reserve - about 62 species of mammals (including 10 primate species and over 189 bird species), with some critically endangered and vulnerable species. The Bia East District has two forest reserves - Akosua Anto

and Camp Road, while Bia West also has the Bia North (protected) and Bia South (productive) Forest Reserves. The project districts both fall in the moist semi-deciduous forest zone.

Agriculture is the main occupation in the project districts. Women's roles and participation in economic activities (in Ghana generally) have been defined and shaped along biological and cultural lines. Although females make up about 51% of Ghana's population, illiteracy is more prevalent among women than men. The problems women face in carrying out economic activities, include:

- Access to and control over land due to traditional/cultural factors;
- Access to credit due to lack of collateral, etc.;
- Access to training and low educational qualification; and
- Access to other inputs: fertilizer, extension services, information, technology, etc.

Early marriage and relegation of women exist in these areas. Teenage pregnancy cases are a major source of concern.

Stakeholder Engagement

Stakeholders were consulted to ensure open, inclusive, and participatory involvement in the assessment processes, and for feedback on project impacts/risks and mitigations as well as potential opportunities and benefit optimisation.

The stakeholders engaged through face-to-face interviews, focused group discussions, and virtual means in addition to those from the Stakeholder Engagement Plan relevant to the ESMF include:

• Ghana Cocoa Board;	○ Kwaebibirim;
• Cocoa Health and Extension Division;	○ Wenchi;
• Seed Production Division;	• Crop Life Ghana;
• Ministry of Gender, Children and Social Protection;	• Council for Scientific and Industrial Research;
• Environmental Protection Agency;	○ Oil Palm Research Institute;
• Water Resources Commission;	○ Crop Research Institute;
• Forestry Commission;	• International Cocoa Initiative;
• Forest Service Division;	• SEND West Africa;
• Wildlife Division;	• Global March Against Child Labour;
• Domestic Violence and Victims Support Unit;	• General Agricultural Workers Union;
• Ghana National Fire Service;	• Rubber Out Growers Association;
• Wenchi Agricultural Station;	• Rubber Farmers Association;
• Traditional Authority;	• West Akim Coconut Farmers Association;
• Action Against Child Exploitation;	• Wenchi Cashew Buyers Association;
	• Cocoa Farmers;
	• Female Cocoa Farmers;

- Wenchi Municipal Cooperative Cashew Farmers and Marketing Union Limited;
- Municipal Assembly;
 - West Akim;
- Private Nursery Operator - Henry 86 Enterprise; and
- Individual Agents.

Information Dissemination and Disclosure

The WBG ESSs and the Ghana EA Regulations recognize the importance of open and transparent engagement with project stakeholders as an essential element of good practice. After approval of this ESMF and other E&S instruments such as the Integrated Pest Management Plan (IPMP), Stakeholder Engagement Plan (SEP) and Resettlement Policy Framework (RPF), a public notice will be served through newspaper advertisement indicating where copies of the report could be accessed.

The final report will be distributed for the records of the beneficiary MDAs, TCDA and COCOBOD, Regional and District CHED Offices, Regional and District TCDA Offices for public information. The document will also be disclosed electronically on the World Bank infoshop (e-library).

Assessment of Potential Impacts and Mitigation Measures

A summary of the potential impacts and risks assessed have been presented below. The beneficial impacts and potential opportunities associated with the project include:

Employment Generation

The project will provide jobs throughout the value chain of the targeted tree crops - cashew, coconut and rubber. The establishment of nurseries, production, processing and storage/marketing of SMEs, employment opportunities will be opened for unskilled, semi-skilled and professional personnel, both temporary and permanent. The cultivation and maintenance of cashew, rubber and cocoa farms is labour intensive and will generate employment for a large number of farmers, workers, transporters, and loaders to cart the produce, etc.

Increased Farm Yield

The project will increase farm yield through the implementation/establishment of:

- Sustainable agricultural practices like the development and use of true-to-type planting materials, integrated soil fertility management technologies (ISFM), integrated pest management (IPM) techniques, and postharvest management technologies;
- Commercial nurseries offering high-volume, high-speed quality multiplication services, and the Tree Crops Service Centres (TCSCs)-certified agricultural input distributors; and
- Competency-based trainings for farmers in tree crop farming, Good Agricultural Practices (GAPs), mechanization, and other related areas.

Increased Income and Economic Growth

The project aims to enhance the quality and quantity of farm produce. As a result of this, farmers will be able to achieve higher yields and better-quality produce, leading to increased income from farming activities. This could increase agricultural export earnings which will help reduce Ghana's trade deficit and boost the foreign exchange reserves of the country. The increase in production and productivity would also increase the GDP.

Institutional Strengthening to Prevent, Monitor, Identify and Remediate Child Labour

An objective of the project is to eradicate or reduce child labour within the Tree Crop sector. The program will strengthen FBOs through the development of interfaces with Ghana's child labour monitoring system and the Social Welfare Information System (SWIMS) with digitally traceable farm household mappings. This sub-component of the project will measure the prevalence of child labour and the effectiveness of remediation and create baseline data for child labour on various farms in the targeted districts and allow for monitoring on occurrences of child labour in the sector. The adoption of this system can lead to more effective interventions and better enforcement of labour laws, ultimately contributing to the protection of children's rights to education, health, and social protection. In addition, the project will bridge the knowledge gap on the concept of child labour among farmers and address the difference between child labour and apprenticeship.

Institutional Strengthening and Value Chain Governance

The project will build required institutional capacity in cashew, coconut and rubber value chain associations, and respective umbrella organisations to strengthen their ability to provide services to members, such as training, access to credit, and market information. This, in turn, will increase the competitiveness and profitability of these value chains, which will benefit farmers, processors, and traders alike. This will also contribute to increase productivity, reduce post-harvest losses, and improve the quality of products, which will in turn help increase the income of farmers and other actors in the value chain. This will create an overall conducive environment for private sector investments and help to attract more investors into these value chains.

Mitigating the Impact of Climate Change

The project aims to increase tree cover by rehabilitating, and sustainably intensifying cultivation of tree crops through several interventions such as the development, promotion, and adoption of climate-resilient varieties of the targeted tree crops, which will help absorb carbon dioxide in their biomass and in the soil. This process of carbon sequestration can help to mitigate greenhouse gas effects and reduce the concentration of carbon dioxide in the atmosphere, thus reducing the impact of climate change.

Improved Institutional Capacity to Prevent Deforestation and Forest Degradation

Under sub-component 1.2, COCOBOD and TCDA will be supported in digitization of the value chain for traceability to combat deforestation and forest degradation. Digitization and traceability allow supply chain actors to verify the geographical origin of the tree crops, link sustainability characteristics to specific batches of tree crops, collect information on

certification payments and inform and engage with consumers. Value chain digitization and traceability will ensure that the production and export of tree crop products are not associated with deforestation and forest degradation and meet relevant international requirements.

Improved Biodiversity

The tree crops farms will have a significant positive impact on biodiversity by creating new habitats for wildlife. Trees provide a variety of habitats for wildlife, including nesting sites, food sources, and shelter. By creating new areas of “forest cover”, the establishment of tree crops can increase the diversity of habitats available to wildlife, and promote species richness in succession.

The potential adverse impacts and risks were grouped under the applicable ESS and assessed as follows:

- ESS 1: 1) Inefficient ESMF implementation
- ESS 2: 2) Occupational health and safety
- 3) Infringement of labour rights
- 4) Child labour
- ESS 3: 5) Impact on water resources
- 6) Improper waste handling and disposal
- 7) Pest infestation and diseases
- 8) Inappropriate handling, usage and disposal of agrochemicals
- 9) Resource efficiency and GHGs
- 10) Pollution from SMEs
- ESS 4: 11) Community health and safety
- 12) Loss of cocoa farmlands to illegal mining
- 13) Gender based violence and disparity
- 14) Increased rate of teenage pregnancy
- 15) Spread of HIV and STIs
- 16) Transmission of COVID-19
- ESS 5: 17) Farm loss
- 18) Land take
- ESS 6: 19) Deforestation and forest degradation
- 20) Threat to Biodiversity
- ESS 8: 21) Socio-cultural conflict

The table below provides the sources/causes and mitigation measures to the assessed impacts and risks.

Table 2 Potential Impacts and Corresponding Mitigation Measures

Significance of Impacts/Risk	Mitigation Enhancement
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	
1. Inefficient ESMF Implementation	
Inadequate E&S safeguards capacity for deserving personnel and management commitment to E&S capacity building would hamper the successful implementation of the ESMF for both institutions.	The positions of the personnel performing E&S safeguards tasks, project monitoring and evaluation and E&S risk management responsibilities, etc. must be identified along with required work

The provision to fill this gap through capacity building and training tours opportunities could, however, be diverted and exploited by high senior management personnel. Despite the above, the significance of the risks is ranked low.	deliverables as well as plans for the training program.
ESS 2: Labour and Working Conditions	
2. Occupational Health and Safety	
The occupational health and safety risks from farm and workplace construction accidents, dust/emissions, noise and vibration, laboratory reagents and agrochemical exposure though localized, the associated health implications could be dire, therefore the significance of the impact is ranked high.	Provision and use of appropriate PPE, training and effective supervision as well as regular maintenance of equipment/machinery
3. Infringement on Labour Right	
Although the Labour Act exists to protect the rights of all category of workers, due to the informal nature of the sector, workers could be denied employment contracts and the opportunity to unionize, with consequent unfair compensation, and marginalisation of women and PWDs. The significance of potential infringement on labour rights is therefore ranked high.	A standalone Labour Management Plan have been developed to protect workers throughout the project life through the issuance of employment contracts to workers, giving fair compensation and promoting the formation of unions in their workplaces.
4. Child Labour	
Analysis of the significance of potential child labour prevalence in the tree crop sector, and the risk to COCOBOD and TCDA's international obligations and trade is ranked high, in spite of the existing efforts and milestones towards control and elimination of the phenomenon.	Child labour will not be tolerated under this project. A standalone Labour Management Procedure (LMP) with provisions for managing child labour risk, have been prepared, reviewed, and cleared by the Bank to ensure that labour and working condition is regulated and managed throughout the project implementation consistent with the ESS2 and relevant Ghanaian Laws especially the Children's Act, 1998 (Act 560). The client will ensure effective implementation of the LMP throughout the Project Implementation as it relates to child labour, hazardous child labour, labour influx, child trafficking, etc. Child Labour prevention and remediation cover provisions for children working conditions for 14 years and above, formalization of labour practices in the tree crop sector, including employment conditions by contractors, continuous farmer and contractor education and accountability on farm workers and children of the farmer family. Others include reporting of child labour offences (by farmers/contractors) to DOVVSU and SWCDD for investigation and prosecution, and the provision of support by COCOBOD and TCDA to relevant NGOs in districts/regions to take custody and care of the victims as appropriate.
ESS 3: Resource Efficiency and Pollution Prevention and Management	

5. Impact on Water Resources	
The significance of water resource degradation and pollution from land clearing/site preparation, agrochemical releases and waste oils from machinery/equipment use/handling associated with sub-sub-components 2.2 and 2.3 activities will be high.	The farms, SME's, nurseries and agricultural input centres will comply with the recommended buffer width stipulated in the Riparian Buffer Zone Policy, 2013. Also, farmers will be trained on agrochemical storage, handling, and spraying.
6. Improper Waste Handling and Disposal	
Due to the potential improper handling and indiscriminate disposal of the different types of waste generated (e.g. chemical containers, spent oils and lubricants, construction and vegetative wastes), with health exposure and fire risks, the significance of the impact is ranked high.	In compliance with the objectives and the specific guidelines for environmental sanitation services of the Environmental Sanitation Policy (2010), measures such as segregation of waste, safe handling and disposal of oily, agrochemical and hazardous waste will be implemented to prevent the impact of waste on human health and the environment.
7. Pest Infection and Diseases	
Component 2 aims to introduce disease resistant planting materials with genetic advantage, and integrated pest management techniques, nonetheless, the potential low adoption rate of pest and disease control and rehabilitation of overaged trees by farmers present a challenge. Despite this, the significance of pest infestation and diseases would be of low significance.	The development of disease-tolerant and climate resilient plant varieties by research institutions, multiplication and supply of resistant plant variety to farmers, replacing over aged trees with disease-resistant varieties and strengthening extension services to cover all tree crops will reduce the risk of pest infestation.
8. Inappropriate Handling, Usage and Disposal of Agrochemicals	
The impacts associated with agrochemical storage, handling, use and disposal are largely localized, however, the potential environmental and health risks are deleterious, therefore the significance of the impact is ranked high.	A comprehensive Integrated Pest Management Plan (IPMP) has been prepared as a standalone document to guide farmers and other stakeholders on the safe use of agrochemicals and management of pest. Other measures include sensitisation of farmers and farming communities on safe handling, use and disposal of agrochemicals and the implementation of agrochemical container take back system by the Tree Crop Service Centres.
9. Resource Efficiency and GHG Emissions	
Inefficient use of energy and water (which also requires energy to produce/supply) during construction and operation of laboratories, nurseries and agricultural input supply centres and processing operations by SMEs would cumulatively result in high GHG emissions responsible for global warming and climate change. However, the significance of inefficient resource use resulting in GHG emissions from project activities is ranked low.	Measures such as turning off idling machines, regular servicing of machinery, energy use monitoring, installing light and water fixtures with sensors, water use monitoring and rainwater harvesting will be implemented to enhance energy and water efficiency such as.
10. Pollution from SMEs	
The disposal of the waste generated, emissions and harmful chemicals released from the operations of SMEs involved in quality processing (and post-harvest management), and value addition of cocoa, cashew, and coconut could pollute the	To control pollution from SMEs, the technical and financial support to be provided would be geared towards SMEs that adopt sustainable production practices, including green manufacturing practices, waste reduction and management strategies, use of

environment and compromise public health - the significance is, however, ranked low.	energy efficient machinery and adopting renewable energy sources
ESS 4: Community Health and Safety	
11. Community/Public Health and Safety	
The significance of the adverse health and safety risks of noise from machinery/equipment use during construction and sawing of CSSVD-affected trees (farms), dust and emissions and accidents by construction trucks, as well as chemical/pesticide spray drift on nearby communities is ranked high.	Measures such as restriction of construction works to daylight hours, enforcement of the 30km/hr speed limit within communities, training of farmers on pesticide use, scheduled maintenance of machinery, etc., will be implemented to safeguard the communities/public
12. Loss of cocoa Farmlands to Illegal Mining	
The inadequate compensation, coupled with 5-year or more waiting time for the rehabilitated cocoa farm to be ready for harvesting, deprive farmers of earning and become impoverished over a long period, hence the significance of the enticement to give cocoa farmlands for galamsey is high.	Competitive and attractive livelihood support package for participating rehabilitating CSSVD-affected farmers, instalment livelihood support payment including financial grant (over the rehabilitation period) and signed contract between COCOBOD and the landowner/ farmer committing to the rehabilitation and detailed in the PIM to be reviewed by the Bank.
13. Gender-Based Violence and Disparity	
The likelihood of occurrence of GBV and SEA/SH with the project is ranked low using the World Bank GBV/SEA/SH risk screening tool for civil works, and since records in the project districts are minimal (described as not prevalent in the districts consultations). However, due to the attendant physical and mental health problems suffered by victims coupled with under-reporting of cases, and the dire challenges of institutions responsible to provide needed support to victims, the significance is ranked moderate.	The client will ensure that GBV and SEA/SH risks and mitigation measures are adequately reflected in all site specific safeguards documents e.g. (ESMPs, C-ESMPs) and implemented throughout the project lifecycle. Workers will be provided with extensive education on human rights, while ensuring each worker signs a code of conduct developed by the contractor that incorporate human right clauses. The SEA/SH Risk Mitigation and Response Action Plan will also include the availability of an effective grievance mechanism (GM) with multiple channels to initiate a complaint. It should have specific procedures for GBV including confidential reporting with safe and ethical documenting of GBV case consistent with the Ghana National Gender Policy.
14. Increased Rate of Teenage Pregnancy	
The likelihood of the risk occurring during the project implementation is low due to the on-going sensitization program organized within the various project districts. The significance is ranked moderate, as its occurrence could jeopardizes adolescents' education and future employment prospects.	A workplace policy will be developed and enforced based on awareness creation about teenage pregnancy among workers/farmers and girl child in project areas. The policy will also involve immediate suspension and reporting of workers/farmers who engage in sexual relations with under aged girls to the Police for the due process of the law
15. Spread of HIV and STIs	

The likelihood of occurrence of the potential risk of spread of HIV and STIs is high, and equally the significance of the impact is ranked high, taking into account the presence of migrant workers, pervasive promiscuity, and other contributing factors.	Promoting safe sexual practices, increasing awareness and access to HIV testing and counselling, etc., will be implemented to reduce the spread of HIV/AIDS.
16. Transmission of COVID-19	
Construction, nursery, supply centre and farming activities will be conducted in the open, in temperature ranges of 28°C and 36°C which will not promote transmission, unlike office and airconditioned confined areas highly prone to transmission. Given, however, the low rate of transmission in all the project regions, except Eastern, the risk of significant transmission of COVID-19 is ranked moderate.	Implementation of COVID-19 protocols, requisite investments/budget for provision of standard COVID-19 protocol response requirements, requiring workers to be fully vaccinated and welfare relief package for infected workers who disclose their COVID-19 status.
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	
17. Land Take	
The likelihood of occurrence of land-take (land acquisition) for project activities is low, however, the significance of this impact is ranked moderate, giving that physical displacement and loss of sources of livelihood and economic activity by the affected persons, especially women can lead to further impoverishment.	A standalone Resettlement Policy Framework has been developed to provide required criteria to screen all projects for their potential resettlement impacts and streamline all the necessary procedures to follow in mitigating resettlement impacts/issues. The RPF also pays particular attention to gender aspects and the needs of vulnerable groups among the PAPs.
18. Farm Loss	
The significance of potential loss of farm as a result of unimproved seedlings, non-compliance with good agricultural practices and inadequate extension services is ranked moderate, due to a low likelihood of occurrence under the project, while fire risk is ranked high due to the susceptibility of tree crops to fire and its devastating effect on farmers.	Sensitisation and training of farmers, strengthening of extension services to cover all 8 TCDA's project area and supporting GNFS to train fire volunteers will be implemented to minimise the risk of farm loss.
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	
19. Deforestation and Forest Degradation	
The likelihood of clearing forested areas for coconut, rubber and cashew farms is low since the project is designed to mitigate deforestation and forest degradation through value chain digitization. Although the tree cover loss would be temporary and reversible, the permanent alteration of biodiversity composition that is associated with deforestation and forest degradation makes the significance moderate.	Coconut, rubber and cashew farms will not be allowed in or near forests reserves, protected areas and national parks. Biodiversity offsets will be established for forest areas outside of forest reserves, protected areas and national parks that would be cleared for the farms. Farmers and SMEs and nursery and supply centres operators will be trained as part of the resilience strengthen mechanisms in climate change adaptation.
20. Threat to Biodiversity	
The significance of biodiversity loss associated with the rehabilitation of CSSVD-affected cocoa farms is ranked low given the reversible and temporary nature of the loss of tree cover/vegetation within rehabilitated farms, while that for the establishment of new farms, nurseries and agricultural input supply centres, etc. is ranked moderate due partly to	The cocoa rehabilitation process will be streamlined to avoid delays in replanting. The project is inherently designed to improve biodiversity through agroforestry and soil improvement practices. Laboratories, nurseries and agricultural input supply centres will be greened by planning trees.

rehabilitation of existing structures and/or the relatively small land area required for some of the infrastructure construction.	
ESS 8: Cultural Heritage	
21. Socio-cultural Conflict	
The significance of socio-cultural conflict on potential project implementation disruption and community violence is ranked high.	Before the commencement of any project activities, traditional authorities of the host community will be engaged through courtesy calls arranged by the contractor. Also, the project will implement chance find procedures and a reporting system that will be used by FBOs and beneficiaries in the event that a cultural heritage feature or ecologically sensitive item/issue is encountered.

ESMF Implementation

The successful implementation of the environmental and social safeguards will depend on the commitment of COCOBOD and TCDA as well as the EPA, and other key stakeholders playing their expected roles.

Institutional Roles and Responsibility

The PCU at the TCDA is responsible for coordinating the monitoring and evaluation of the project while the PIU at COCOBOD will implement the components and sub-components that fall under their jurisdiction. Under this arrangement, the project will work closely with the relevant CHED and TCDA district offices for implementation along with other stakeholders such as SPD, CSIR, and EPA.

Capacity Building

The responsibility for ensuring environmental soundness and social acceptability of the GTCDP and its project activities would primarily lie with the Environmental and Social Safeguards Unit (ESSU) of the PCU and PIU of TCDA and COCOBOD respectively.

The TCDA would hire a Social Development Specialist and require assistance to develop in-house E&S risk management policy and management system. The Social and Gender Specialist at the COCOBOD Head Office would take courses in social and gender (including child labour) risk and impact identification, management and performance monitoring to enhance their capacity in performing the safeguards role.

Environmental and Social Monitoring and Reporting

Monitoring would be a key component of the ESMF during project implementation. Monitoring would be undertaken at the project implementation phase to verify the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. Monitoring would involve compliance monitoring which will be done by the EPA, though the PCU/PIU will also carry out its limited compliance monitoring on contractors' E&S risk management obligations while impact monitoring would be the duty of the

Environmental Specialist and Social and Gender Specialist of COCOBOD, and Environmental Specialist and Social Development Specialist of TCDA.

Sub-project Screening and Approval

This section outlines the screening, review and approval process to facilitate the project assessment process, while meeting World Bank ESSs and the Ghana EA requirements. To facilitate the sub-project assessment processes, a project-specific Screening Checklist and Exclusion List has been developed to serves the purpose.

The assessment process would be undertaken/facilitated by the PCU/PIU for the sub-projects to be directly operated or undertaken by TCDA/COCOBOD. The assessment for sub-projects requiring initial assessment will be undertaken by the PCU/PIU, whereas, PEA, ESIA, ESMP and RAP will be outsourced to E&S consultants.

ESMF Implementation Budget

The estimated budget for the ESMF implementation covers the cost of E&S training for TCDA and COCOBOD to effectively execute their roles outlined in the ESMF among others. The proposed budget is USD 1,131,400. The cost for the Environmental Assessment for individual sub-project will be determined through a national competitive bidding process where an approved World Bank selections method is used to award the contract.

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1.0 INTRODUCTION

1.1 Background

The Government of Ghana (GoG) intends to diversify and expand the economy by modernizing agriculture, accelerating industrialization, and prioritizing climate resilience and mitigation, in line with the Investment for Food and Jobs (Medium-Term Development Plan, 2018–2021) and the ‘Ghana Beyond Aid’ reform agenda. This will be done by implementing the Ghana Tree Crop Diversification Project (GTCDP). The GoG, through the Tree Crops Development Authority (TCDA) and Ghana Cocoa Board (COCOBOD), will collaborate with the World Bank to implement the GTCDP.

The GTCDP, among others, aims to support the existing capacity of COCOBOD. strengthen the nascent organizational capacity of THE TCDA and provide the optimal enabling environment through the legalization and operationalization of tree crop regulations and agribusiness policies. This will also support and enable local farmers, traders, and processors to generate jobs and profits from production of the four selected tree crops, i.e., cocoa, cashew, rubber and coconut.

1.2 Project Justification

Agriculture constitutes 19.7% of Ghana's Gross Domestic Product (GDP), 30% of export earnings, and a significant source of inputs for manufacturing. In 2020 and 2021, the sector grew by 7.3% and 8.4%, respectively. The tree crop industry in Ghana contributes to the country's agricultural exports and economic growth but has great potential for economic diversification and job creation. The challenges in the sector, however, include low productivity, poor product quality, low processing and value-added capacity, weak supply chains, and value chain governance, poor infrastructure, weak system for tracking products, and a dearth of financial services for value chain actors.

The GTCDP Development Objective (PDO) is to improve productivity, increase value added, and promote climate resilience for selected tree crop segments in project areas. The project will be implemented in eleven (11) selected districts within five (5) regions, which already have substantial cocoa, cashew, rubber, and coconut coverage. Furthermore, and more importantly, farmers will be provided with the required support to increase productivity, including:

- Knowledge and finance to adopt new, climate smart technologies to boost yields;
- Reduce pest infestation and disease; and
- Rehabilitate, and sustainably intensify production.

The consequent benefits would include, avoiding deforestation and forest degradation, and mitigating the impacts of climate change, while contributing to social sustainability including preventing child labour. The project will invest in all these areas in the different segments of the tree crop systems and support farmers also with:

- Inputs, extension (technical assistance), organization, and digitization.

- Development and uptake of practical, cutting-edge research on tree crops, including –
 - Setting up laboratories that enable the transfer of genetic and plant varieties to address the most critical issues faced on farms.

1.3 Environmental and Social Requirements

The GTCDP is prepared under the World Bank Environmental and Social Framework (ESF), which requires the Borrower to comply with Ten (10) Environmental and Social Standards (ESSs). The World Bank (WB) has classified the Environmental and Social (E&S) risk of this project as High due to the potential E&S issues associated with child labour.

In addition to the WB ESF, the project will be implemented in accordance with the World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines, as well as in compliance with the applicable national legislation.

1.4 Rationale for the ESMF

At this stage, the exact locations/sites of project implementation and the specifics of project activities, including the scale of likely impacts are not yet determined. So, this Environmental and Social Management Framework (ESMF) is prepared in conformance with the requirements of the ESF, specifically the ESS1: Assessment and Management of Environmental and Social Risks and Impacts. This would set the stage to ensure that the environmental and social risks and impacts (ESRIs) associated with the implementation of the GTCDP activities are properly assessed, managed, and monitored throughout the project cycle.

The specific objectives of this ESMF are to:

- Identify all relevant potential environmental and social risks and impacts that may arise as a result of the project and subprojects that it will support;
- Specify appropriate roles and responsibilities of involved stakeholders in the implementation of the ESMF;
- Develop project review procedures as well as forms, guidance and checklists to apply technical input for the project activities;
- Develop a screening procedure to identify the environmental and social issues associated with the project activities;
- Provide clear procedures and processes for subsequent assessment of E&S risks and impacts of project/subproject activities;
- Review and assess the capacity of the project implementation entities to screen project activities, develop and monitor the implementation of relevant environmental and social (E&S) instruments and make proposals for capacity enhancement as appropriate;
- Provide estimates for the budget required for the implementation of actions prescribed in this ESMF as well as for the preparation of subsequent E&S instruments during the implementation phase of the project;
- Develop a public consultation and stakeholder engagement strategy;
- Define appropriate environmental and social standards performance indicators; and

- Provide practical information resources for implementing the ESMF.

1.5 Approach and Methodology for ESMF Preparation

This ESMF has been prepared in accordance with the World Bank ESF, World Bank Group General EHS Guidelines, EHSGs for Annual and Perennial Crop Production, and the Ghana Environmental Assessment Regulations. The key methodologies for the study involved:

- Literature/document review;
- Capacity needs assessment;
- Field visits/consultations; and
- Information collation, analysis and preparation of report.

1.5.1 Literature/Document Review

The following relevant documents were reviewed:

- Project Appraisal Document (PAD);
- Population and Housing Census (PHC), General Report Vol 3A_Population of Regions and Districts (2021);
- Rubber Production Guide;
- Crops Sub-sector Studies – Report on Rubber;
- Crops Sub-sector Studies – Report on Coconut; and
- A Guide to Cashew Production.

1.5.2 Capacity Needs Assessment

The capacity needs of TCDA and COCOBOD, the implementing entities, were assessed to establish their ability to screen projects and monitor the implementation of E&S measures in addressing the relevant risks and impacts identified.

1.5.3 Field Visits/Stakeholders Consultations

The Consultant visited 3 selected beneficiary Municipal and District Assemblies (MDAs), i.e., West Akim, Kwaebibirem and Wenchi Municipalities, between February and March 2023 to engage various value chain actors and to observe baseline conditions to inform the potential environmental and social risks and impacts that could arise during the implementation of the program. The selection of sites was informed after consultation with COCOBOD and TCDA on an appropriate sample size for the field work. National level institutions were engaged face-to-face in their offices in Accra while some consultations were held via phone calls and virtual at the stakeholder's convenience. Stakeholders involved in the study included the following:

- COCOBOD Divisions –
 - Cocoa Health and Extension Division of COCOBOD;
 - Seed Production Division of COCOBOD;
- Ministry of Gender, Children and Social Protection;
- Environmental Protection Agency (Head Office and Bono Region);
- Water Resource Commission (Head Office and Tano Basin Station);

- Forestry Commission (Head Office and Bono Region);
- Ghana Police Service –
 - Domestic Violence and Victims Support Unit (Wenchi and West Akim);
- Ghana National Fire Service (West Akim, Kwaebibirim, and Wenchi);
- Municipal and District Assemblies (West Akim, Kwaebibirim, Wenchi);
 - Department of Agriculture;
 - Environmental Health and Sanitation Department;
 - Education Directorate;
 - Health Directorate;
 - Social Welfare and Community Development Department;
 - National Disaster Management Organisation (NADMO);
 - Physical Planning Department;
- Research Institutes –
 - Council for Scientific and Industrial Research – Oil Palm Research Institute (CSRI-OPRI)
 - Council for Scientific and Industrial Research – Crop Research Institute, (CSIR-CRI)
 - Wenchi Agricultural Station
- Farmers and Farmer Associations –
 - Rubber Out Growers Association, Eastern Region;
 - Rubber Farmers;
 - Five Cocoa Farmers Cooperatives, Asamankese;
 - Female Cocoa Farmers;
 - West Akim Coconut Farmers Association;
- Cashew Aggregators/Agents –
 - Wenchi Cashew Buyers Association;
 - Henry 86 Enterprise
- Private Nursery Operator –
 - Henry 86 Enterprise; and
- Agrochemical Dealers Association –
 - Crop life Ghana.

Details of the stakeholder consultations are provided in Chapter 5.

2.0 DESCRIPTION OF THE PROJECT

2.1 Background

This chapter describes the Ghana Tree Crop Development Project (GTCDP), the specific tree crops, project development objectives, its components and the implementing organizations. The project development is aimed to improve productivity, increase value addition, and promote climate resilience for selected tree crops in eleven (11) districts in five (5) regions, which already have substantial cocoa, cashew, rubber, and coconut coverage (Tables 2.1). Furthermore, value chain actors and farmers will be provided with support to increase productivity, including knowledge and finance to adopt new, climate smart technologies to boost yields; reduce pest infestation and disease; and rehabilitate, and sustainably intensify production.

2.2 Selected Tree Crops

2.2.1 Cocoa

Cocoa dominates the tree crops landscape, in both harvested area and socio-economic terms. The sector employs about 17% of the working population and integrates the rural into the national economy as well as enhancing trade. The output in Cocoa as of 2022 was 683,269 tonnes of cocoa beans and exports worth about US\$2 billion. The crop accounted for 9% of Ghana's GDP and 20–25% of its foreign exchange earnings in 2022.

The average yield of 541 kg/ha in 2018–2021, is well below the yields of 1,400–3,000 kg/ha attained on research and more productive farms. Cocoa production is plagued with challenges. Some cocoa trees are over aged, almost 25% are about 30 years old with declining productivity (COCOBOD, 2015). It also faces pressure from the cocoa swollen shoot virus disease (CSSVD), which curtails the lifespan of infected trees.

Cocoa processing capacity is underutilized, post-secondary value addition to beans is limited, and supply chain inefficiencies undermine the sector's performance. Ghana processes about 30% of its cocoa beans and the government aims to increase that share to 50%.

2.2.2 Cashew

The production of cashew over the last two decades has increasingly contributed towards the economy, and in particular agriculture GDP (without cocoa) of 13.69% (MoFA, 2018). Since 2014 cashew has been the highest non-traditional export (NTE) earner, raking in US\$271m in 2017 after rising from US\$196.7m in 2016 (MoFA, 2018). The sector employs over 100,000 farmers and another 100,000 direct labourers involved in picking or harvesting the raw cashew nuts (RCN), as well as 5,000 indirect jobs along the value chain (VC) activities such as aggregators, dryers and transporters. Further employment is generated in processing, but this has declined considerably since 11 out of 14 processing facilities have shut down due to difficulty in securing nuts and technical non-competitiveness. There are about 470 traders and exporters in the Cashew VC of which most are foreigners.

The major insect pests are the sap-sucking bugs, stem borer and branch girdler. The main fungal diseases that affect the leaves, stem, root and fruit of cashew plants are the damping off disease, seedling blight and root rot occurring only at the nursery stage. Diseases that affect the leaves include inflorescence blight, anthracnose, leaf blight, die-back, leaf spot, leaf rust, leaf mosaic and leaf rosette and leaf chlorosis. Stem and root diseases include gummosis and polyporus root-rot. Wastes in the cashew VC are mainly branches left after pruning, the apple, and cashew shell.

2.2.3 Coconut

Ghana accounts for 2.7% of total world production and was the 14th largest producer of coconut in 2020. Total cultivated area stands at 97,000ha out of which an average 60,000ha is harvested annually with post-harvest losses at less than 1%. Average yield is 19.2MT/ha as against achievable yield of 40MT/ha (52%), depending on ecology and agronomic practices. About 60% of produce goes to the domestic market while the remaining 40% is exported, yielding a total export of US\$6.3m - 21.9m from 2020-2021. Averagely, 160 coconut trees can be planted per one hectare, and the farming employs about 120,000 people especially in the rural areas.

The three varieties of coconut common in Ghana are the tall, dwarf and hybrid varieties. The three notable pest and diseases that affect coconut production are the rhinoceros beetle, termites (*Odontotermis sp.*) and Cape Saint Paul Wilt Disease (CSPWD). Currently there are varieties of coconut resistant to CSPWD, hence a drop in the occurrence of the disease. Waste generated in the coconut VC include those from copra, shell, and the husk.

The Coconut VC includes both local and foreign participants. The Coconut Federation of Ghana (COFEG) currently controls activities of actors (farmers, aggregators, processors, traders, etc.) in the VC. Actors in the VC with high influence and interest are the traders who pre-finance the production of coconut and hence determine the price for the farmers.

2.2.4 Rubber

The total acreage of rubber cultivation as at the end of 2017 was 61,000 hectares, with 41,000 tons of dry rubber content produced. The rubber industry contributed a total of US\$315m to GDP between 2013 and 2017 (World Bank, 2018). Average yield currently stands at 3,783kg/ha/year wet. The industry employs about 120,000 people, including farmers, tappers, collectors, transporters, loaders and factory workers. The rubber VC consists of input services, producers, off-takers, processors, and support services (mainly regulators and research institutions). Rubber trees are also environmentally friendly and can sequester carbon, enhance soil fertility through nutrient recycling, used as forest cover on degraded land and harvested for timber and biofuel.

The main pests of rubber trees are termites and mistletoe. Diseases include the Black Stripe/Black Thread/Black Rot, Leaf Fall and Leaf Disease. The main wastes associated with rubber come from pruning of branches, especially in the first three years, and wastewater from cleaning of cup lump.

Table 2.1 Program Coverage

Tree Crop Type	Region	District	Selection Criteria	Target Farmers	Land Targeted (Ha)
Cashew	Savanna	Bole	• High cashew production • High levels of poverty • Decline in quality and productivity levels	5,377	96,310
		Sawla-Tuna-Kalba	• High Level of production • Potential for expansion • High levels of poverty and decline in quality and productivity levels	6,722	46,010
	Bono	Wenchi	• Major cashew production, processing area and research station. • Decline in quality and productivity levels	15,960	49,390
		Tain	• High cashew production. • High levels of poverty. • Decline in quality and productivity levels	9,854	19,530
	Bono East	Techiman Municipal	• Major production and trading hub of cashew. Decline in quality and productivity levels	6,841	11,190
		Techiman North	• Major production area, decline in quality and productivity levels	8,263	3,894
Rubber	Eastern	Kwaebibirem	• Predominant production area in Eastern Region • Potential expansion	500	8,580
Coconut		Kwaebibirem	• Predominant production area in Eastern Region • Potential expansion due to proximity to urban market.	375	1,000
		Suhum	• Emerging production area in Eastern Region. • Potential Expansion due to proximity to urban market.	125	1,000
Cocoa			West Akim	• High prevalence of CSSVD	3,000
	Western North	Bia East	• High prevalence of CSSVD	5,500	10,000
		Bia West	• High prevalence of CSSVD	5,500	10,000

Source: Ghana Agriculture Census 2021

2.3 Project Components

The PDO will be achieved through the following four components:

- Component 1: Institutional strengthening and value chain governance.
- Component 2: Improving tree crops productivity and climate resilience.
- Component 3: Support for Post-Harvest Management, Value Addition and Market Access.
- Component 4: Project Coordination, Management, Monitoring and Evaluation.

Component 1. Institutional Strengthening and Value Chain Governance

The objective of this component is to identify and build institutional capacities of TCDA and COCOBOD. This will include the capacity to improve the governance of the value chain associations and their umbrella organization (i.e., FAGE), as well as the business enabling environment for farmers and agribusinesses in the cocoa, cashew, coconut and rubber value chains. It will also facilitate policy formulation, advocacy, and implementation by selected MDAs (i.e., MOFA-DCS, MOFA-PPRSD, MOGCSP, and MELR), digitize the value chains for traceability, and strengthen national capacity to prevent, monitor, identify and remediate child labour.

Sub-component 1.1: Institutional Capacity, Policies, and Regulations

Investments will be mainly channelled through TCDA to build institutional capacity and improve on its service delivery, strengthen governance of the cashew, coconut and rubber value chain associations and their respective umbrella organizations, facilitate policy formulation, advocacy, and implementation.

COCOBOD will build required capacity to access carbon financing/credits for cocoa farmers, to earn additional income (as the cocoa agroforestry sequester carbon). The interventions of this project will establish the methodology for measuring tons of carbon sequestered, establish baseline data from selected existing plantations, and to implement/manage the system, as well as seek market for the carbon, in collaboration with the Forestry Commission and other relevant entities.

Sub-component 1.2: Value Chain Digitization for Traceability

The sub-component will invest in digitization of VC actors in cashew, coconut, and rubber (by TCDA), and e-extension and accounting for deforestation, carbon, and child labour, etc. (by COCOBOD).

Sub-component 1.3. Preventing and Responding to Child Labour (US\$8.1 million of IDA).

Under the sub-component, an integrated, area-based child labor prevention, identification, and remediation strategy will be applied in the 11 project districts. The project will collaborate with the Ghana Productive Safety Net Project-2 (GPSNP-2; P175588) to leverage social protection support to project communities and will, in addition, finance the following specific activities under the sub-component (i) alternative livelihood support, consisting of a mix of

empowerment interventions, including financial empowerment and expansion of income generating opportunities, to vulnerable households that are not eligible under Livelihood Empowerment Against Poverty (LEAP) support; (ii) implementation of nationally representative child labor surveys for project tree crops and assessment of prior inter-ministerial interventions in child labor; (iii) set up of a national child labor implementation review committee for harmonizing ministerial interventions; (iv) set up of child labor desk or unit at COCOBOD and TCDA; (v) scaling up of Ministry of Gender, Children and Social Protection's Social Welfare Information Management System (MOGCSP SWIMS) and Ministry of Employment and Labor Relations' Ghana Child Labor Management System (MELR's GCLMS) in the project districts currently not implementing these child labor monitoring systems; (vi) development of an interface between GCLMS and COCOBOD's CMS and TCDA's digital platform; (vii) increasing awareness, case management and remediation of child labor. This sub-component will be implemented by COCOBOD's PIU and TCDA's PCU in collaboration with the GPSNP, Ministry of Local Government and Rural Development (MLGDRD), Office of the Head of Local Government Service (OHLGS), MOGCSP, MELR, and Ghana Statistical Services (GSS).

Component 1 General Project Activities

- Institutional capacity building of TCDA and COCOBOD
- Capacity building for farmers and agribusinesses in the selected value chains to improve the business enabling environment
- Policy and regulatory framework design and implementation to strengthen the selected tree crops' value chains
- Research and Development (R&D) support to underpin climate resilient production
- Preventing and responding to child labor

Specific Project Activity with E&S Concerns under Component 1

- 1.1 Installation of digitization equipment for traceability of value chain actors in cashew, coconut, and rubber
- 1.2 Establishment of integrated, area-based child labour prevention and response system

Component 2: Improving Tree Crops Productivity and Climate Resilience

The largest project component in terms of scope and budget aims to improve socially and environmentally sustainable productivity, profitability, and climate resilience of tree crop farms by addressing a lack of access to and availability of technologies. This component's investments are subdivided into the three sub-components.

Sub-component 2.1: Demand-driven Research Support

The investment will support the improvement of existing infrastructure and laboratory equipment for research work to develop and make available, through the appropriate extension mechanism, true-to-type planting materials with a genetic advantage, integrated soil fertility

management (ISFM) technologies, integrated pest management (IPM) techniques, and postharvest management technologies. The three selected public research institutions include:

- Cocoa Research Institute of Ghana (CRIG) for cocoa and cashew;
- Oil Palm Research Institute of Council for Scientific and Industrial Research (CSIR-OPRI) for coconut; and
- Crop Research Institute (CSIR-CRI) for rubber.

The project will create and institutionalize a research agenda platform for the selected tree crops, with the objective of bringing together value chain actors, farmers, researchers, and development partners biannually to provide inputs for the promotion of market-driven research.

Sub-component 2.2: On-farm productivity enhancement and resilience

COCOBOD will focus its investments on funding its strategy for the rehabilitation of CSSVD-affected farms, with a compensation mechanism established as a social protection for participating farmers. Also, new research practices pertaining to cutting, spraying, and other techniques will be integrated into the funding.

TCDA will support four sets of interventions under this funding window:

- a) Establishment of Tree Crops Development Centres (TCDCs) as commercial nurseries offering high-volume, high-speed quality multiplication services in collaboration with research institutes as innovation disseminators. Existing and prospective commercial nursery operators will be selected, who will receive matching grants and technical support for improved service delivery to farmers.
- b) Establishment of Tree Crops Service Centres (TCSCs)-certified agricultural input distributors (private-sector-driven input distribution channels for farmers) in collaboration with the respective production associations. The project will offer technical assistance and business development services to the selected agro-dealers.
- c) Facilitate the acquisition of planting materials and other agricultural inputs of superior quality by farmers, using the criteria below to target both existing farms (70%) and new farms (30%), directly reaching 250,000 farmers and additional 400,000 indirectly, for farmers with:
 - 0.4 - 2.0ha of available land receiving 100% both planting material and other agro-inputs subsidy;
 - 2.0 - 5.0ha of land receiving 100% and 50% subsidy for planting materials and other agro-inputs respectively;
 - 5.0 - 10.0ha of land receiving subsidies of 60% and 25% for planting materials and other agro-inputs respectively; and
 - More than 10.0ha of land receiving a 40% planting material subsidy.
- d) TCDA will promote the development of farmer field schools by targeting existing MoFA farm institutes and successful commercial farms, supporting their development

and rollout of competency-based trainings for farmers in tree crop farming, GAPs, mechanization, etc.

Sub-component 2.3: Strengthening of Farmer Based Organisations

The project financing will leverage Farmer Based Organisations (FBOs) for sustainability and collaborate with public entities to deliver specific services such as extension for each of the tree crops. The assistance will facilitate the formalization of production groups as registered FBOs, strengthen their governance structure, and improve access to input and output markets as well as financial services. The investments will be reliant on verifiable digital registries and carbon measurement on farms. Through the development of interfaces with Ghana's child labour monitoring system and the Social Welfare Information Management System (SWIMS) with digitally traceable farm household mappings, this sub-component of the project will measure the prevalence of child labour and the effectiveness of remediation.

Component 2 General Project Activities

- Rehabilitation of cocoa farms adopting new research practices on cutting, spraying, and other techniques with a compensation mechanism
- Nurseries establishment for multiplication of suitable cashew plant varieties
- Nurseries establishment for multiplication of suitable coconut plant varieties
- Nurseries establishment for multiplication of suitable rubber saplings
- Delivery centres establishment for fertilizer and other input supplies
- Linkage of farmers to the nurseries and other input suppliers established through FBOs

Specific Project Activities with E&S Concerns under Component 2

- 2.1 Building of laboratory structures and installations, etc. and their operation for the development of resistant plant varieties by:
 - a) Cocoa Research Institute of Ghana (CRIG) for cocoa and cashew;
 - b) Oil Palm Research Institute of Council for Scientific and Industrial Research (CSIR-OPRI) for coconut; and
 - c) Crop Research Institute (CSIR-CRI) for rubber.
- 2.2 Rehabilitation of CSSVD-affected farms, applying new research techniques of cutting, spraying, etc. with compensation to participating farmers
- 2.3 Establishment of Tree Crops Development Centres (TCDCs) as commercial nurseries for high-speed quality multiplication services for cashew, coconut and rubber plant varieties.
- 2.4 Establishment of Tree Crops Service Centres (TCSCs)-certified agricultural input distributors as private-sector-driven input distribution channels for farmers.
- 2.5 Adoption of digitally traceable farm and household mappings (construction/installation of digitalization system) to assess the prevalence of child labour and effectiveness of corrective measures.

Component 3: Support for Post-Harvest Management, Value Addition and Market Access

The objective is to support post-harvest management, processing, and marketing of cocoa, cashew, and coconut, with the intention of enhancing quality, value addition, and supply to new markets. This will provide technical assistance, and matching grant to facilitate SMEs access to finance and market.

Component 3 General Project Activities

3.1 Technical assistance and finance to establish SMEs to enhance:

- Post-harvest management
- Quality processing and value addition of cocoa
- Quality processing and value addition of cashew
- Quality processing and value addition of coconut
- Exploration of new market access

Specific Project Activities with E&S Concerns under Component 3

3.1 Support to SMEs with technical assistance and finance to establish enterprises that will enhance post-harvest management, quality processing and value addition of cocoa, cashew and coconut.

Component 4: Project Coordination, Management, Monitoring and Evaluation

Component 4 focuses on the establishment of a Project Coordination Unit (PCU) at TCDA and Project Implementation Unit (PIU) at COCOBOD for effective coordination, management, and project monitoring and evaluation (M&E).

Component 4 General Project Activities

- Establishment of PCU at TCDA for coordination, management, and project M&E and development of E&S capacity building plan for effective implementation of the ESMF.
- Establishment of PIU at COCOBOD for coordination, management, and project M&E and development of E&S capacity building plan for effective implementation of the ESMF.

2.4 Implementing Organisations

The implementing organizations of GTCDP – COCOBOD and TCDA – are described briefly below with the respective organizational structures.

2.4.1 COCOBOD

Ghana Cocoa Board (COCOBOD) formerly Cocoa Marketing Board, is a statutory public institution established in 1947 with the mandate to regulate the cocoa industry. COCOBOD's function overall is to encourage and facilitate the production, research, expansion, marketing and quality control of cocoa (including coffee). In addition, it guides the administrative powers in Ghana to develop appropriate policies towards performance of the above functions. The functions are divided into Pre-harvest and Post-harvest - the former is performed by the Cocoa

Research Institute of Ghana (CRIG), the Seed Production Division (SPD) and the Cocoa Health and Extension Division (CHED), while the latter is handled by the Quality Control Company (QCC) Limited and the Cocoa Marketing Company (CMC) Limited.

The vision of COCOBOD is ‘to create a modernized, resilient and competitive cocoa environment where all stakeholders strive towards a sustainable cocoa economy in which cocoa farmers and their communities thrive.’

COCOBOD has an Environmental and Social Management System (ESMS) in place which outlines the E&S risks along the cocoa value chain. The ESMS is guided by the Cocoa Sector Development Strategy II (CSDS II) that emphasizes productivity enhancement through the empowerment of smallholder cocoa farmers to adopt modern technologies, and adopts an Occupational Health, Safety and Environment Policy aimed at protecting the health, safety and welfare of staff and stakeholders, as well as, protecting the environment and local communities. Other relevant plans and procedure manuals in place include:

- Human Resource Policy Manual;
- Stakeholder Engagement Plan;
- Grievance and Redress Mechanism;
- Emergency Preparedness and Response Plan;
- E&S Risk Management Procedures;
- E&S Risk Appraisal procedures; and
- E&S Risk Control and Monitoring Procedures.

The COCOBOD organisational structure is provided in Figure 2.1.

2.4.2 TCDA

The Tree Crop Development Authority (TCDA) develops and regulates the sustainable production, processing and trading of tree crops in Ghana; namely, cashew, coconut, rubber, shea, mango, and oil palm. The functions of TCDA surround the production, commercialisation and marketing, regulation, and research of tree crops, and the capacity building of tree crop farmers (Tree Crop Development Authority Act, 2019 (Act 1010)).

TCDA is governed by a board made up of various stakeholders, including representatives from the Ministries of Food and Agriculture, Trade and Industry, and Finance. The TCDA organisational structure is provided in Figure 2.2.

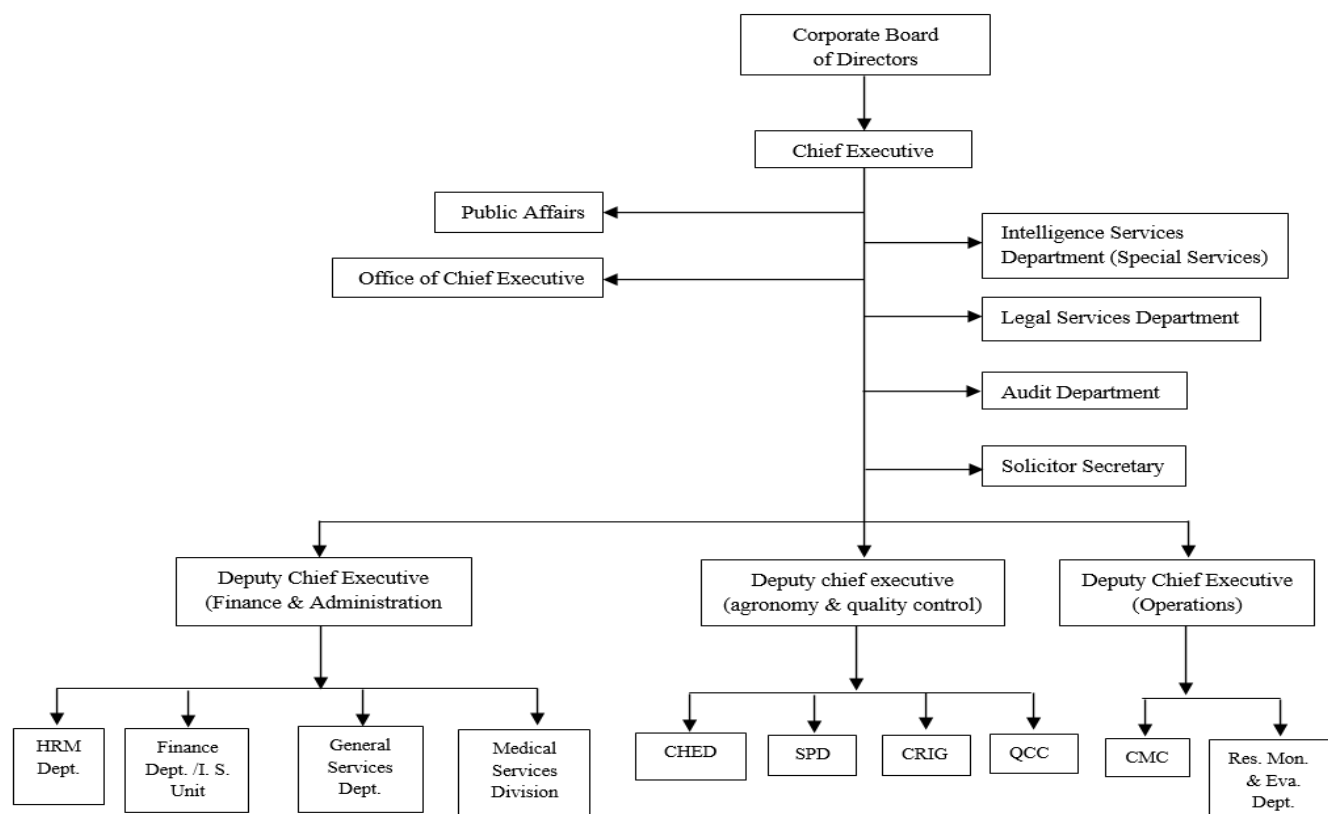


Figure 2.1 COCOBOD's Organizational Structure

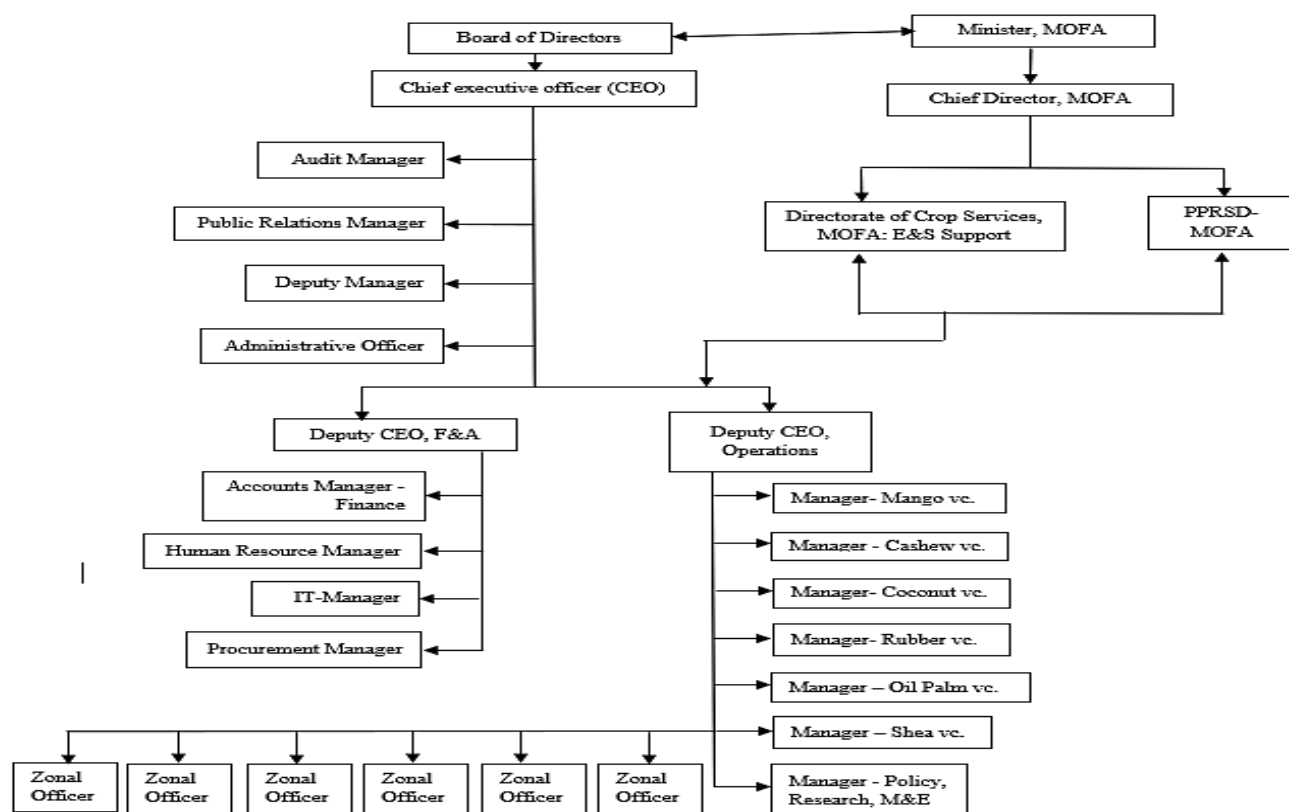


Figure 2.2 TCDA's Organisational Structure

3.0 POLICY, LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK

The key policy and regulatory frameworks relevant to the environmental and social assessment and management of the tree crop sector have been reviewed in this section. These have been applied in the assessment as necessary to ensure sustainable project implementation. The fourteen broad themes under which these were considered are as follows:

- 1) National environmental policy and requirements;
- 2) Agriculture, food, and trade related requirements;
- 3) Waste management policies and related requirements;
- 4) Water related policies and requirements;
- 5) Wildlife, forestry, and cultural heritage protection;
- 6) National planning and development requirements;
- 7) National labour, gender, and human rights requirements;
- 8) Education and training requirements;
- 9) National health and safety requirements;
- 10) National environmental quality standards;
- 11) World Bank requirements;
- 12) International requirements and conventions;
- 13) Comparison of the World Bank ESF and the EA Regulations; and
- 14) Institutional framework.

3.1 National Environmental Policy and Related Requirements

The policy and regulatory requirements reviewed and applied in the assessment in compliance with national requirements included:

- National Environmental Policy, 2013;
- National Environmental Action Plan, 1991;
- Environmental Protection Agency Act, 1994 (Act 490);
- Environmental Assessment Regulations, 1999 (LI 1652);
- The Fees and Charges (Miscellaneous Provisions) Act, 2022 (Act 1080); and
- National Climate Change Policy, 2013.

3.1.1 National Environmental Policy, 2013

The vision of the National Environmental Policy, 2013 which is based on an integrated and holistic management system for the environment, seeks to unite Ghanaians in working towards a society where all residents have access to sufficient and wholesome food, clean air and water, decent housing, and other necessities of life; and that further enable them to live in a fulfilling spiritual, cultural and physical harmony with their natural surroundings. This new paradigm of sustainable development intends to ensure:

- Citizens' quality of life and their living and working environments;
- Equal access to land and other natural resources; and
- Public participation and environmental governance.

The ESMF addressed the policy requirement for a holistic management of the environment with the provision of relevant mitigation measures for deforestation, waste handling, etc. for the protection of natural resources.

3.1.2 National Environmental Action Plan, 1991

The policy aims at ensuring a sound management of resources and the environment, and to 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.

Implementation of the activities under the ESMF for GTCDP will therefore ensure that the environment and resources are protected from exploitation and degradation.

3.1.3 Environmental Protection Agency Act, 1994

The Environmental Protection Agency Act, 1994 (Act 490) grants the EPA the mandate to ensure compliance with the Ghana Environmental Assessment (EA) requirements and procedures. Additionally, the Agency is required to control and monitor the generation, treatment, storage, transportation and disposal of waste, and the use and advice on regulation and management of hazardous substances.

The Agency is also vested with the power to determine an ‘adverse effect on the environment’ or an activity posing ‘a serious threat to the environment or public health’, and to regulate and serve an enforcement notice for any offending or non-complying activity. The Agency is also required to monitor and verify compliance with permit conditions of approved developments.

The implementation of the GTCDP activities consistent with provisions of the ESMF will therefore ensure compliance with the EA Regulations. The Project will always subject itself to the EPA for any inspection/monitoring as required by the Act.

3.1.4 Environmental Assessment Regulations, 1999

The Environmental Assessment Regulations, 1999 (LI 1652) prohibit commencing an “undertaking” without prior registration and environmental permit. Undertakings/activities are grouped into Schedules to facilitate screening and registration through the EA system. The schedules include undertakings requiring registration and environmental permit (Schedule 1), EIA mandatory undertakings (Schedule 2), and Schedule 5-relevant undertakings (i.e., proposals located in or near Environmentally Sensitive Areas) in Ghana. The regulations require submission of Annual Environmental Reports (AERs) and Environmental Management Plans (EMPs) for the implementation phase of approved undertakings.

All GTCDP activities will be screened to establish the appropriate level of environmental and social assessment using the Screening Checklist (Appendix 9.1) and in accordance with the ESMF and the EA Regulations.

3.1.5 Fees and Charges (Miscellaneous Provisions) Act, 2022

The Fees and Charges (Miscellaneous Provisions) Act, 2022 (Act 1080) sets out the fee regime for processing and issuing environmental permits, associated with the Environmental Assessment Regulations. Fee invoices are duly issued by EPA and paid for prior to issuance of an environmental permit. Fees for permits will be paid in accordance with this instrument for all applicable project activities.

3.1.6 National Climate Change Policy, 2013

The National Climate Change Policy, 2013 is Ghana's integrated response to climate change, aimed at a climate-resilient and climate-compatible economy, and sustainable development through equitable low-carbon economy. The objective of the Policy is to mitigate and ensure an effective adaptation in key sectors of the economy, such as agriculture and food security and natural resources management among others. The objective of the largest project component of the GTCDP is to support socially and environmentally sustainable productivity, profitability, and climate resilience of tree crop farms, addressing a lack of availability and access to technologies.

3.2 Agriculture, Food and Trade Related Requirements

The agricultural sector legislation relevant to E&S risks and impact management reviewed and applied in the assessment included:

- Plants and Fertilizer Act, 2010 (Act 803).

3.2.1 Plants and Fertilizer Act, 2010

The Plants and Fertilizer Act, 2010 (Act 803) provides for the efficient conduct of plant protection to prevent the introduction and spread of pests and diseases, regulate imports, and facilitate exports of plants and planting materials, the control and regulation of fertilizers and related matters. The Act also established the Plant Protection Advisory Council with functions such as developing and promoting a national plant protection system and coordinating public and private sector participation in plant protection and related matters. The ESMF addresses measures to prevent and control disease and pest infestation. These measures have been duly expatiated in a standalone Integrated Pest Management Plan (IPMP).

3.3. Waste Management Policy and Requirements

The relevant waste management policies and requirements reviewed and applied included:

- Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917);
- Hazardous, Electronic and Other Waste, Control and Management Regulations, 2016 (LI2250); and
- Environmental Sanitation Policy, 2010.

3.3.1 Hazardous and Electronic Waste Control and Management Act, 2016

The Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917) provides for the control, management and disposal of hazardous, electrical, and electronic waste and

related purposes. The Act also states that a person involved in the management of hazardous wastes or other wastes shall:

- Take the steps that are necessary to prevent pollution from hazardous wastes and other wastes arising from the management; and
- Where pollution occurs, minimize the consequences of the pollution on human health and the environment.

3.3.2 Hazardous, Electronic, and Other Wastes Control and Management Regulations

The Hazardous, Electronic, and Other Wastes (Classification), Control and Management Regulations, 2016 (LI 2250) is derived from the parent Act 917 and applies principally to waste generators, transporters, and managers, but not to domestic waste. The purpose includes:

- Classification, control, and management of wastes;
- General duties of waste generators, waste transporters, and managers; and
- Requirements for the disposal of wastes.

Activities under Component 1 of GTCDP regarding installation of digitalization system for farm and household mapping and traceability will adhere strictly to the requirements under these policies.

3.3.3 Environmental Sanitation Policy, 2010

The Environmental Sanitation Policy (Revised 2010) addresses the limitations of the old policy (1999) to meet current development objective. The policy aims at developing and maintaining a clean, safe, and pleasant physical environment in all human settlements, to promote the social, economic, and physical well-being of all sections of the population. The principal components of the policy include the collection and disposal of waste, e.g., solid and liquid waste, excreta, hazardous waste.

The following activities under GTCDP will not only comply with the policy, but also reinforce it by the sound management of waste generated from laboratories and experimental fields / stations and cuttings of CSSVD-affected farms and spraying. It will also enhance post-harvest management through avoidance.

3.4 Water Related Policies and Requirements

The relevant water related policies and requirements reviewed and applied to maintain a clean, safe, and pleasant physical and natural environment while protecting water resources and the health of the citizenry included:

- National Water Policy, 2007;
- Water Resources Commission Act, 1996 (Act 522);
- National Irrigation Policy, 2010;
- Riparian Buffer Zone Policy, 2013; and
- Water Use Regulations, 2001 (LI 1692).

3.4.1 National Water Policy, 2007

The National Water Policy, 2007 aims at an overall goal of 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. The policy addresses relevant issues under water resources management, urban water supply and community water and sanitation. The policy objectives seek to:

- Minimize the pollution of water sources from poor environmental sanitation services;
- Support District Assemblies to meet statutory obligations of providing services; and
- Ensure sustainability through effective community ownership and management facilities, active participation of women, public sector facilitation and private sector involvement.

3.4.2 Water Resources Commission Act, 1996

The Water Resources Commission Act, 1996 (Act 522) establishes the Commission, to regulate and manage the utilization of water resources in Ghana, and for the co-ordination of any policy in relation to them. The Commission also plans towards the utilization, conservation, development, and improvement of water resources, initiate, control and co-ordinate activities connected with the development and utilization of water resources. The GTCDP activities related to water use will comply with this Act (prohibition of use of water without authority – divert, dam, store, abstract or use water resources) stipulated in this Act.

3.4.3 National Irrigation Policy, 2010

The National Irrigation Policy, 2010 addresses the problems, constraints, and opportunities, which cut across the whole irrigation sub-sector; and specifically, for informal, formal and commercial irrigation. The goal of the Policy is to achieve sustainable growth and enhanced performance of irrigation, contributing fully to the goals of the agriculture sector. One of the key concerns of the sector is environmental degradation associated with irrigated production. GTCDP activities related with irrigation will be in the (production of seedlings and saplings at the nurseries)

3.4.4 Riparian Buffer Zone Policy, 2013

The Riparian Buffer Zone Policy, 2013 aims at ensuring all designated buffer zones along rivers, streams, lakes, reservoirs, and other water bodies are sustainably managed, as well as conserve, protect, restore, and maintain the ecology of such areas. It also seeks to establish vegetation in riparian buffer zones to improve water quality by controlling activities along the riverbanks and generally in catchments of surface water bodies. No activities of GTCDP will be permitted within the buffer zones of water bodies in the country.

3.4.5 Water Use Regulations, 2001

The Water Use Regulations, 2001 (LI 1692) enjoins all persons to obtain Water Use Permit from the Water Resources Commission (WRC) for domestic, commercial, agricultural water use among others. The Commission is also mandated to request for evidence that an

environmental impact assessment or an environmental management plan has been approved by the EPA before issuance of the Water Use Permit. In accordance with this regulation, all GTCDP activities requiring water use (production of seedlings and saplings at the nurseries) will seek the requisite guidance from the WRC.

3.5 Wildlife, Forestry and Cultural Heritage Protection

The relevant policies reviewed and applied to preserve and protect wildlife and forestry, as well as ensure the protection of cultural heritage included:

- Forest and Wildlife Policy, 2012;
- Forestry Commission Act, 1999 (Act 571); and
- National Museums Act, 1969 (N.L.C.D 387).

3.5.1 Forest and Wildlife Policy, 2012

The Forest and Wildlife Policy, 2012 aims at the conservation and sustainable development of forest and wildlife resources for the maintenance of environmental stability and continuous flow of benefits for the socio-cultural and economic goods and services derived by the present and for future generations, whilst fulfilling Ghana's commitments under international agreements and conventions. Two relevant objectives of the policy are to manage and enhance the ecological integrity of the forest, savannah, wetlands, and other ecosystems for the preservation of vital soil and water resources, conservation of biological diversity, and carbon stocks and to promote the rehabilitation and restoration of degraded landscapes to enhance environmental quality.

3.5.2 Forestry Commission Act, 1999

The Forestry Commission Act, 1999 (Act 571) establishes the Commission to be responsible for the regulation of the utilization of forest and wildlife resources, the conservation and management of those resources and the co-ordination of policies related to them. A relevant function is to create, protect and manage the permanent forest estates and protected areas in the various ecological zones to conserve Ghana's biophysical heritage.

In line with the Forest and Wildlife Policy and the Forestry Commission Act, mitigation measures that address the concerns of forest degradation and loss of biodiversity have been provided in this ESMF (refer to Section 7.21 and 7.22).

3.5.3 National Museums Act, 1969

The National Museum Act, 1969 (N.L.C.D. 387) establishes and governs the operations of the Ghana Museum and Monuments Board (GMMB) to acquire, protect, conserve, and document the Nation's movable and immovable material cultural heritage for posterity, for the purposes of research and education of the public. Sections 8, 9 and 10 of the Act deals with excavation permits, removal of antiquity and duty to notify discovery. In line with this Act, measures to protect cultural heritage have been provided in this ESMF (refer to Section 7.23).

3.6 National Planning and Development Requirements

The relevant policy and legislation on land-take for sector activities reviewed and applied included:

- National Land Policy, 1999;
- Lands Commission Act, 2008 (Act 767);
- Land Use and Spatial Planning Act, 2016 (Act 925);
- Local Governance Act, 2016 (Act 936);
- National Building Regulations, 1996 (LI 1630);
- Land Act, 2020 (Act 1036); and
- The Lands (Statutory Wayleaves) Act, 1963 (Act 186).

3.6.1 National Land Policy, 1999

The National Land Policy, 1999 sets out a broad framework and guidelines for land administration and utilization, with the following objectives among others:

- Ensure socio-economic activities are in conformity with principles of sustainable land use;
- Protect the rights of landowners and their descendants from becoming landless; and
- Provide mechanism for minimization and resolution of land dispute; and
- Promote community participation and public awareness at all levels in sustainable land management and development practices to ensure the highest and best use of land.

3.6.2 Lands Commission Act, 2008

The Lands Commission is charged with the management and administration of state and vested lands, with general functions as spelt out in Article 256 of the 1992 Constitution and the Lands Commission Act, 2008 (Act 767). The proprietary plan covering the site acquired for the project is plotted by the Commission in the government records. It is also responsible to ensure the acquisition is processed for approval by the Minister responsible for lands before an executive instrument is issued and gazetted.

3.6.3 Land Use and Spatial Planning Act, 2016

The Land Use and Spatial Planning Act, 2016 (Act 925) establishes the Land Use and Spatial Planning Authority with the functions to:

- Develop the capacities of the District Assemblies and other institutions for effective performance of their spatial planning and human settlement management functions;
- Ensure the control of physical development in uncontrolled or less controlled but sensitive areas such as forest reserves, nature reserves, wildlife sanctuaries, green belts, coastal wetlands, water bodies and catchment areas, open spaces, and public parks; and
- Ensure the exploitative use of natural resources for agriculture, mining, industry, and other related activities do not adversely impact on human settlements.

3.6.4 Local Governance Act, 2016

The Ministry of Local Government, Decentralization and Rural Development (MLGDRD) is responsible for the 16 administrative regions of Ghana. These regions are subdivided into 261 MMDAs. The Local Governance Act, 2016 (Act 936) mandates the MMDAs to take charge of the overall development of their respective areas. Under Act 936 the assembly is the planning authority and therefore responsible for physical/spatial planning, and approval of all planning schemes, as well as for development control through the grant of permit for development.. MMDAs are mandated to initiate programmes for the development of basic infrastructure, plan projects for the social development and provide municipal works and services as well as be responsible for the development, improvement and management of human settlements and the environment in the district. The law establishes right to information, participation, and the inclusion of marginalized groups. Articles 40 to 48 of the Act mandate local authorities to create opportunities for residents and other stakeholders to access information and to participate in decision making...etc.

3.6.5 National Building Regulations, 1996

The National Building Regulations, 1996 (LI 1630) regulates the haphazard and amorphous building of structures that affect the landscape of the country. The LI 1630 makes it an offence for any individual to undertake any development without the acquisition of a Building Permit from the relevant District Assembly. This ensures that buildings are well planned and are in conformity with the Assembly's plan designs of an area.

3.6.6 Land Act, 2020

The Land Act, 2020 (Act 1036) seeks to revise and consolidate the laws on land, with the view to harmonizing those laws to ensure sustainable land administration and management and effective land tenure. The Act makes it a necessity for reasons of justification to be provided for causing any hardship to persons who have an interest in or right over the property, and with prompt payment of fair and adequate compensation made for the acquisition.

3.6.7 The Lands (Statutory Wayleaves) Act, 1963

The Act (Act 186) requires notification for the right of entry to occupiers before undertaking survey, construction, inspection, and maintenance work. Section 6 of the Act states that any person who suffers any loss or damage of land as a result of construction, is entitled to compensation of an amount assessed by the Minister in respect of such loss or damage.

All the activities of GTCDP that will require land acquisition and involuntary resettlement will be addressed in accordance with these Acts (767, 925, 936, 1036 and 186) as well as the National Land Policy and the National Building Regulations.

3.7 National Labour, Gender, and Human Requirements

The requirements and provisions for workers, gender and social protection identified included:

- The Constitution of Ghana (1992);
- National Gender Policy, 2015;

- Labour Act, 2003 (Act 651);
- Labour Regulations, 2007 (LI 1833);
- National Employment Policy, 2014;
- Children’s Act, 1998 (Act 560);
- Hazardous Child Labour Activity Framework (2016);
- Inter-Sectoral Standard Operating Procedures for Child Protection and Family Welfare, 2020;
- National Plan of Action Phase II (NPA2) for the Elimination of the Worst Forms of Child Labour in Ghana (2017-2021);
- Workmen’s Compensation Law, 1987 (PNDCL 187);
- Persons with Disability Act, 2006 (Act 715); and
- Data Protection Act, 2012 (Act 843).

3.7.1 *The Constitution of Ghana, 1992*

Article 28 of the Constitution states every child has the right to be protected from engaging in work that constitutes a threat to his health, education, or development. It also supports the enactment of laws to protect children. For the purposes of this article, a “child” means a person below the age of eighteen years. In accordance with the Constitution, no child will subject to work that constitutes a threat to his health, education, or development in all the activities of GTCDP.

3.7.2 *National Gender Policy, 2015*

The National Gender Policy overarching goal is to mainstream gender equality concerns into the national development processes by improving the social, legal, civic, political, economic, and socio-cultural conditions of the people of Ghana particularly women, girls, children, the vulnerable and people with special needs (persons with disability and the marginalized). In this regard, GTCDP will ensure that its activities are focused on providing equal opportunities for all.

3.7.3 *Labour Act, 2003*

The purpose of the Labour Act, 2003 (Act 651) is to amend and consolidate existing laws relating to labour, employers, trade unions and industrial relations. The Act provides for the fair treatment of laborers to prevent discrimination of any sort, and the provision of special incentives to an employer who employs persons with disability. The provisions under Part XV (Occupational Health, Safety and Environment), of the Act explicitly prescribes the duty of an employer to ensure that every worker works under satisfactory, safe, and healthy conditions.

3.7.4 *Labour Regulations, 2007*

Labour Regulations, 2007 (LI 1833) states that an employer shall not engage a young person in work which involves manual lifting of loads (the weight of which exceeds twenty-five kilograms), the use of dangerous chemicals and substances and materials that emit radiation, or poisonous gases or fumes among others. It also states that an employer shall take appropriate measures to safeguard the health and safety of employees.

In accordance with the Labour Act and Regulations, measures to protect the rights of workers and safeguard their health have been addressed in this ESMF (see section 7.2 and 7.3). Additionally, these measures have been detailed in a standalone Labour Management Procedures.

3.7.5 National Employment Policy, 2014

The National Employment Policy, 2014 indicates that the key source of demand for labour emanates from the productive sectors of the economy, namely, agriculture, industry, and service. One of the key strategies of the employment policy is to promote farm and non-farm rural employment through modernisation of agriculture, improving the productivity of farmers and contract farming arrangements, promoting effective linkages between farm and non-farm activities among others.

3.7.6 Children's Act, 1998

The Children's Act, 1998 (Act 560) seeks to reform and consolidate the law relating to children, to provide for the rights of the child, maintenance, and adoption, regulate child labour and apprenticeship, for ancillary matters concerning children generally, and to provide for related matters. Section 87 of this Act specifically states that "No person shall engage a child in exploitative labour". According to the Act, labour is exploitative of a child if it deprives the child of its health, education, and development.

Section 90 states "The minimum age for the engagement of a child in light work shall be thirteen years". Where light work constitutes work which is not likely to be harmful to the health or development of the child and does not affect the child's attendance at school or the capacity of the child to benefit from schoolwork.

Section 91 states "The minimum age for the engagement of a person in hazardous work is eighteen years". Work is hazardous when it poses a danger to the health, safety, or morals of a person. Hazardous work includes, going to sea, mining and quarrying, portering of heavy loads, manufacturing industries where chemicals are produced or used, work in places where machines are used and work in places such as bars, hotels, and places of entertainment where a person may be exposed to immoral behaviour.

There is an amendment of this Act (Children's Amendment Act, 2016) which makes further provision in respect of foster-care and adoption and to provide for related matters. But this is not relevant to our project.

3.7.7 Hazardous Child Labour Activity Framework, 2016

The overall objective of the Hazardous Child Labour Activity Framework, 2016 is to develop a comprehensive, age-appropriate contextually relevant and acceptable hazardous child labour framework to drive research, intervention, monitoring and enforcement. It will also provide the best options for intervention and evaluation to safeguard the health, safety, development and

education of children. The list of hazardous child labour activities, processes or occupations include:

- Work involving exposure to harmful chemical agents (i.e., toxic, lead, asbestos, pesticides, e-waste, etc.);
- Driving or operating motor vehicle, tractors, forklift, or farm machinery; and
- Working for more than 4 hours per day in physically demanding or hazardous occupations, e.g., agriculture.

Table 3.1 presents a list of hazardous, non-hazardous, and light work in crop agriculture. derived from ILO C182 and R190, Ghana's laws on child labour, international best practices, laws, and occupational health principles.

Table 3.1 List of Hazardous, Non-Hazardous and Light Work in Crop Agriculture

Hazardous Work	Non-Hazardous Work	Light Work
• Clearing of forest • Felling of trees • Removing tree stumps • Bush burning • Exposure to agrochemicals (purchase, transport, storage, mixing, loading into spraying machine, spraying trees, washing containers, and spraying machine and disposing of empty agrochemical containers) • Being present or working in the vicinity of farm during spraying of agrochemicals or re-entering a sprayed farm within less than 12 hours • Grafting in citrus and rubber farming • Using machetes/long cutlass for weeding or pruning • Climbing trees higher than 2.5 meters to cut mistletoe or harvest or prune with sharp cutlass or implement • Working with motorized farm machinery (mist blower, knapsack sprayer, chainsaw, tractor, and bulldozer) • Harvesting overhead cocoa pods, palm fruits, orange or rubber with Malayan knife, axe, or other implements. • Breaking cocoa pods with sharp breaking knives, stripping palm fruit from stem bunches with sharp axe or cutlass • Carrying heavy load beyond permissible carrying weight (above 30% of body weight for more than 3km. • Working without adequate basic foot and body protective clothing • A child working alone on the farm in isolation (beyond visible or audible range of nearest adult • Covering the counted oranges with branches to hide it and shade it from the sun	• Making a shed to provide shade for seedlings • Assisting in planting and securing seedlings and other crops • Weeding/brushing under-growths with age-appropriate cutlass • Plucking pods or oranges within hand-reach • Collecting rubber latex • Breaking cocoa pods with breaking mallet or hitting it on the ground • Carrying and carting age-appropriate load (permissible weight) • Heaping of cocoa, orange, rubber, or oil palm • Gathering harvested pods • Scooping cocoa beans out of broken pods • Assisting in loading harvested produce into vehicle	• Filling the plastic bags with back soil • Picking and gathering cocoa, orange, loose palm fruits and other produce during harvesting • Counting oranges and cocoa pods • Fetching water for spraying and leaving the farm before spraying commences • Running basic farm errands • Assist in taking care of babies and toddlers on the farm during weekends and holidays

3.7.8 Inter-Sectoral Standard Operating Procedures for Child Protection and Family Welfare, 2020

The Inter-Sectoral Standard Operating Procedures (ISSOP) for Child Protection and Family Welfare has been developed to be used by all Government and Non-Governmental Institutions

working for and on behalf of children. These include individuals and supervisors, informal and informal institutions that provide services to children who have suffered or are likely to suffer various forms of violence, abuse and exploitation or who are in conflict/contact with the law. The users of this ISSOP specifically include: Ministry of Gender, Children and Social Protection, Department of Social Welfare, Department of Social Welfare & Community Development, Traditional Authorities, Members of Child Protection Committees, Private sector enterprises etc. It also spells out roles and responsibilities in pathways of key sector, institutions and caseworkers such as civil society and key community-based stakeholders in child protection, Child Labour Unit, Department of Social Welfare and Community Development, Anti-human Trafficking Unit/ Domestic Violence and Victim Support Unit/ Ghana Police Service, school staff, NGOs, the courts, etc..The ISSOP defines level of risk and vulnerability as follows (Table 3.2 presents the risk and vulnerability matrix for child labour and trafficking):

- Level 1 (Higher) – Significantly harmed and / or with urgent safety and health risk or needs reported immediately and the response occurs no later than 24 hours;
- Level 2 (Medium)– Reported within 48 hours and the response occurs no later than one week;
- Level 3 (Lower) – Reported within one week and service well underway at least within one month; and
- Level 4 (Risks Reduced, Needs Met, Wellbeing Outcomes – No further response needed other than periodic monitoring, counselling and / or guidance as needed.

Table 3.2 Risk and Vulnerability Matrix for Child Labour and Trafficking

Activity	Type of Risk, Vulnerability and Response Required	Level 1 (Higher)	Level 2 (Medium)	Level 3 (Lower)	Level 4 (Risks Reduced, Needs Met; Wellbeing Outcomes)
Reporting	Child Labour and Child Trafficking Worst Forms of Child Labour (WFCL) Domestic and Gender-based Violence (D&GBV)	1) All forms of Child Trafficking a) Some may be situations in which the life or health (physical or mental) of a child is in danger or imminent danger; the child, parent, relative or close friend expresses urgency due to an event that is about to happen and needs to be prevented – for example moving to a new location, forced into a brothel, cross a border for exploitative purposes. b) Others may not be in such immediate risk but nevertheless response is necessary in the form of planning and preparation for rescue/other responses 2) Worst form of child labour in which the life or health of the child is in imminent danger. 3) All forms of WFCL and Child Trafficking involving violence or sexual exploitation (see D&GBV) including domestic workers (house help).	1) All cases of WFCL not requiring an immediate intervention. 2) Children being forced to work 3) Hazardous child labour situations not covered in the WFCL framework due to unique situations of children, such as disability. 4) All child labour cases in which child has dropped out of school. 5) Child hawking on the streets during school hours	1) Parents are threatening to send the child to work 2) Attendance at school is not regular, child is not coming to school on time. 3) Child is fatigued at school and having difficulties with studies, child's appearance and health are not good 4) Child is seen in markets during school hours	1) The child is rescued. 2) Child is no longer in WFCL or hazardous labour 3) Child is removed from exploitative situation Rehabilitation Factors #s 4-7: 4) Child is reintegrated/ reunified into local community or with family or into alternative care 5) Child receives vocation training certificate and is employed in safe responsible livelihood consistent with the laws 6) Parents are in more secure livelihoods or social protection prevents child labour/trafficking. 7) Psychosocial health is improved. 8) Child is back in school for at least two consecutive semesters and enrolled in a third. 9) Employers have ceased illegal child labour practices. 10) Child traffickers and employers of WFCL face criminal penalties including jail and fines

Response	Child Labour, and Child Trafficking Worst Forms of Child Labour (WFCL) Domestic and Gender-based Violence (D&GBV)	1) Law enforcement is immediately engaged (including as necessary of DOVVSU, GPS, Ghana Immigration Service, Human Trafficking Unit) 2) DSW/DSWCD is part of the rescue and removal, and leads coordination of comprehensive assistance, including immediate medical screening, counselling, and temporary shelter as necessary. 3) Child Labour Development Officers are engaged in the WFCL cases dealing with employers. 4) Health facilities are notified and stand ready to help. 5) School is notified for inclusive education planning. 6) Traditional Authorities are engaged to assist with reintegration and reunification, including monitoring	1) Same as higher risk, except for item 5, which can potentially be led by Girl Education Officer (GEOs) with other school staff including Guidance and Counselling Officers (GCOs) who may request assistance from DSW/DSWCD, Traditional Authorities, or other community leaders. If there are complex CP issues requiring health and law enforcement, then DSW/DSWCD becomes case manager. 2) Case associated with neglect, see response under Social Protection and Other Similar Vulnerable Households case category	1) School GEOs, GCOs & administrators lead the casework. Depending on the situation and prior knowledge of the case, school may request assistance from DSW/DSWCD, Traditional Authorities. If there are complex CP issues requiring health and law enforcement, then DSW/DSWCD becomes case manager. 2) Case associated with neglect, see response under Social Protection and Other Similar Vulnerable Households case category	

MDT=Multi-disciplinary Team

3.7.9 National Plan of Action Phase II (NPA2) for the Elimination of the Worst Forms of Child Labour in Ghana (2017-2023)

The overarching principle upon which this second National Plan of Action for the Elimination of the Worst Forms of Child Labour in Ghana (NPA2) is conceptualized, designed and implemented is the promotion of the best interest of the child. NPA2 focuses on a set of priority actions and problems that need to be addressed urgently and which can yield significant impact in the short to medium term. Major emphasis will be placed on preventive strategies against the Worst Forms of Child Labour (WFCL), without neglecting children already involved in the WFCL. The areas to receive priority attention include:

- Public awareness and advocacy for effective implementation of key policies in education, social protection, child development, rural economy (including agriculture) and youth employment;
- Direct services to affected families and children;
- Withdrawal of children below the age of 15 from child labour and the protection of working children aged 15 and above from exploitation and hazardous work; and
- Development of institutional capacities at all levels of government and within civil society to ensure the effective application of established procedures and protocols.

3.7.10 Workmen's Compensation Law, 1987

The Workmen's Compensation Act, 1987 (PNDCL 187) holds employers responsible for the payment of compensation to workmen for personal injuries caused by accidents arising out and in the course of their employment. 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.

In cases of injuries arising out of, and in the course of employment, provisions for the workers' compensation have been provided in the ESMF (Section 7.2) in accordance with the Workmen's Compensation Act, 1987 (PNDCL 187).

3.7.11 Persons with Disability Act, 2016

The Persons with Disability Act, 2006 (Act 715) provides certain rights to protect persons with disabilities. The Act states that a person or an employer shall not:

- Discriminate against or subject a person with disability to degrading treatment;
- Discriminate against a prospective employee or an employee on grounds of disability;
- Call a person with disability derogatory names; and
- Post a person with disability to a section of the establishment not suited for the person.

Mitigation measures have been provided in the ESMF to prevent discrimination of Persons with Disabilities in employment.

3.7.12 Data Protection Act, 2012

The Data Protection Act, 2012 (Act 843) sets out the rules and principles governing the collection, use, disclosure and care for personal data or information by a data controller or processor. Data Protection Commission established by this Act is an independent statutory body to ensure and enforce compliance. While the ESMF process involved the collection of significant data in districts and regions, the rights of individuals will be respected as stipulated in this Act.

3.8 Education and Training Requirements

The Education Act, 2008 (Act 778) provides for the establishment of an educational system intended to produce well balanced individuals with the requisite knowledge, skills, values, aptitudes and attitudes. The Act states that a child who has attained school going age shall, at the basic level attend a course of instruction. It adds that where a child does not attend a course of instruction in compliance to the Act, the parent shall in the first instance, appear before the social welfare committee of the District Assembly for appropriate action. And if fails to comply with the appropriate action agreed by the committee, commits an offence and is liable to conviction by a District Court.

The ESMF addresses measures to ensure that children at school going age are not denied access to education by being engaged in child labour activities (Section 7.4).

3.9 National Health and Safety Requirements

The relevant policies that ensure the general well-being, health promotion and safety of workers and the public includes:

- National Workplace HIV/AIDS Policy, 2012;
- National HIV/AIDS and Policy, 2019;
- National Health Policy, Revised 2020
- Public Health Act, 2012, (Act 851);
- Imposition Restriction 2020, (Act 490);
- Factories, Offices and Shops Act, 1970 (Act 328);
- Ghana National Fire Service Act, 1997 (Act 537);
- Fire Precaution (Premises) Regulations, 2003 (LI 1724);
- National Wildfire Management Policy, 2006; and
- Control and Prevention of Bushfires Act, 1990 (PNDCL 229).

3.9.1 National Workplace HIV/AIDS Policy, 2012

The broad objectives of the National Workplace HIV/AIDS Policy, 2012 among others, are to provide protection from forms of stigma and discrimination in the workplace to people living with HIV and AIDS; prevent HIV and AIDS spread among workers; and provide care, support, and counselling for those infected and affected.

3.9.2 National HIV/AIDS and Policy, 2019

The National HIV and AIDS Policy, 2019 aims at creating an enabling environment for the development and execution of effective and efficient HIV and AIDS interventions and for the achievement of epidemic control. The four objectives the policy strives to achieve includes:

- Empower the population to prevent new HIV infections;
- Ensure the availability of and accessibility to prevention, treatment, care and support services.
- Mitigate the social and economic effect of HIV on persons affected and living with HIV; and
- Ensure the availability of adequate funding to execute the policy strategies.

The ESMF provides measures to ensure basic human rights of all workers are protected by prohibiting workplace discrimination against persons with HIV and STIs according to the National Workplace HIV/AIDS and National HIV/AIDS and STI Policies. Refer to (Section 7.16)

3.9.3 National Health Policy, 2020

The National Health Policy (Revised 2020) works towards the achievement of healthy lives with the goal to promote, restore and maintain good health for all people living in Ghana. The objectives of the Policy are:

- To encourage the adoption of healthy lifestyles;
- To improve the physical environment; and
- To improve the socio-economic status of the population.

Under the objective of improving the physical environment, the policy aims to ensure Ghanaians have access to potable water, improved sanitation, clean air, and a reduction in exposure to harmful noise levels and hazardous substances. GTCDP activities will be conducted in a manner that meets the objectives of this policy; health standards will be enforced while capacities of farmers and other beneficiaries will be built and enhanced.

3.9.4 Public Health Act, 2012

The Public Health Act, 2012 (Act 851) consolidates the laws relating to public health to prevent diseases, promote, safeguard, maintain and protect the health of humans and animals and to provide for related matters. This Act makes provision with respect to the protection of public health in Ghana and lays down rules relative to environmental sanitation. It further, among other things, provides rules relative to food vending and food-borne diseases, prohibits noxious or offensive practices that may cause damage to the lands, crops or cattle.

In accordance with the National Health Policy and the Public Health Act, provisions for prevention and protection of occupational and public health and safety have been made in this ESMF following analysis of the significance of potential health and safety risks posed by the activities of GTCDP. Refer to (Section 7.2 and 7.11).

3.9.5 Imposition Restriction, 2020

The Imposition Restriction Act, 2020 (Act 1012) provides for the imposition of restrictions that are reasonably required in the interest of public safety, and public health or on the movement or residence within Ghana of any person or persons generally, or any class of persons. This Act with the provisions of the Executive Instruments (EI 64 to date) is used to regulate the wearing of face masks by the public when moving out of homes and impose restrictions on public gatherings and travels to help reduce the spread of COVID-19. Provisions have been made in the ESMF for the containment and prevention of COVID-19 transmission (Section 7.17).

3.9.6 Factories, Offices and Shops Act, 1970

The Factories, Offices and Shop Act, 1970 (Act 328) spells out the responsibilities of an employer in ensuring a safe and healthy work environment. It defines a factory to include any premises (whether in or not in a building) in which one or more persons are employed in manual labour in any process. The Act mandates the Department of Factories Inspectorate to register such activities and ensure that internationally accepted standards of providing safety, health and welfare of persons are adhered to.

Measures to ensure a safe and healthy working environment as well as the safety and wellbeing of workers have been incorporated in this ESMF (Section 7.2).

3.9.7 Ghana National Fire Service Act, 1997

The Ghana National Fire Service Act, 1997 (Act 537) re-establishes the National Fire Service to provide for the management of undesired fires and for related matters. To achieve its objective of preventing and managing undesired fire; the Service organises public fire education programmes to create and sustain awareness of the hazards of fire, and the role of the individual in preventing fire. It also provides technical advice for building plans and structural layouts to facilitate escape from fire, rescue operations and fire management. The Act also mandates the issuance of fire certificates. The Project will collaborate with the GNFS District offices to provide periodic fire management education to all project beneficiaries.

3.9.8 Fire Precaution (Premises) Regulations, 2003

Fire Precaution (Premises) Regulations, 2003 (LI 1724), requires a fire certificate for premises used as a public place or place of work. It is incumbent on any developer to ensure that adequate provision and measures are introduced to minimize or prevent fire outbreaks. All building facilities to be provided under this Project will be certified by the GNFS to ensure that adequate fire prevention and suppression provisions have been made.

3.9.9 National Wildfire Management Policy, 2006

The goal of the National Wildfire Policy, 2006 seeks to promote effective and efficient management of wildfires for the sustainable management of natural resources and maintenance of environmental quality to improve on the socio-economic wellbeing of citizenry. The objectives of the policy include:

- Ensuring effective and efficient prevention and control of wildfires;

- Encouraging the adoption of alternative resource management systems that will minimize the occurrences of wildfires; and
- Developing the necessary structures and systems which will ensure stakeholder participation in wildfire management.

3.9.10 Control and Prevention of Bushfires Act, 1990

The Control and Prevention of Bushfires Act, 1990 (PNDCL 229) prohibit the starting of bushfires by any person for any purpose. A bushfire is described as an action of a person that results in the uncontrolled burning of a farm, forest, or grassland. The Act provides for the establishment of a fire volunteer squad in every town, area, or unit. The National Fire Service is responsible for the training of these fire volunteer squads. Measures to prevent and control bushfires have been addressed in this ESMF.(Section 7.12).

3.10 National Environmental Quality Standards

The relevant environmental quality standards identified include:

- Ghana Standard on Health Protection - Requirements for Ambient Noise Controls (GS 1222:2018);
- Ghana Standard on Environment and Health Protection - Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019); and
- Ghana Standards Environment Protection-Requirements for Effluent Discharge (GS 1212:2019).

3.10.1 Ghana Standard on Health Protection - Requirements for Ambient Noise Controls

The Requirement for Ambient Noise Control, (GS 1222:2018) provides for maximum permissible levels of noise based on categorized zones as shown in Table 3.2. The standard also provides noise requirement for a construction site which includes:

- Erecting an acoustic barrier around construction sites; and
- Ensuring that the maximum noise level near the construction site does not exceed 66dB(A) Leq (5min) in areas other than industrial areas.

Table 3.1 Requirements for Ambient Noise Control

Zone	Permissible Noise Level in dB(A)	
	Day (6:00am-10:00pm)	Night (10:00pm-6:00am)
Residential Area	55	48
Educational and health facilities, offices, and law courts	55	50
Mixed used	60	55
Area with some light industry	65	60
Commercial Areas	75	65
Light Industry Areas	70	60
Heavy Industry Areas	70	70

3.10.2 Ghana Standard on Environment and Health Protection - Requirements for Ambient Air Quality and Point Source/Stack Emissions

The Ghana Standard for Environment and Health Protection - Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019) provides the maximum limit for ambient air pollutants (Table 3.3).

Table 3.2 Requirements for Ambient Air Quality – Maximum Limit for 24 Hours

Substance	Maximum Limit ($\mu\text{g}/\text{m}^3$)
Sulphur Dioxide (SO_2)	50
Nitrogen Oxide (NO_2)	150
Total suspended particulate matter	150
PM_{10}	70
$\text{PM}_{2.5}$	35
Black Carbon	25
Lead	1

3.10.3 Ghana Standards Environment Protection-Requirements for Effluent Discharge

The Ghana Standard for Environment Protection – Requirements for Effluent Discharge (GS 1212:2019) require every undertaking to install pollution control system for treatment of effluent discharges from the operations, based on best available technology. In the absence of pollution control equipment, an undertaking shall implement measures to control pollution. Any effluent discharged from a facility shall be within permissible levels (Table 3.4).

Table 3.3 Requirements for Effluent Discharge

Parameter	Unit	Maximum Permissible Levels
Colour (TCU)	TCU	200
pH	pH Units	6 – 9
Conductivity	$\mu\text{S}/\text{cm}$	1500
Total Suspended Solids (TSS)	mg/l	50
Total Dissolved Solids (TDS)	mg/l	1000
COD	mg/l	250
Oil and grease	mg/l	5.0
Aluminum	mg/l	1.0
Copper	mg/l	5.0
Lead	mg/l	0.1

3.11 World Bank Requirements

The relevant World Bank requirements reviewed and applied in the assessment included:

- World Bank Environmental and Social Framework;
- World Bank Group General Environmental Health and Safety Guidelines; and

- World Bank Group EHS Guidelines for Perennial Crop Production.

3.11.1 World Bank Environmental and Social Framework

The EMSF complies with the Environmental and Social Framework of the World Bank. For this project, eight (8) World Bank Environmental and Social Standards (ESSs) are relevant and these are summarized in Table 3.5 below.

Table 3.4 Summary of Relevant Environmental and Social Standards

Policy	Summary of Core Requirements	Relevance
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	ESS1 sets out the Borrower's responsibilities for assessing, managing, and monitoring environmental and social risks and impacts associated with all stages of a project supported by the Bank	All the GTCDP activities must be assessed for E&S risks and impacts and appropriate E&S instruments prepared.
ESS2: Labour and Working Conditions	ESS 2 recognizes how Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. The standard clearly prescribes the minimum age of 14 years for a child to be engaged on the project and prohibits forced labour. It also promotes freedom of association	The project will involve the use of direct workers, contracted workers, and primary supply workers. Some of the proposed project activities will present occupational health and safety risks which must be fully addressed in line with the requirements of ESS2. Furthermore, the project may engage children below the age of 18 in economic activities, thus the ESS2 standard related to child labour is relevant.
ESS3: Resource Efficiency and Pollution Prevention and Management	This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life-cycle since economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people and ecosystem services.	Relevant to GTCDP activities requiring the use of natural resources from the environment and activities such as use of pesticides and fertilisers with the potential to pollute environmental media.
ESS4: Community Health and Safety	ESS4 address the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their circumstances, may be vulnerable.	Activities such as rehabilitation of farms involving spraying, and the setting up of laboratories, etc will be implemented in communities and could have potential risks and impacts on inhabitants of these communities
ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	This ESS emphasizes that involuntary resettlement should be avoided. Where involuntary resettlement is unavoidable, it will be minimized and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) will be carefully planned and implemented.	Activities such as the establishment of nurseries and delivery centres could result in the relocation, resettlement, or restriction to access for some individuals and communities
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	This ESS recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. It addresses sustainable management of primary production and harvesting of living natural resources and recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples,	Activities of GTCDP will involve the use of pesticides, fungicides and other agrochemicals which may be deleterious to biodiversity. The proposed agro-forestry practices in cocoa and other tree crops plantations are expected to improve the biodiversity landscape of project areas.

	whose access to, or use of, biodiversity or living natural resources may be affected by a project.	
ESS8: Cultural Heritage	This recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. It sets out measures designed to protect cultural heritage throughout the project life-cycle.	There is a chance of encountering cultural heritage issues in the project areas since Ghana is a country with rich culture
ESS10: Stakeholder Engagement and Information Disclosure	This recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice.	GTCDP involves many stakeholders with various interest which ought to be managed using a Stakeholder Engagement Plan.

3.11.2 WBG General Environmental Health and Safety Guidelines

The World Bank Group (WBG) General Environmental Health and Safety (EHS) Guidelines is a technical reference document containing information on cross-cutting environmental, health and safety issues potentially applicable to all industry sectors. The General EHS guidelines, which prescribe performance levels and measures, are designed to be used together with the relevant Industry Sector EHS Guidelines. These documents are to be the reference for EHS measures implemented for WBG-funded projects. The General guidelines are in 4 main groups: Environmental; Occupational Health and Safety; Community Health and Safety; and Construction and Decommissioning.

3.11.3 WBG Environmental Health and Safety Guidelines for Perennial Crop Production

The World Bank Group (WBG) General Environmental Health and Safety (EHS) Guidelines for perennial crop production provides information relevant to large-scale plantation crops and out grower systems and focuses on the primary production and harvesting through farming and plantation forestry of major multi-year food, fibre, energy, ornamental, and pharmaceutical crops, located in both temperate and tropical regions. It includes tree crops (such as cocoa and rubber) EHS issues such as pest management, use and management of pesticides, greenhouse gas emissions and biodiversity and ecosystems.

3.12 International Requirements and Conventions

The international requirements and conventions to which Ghana is a signatory, relevant to this ESMF are presented in Table 3.6.

Table 3.5 Relevant International Conventions

Convention	Main Characteristics	Participation of Ghana
Labour Rights		
International Labour Organization Conventions (ILO)	Minimum Age Convention The Minimum Age Convention, 1973 (No.138) states that the minimum age for admission to any type of employment or work which by its nature or the circumstances in which it is carried out is likely to jeopardise the health, safety or morals of young persons shall not be less than 18 years.	R= 6 th June, 2011

Convention	Main Characteristics	Participation of Ghana
	Article 7 of the Convention states that national laws or regulations may permit the employment or work of persons 13 to 15 years of age on light work which is: a) Not likely to be harmful to their health or development; and b) Not such as to prejudice their attendance at school, their participation in vocational orientation or training programmes approved by the competent authority or their capacity to benefit from the instruction received. Worst Forms of Child Labour Convention The ILO Convention of Worst Forms of Child Labour, 1999 (No. 182) was acceded to by Ghana on June 13, 2000. The Convention charges all ratified members to provide effective and time bound measures to prevent the engagement of children in the worst forms of child labour. The Convention further defined worst forms of child labour to include engagement of children in works that are likely to affect their health, safety, or morals. According to the Worst Forms of Child Labour Recommendation (No. 190), the ILO provides the following guidelines for work considered unsafe for children, this includes work involving toxic chemicals or fumes, work taking place in direct sunlight, carrying heavy loads, work that involves the presence of dangerous animals or insects, etc. Forced Labour Convention Forced Labour Convention, 1930 (No. 29) advocates for the suppression of all forms of forced labour. This means that States ratified to this convention must not only criminalize and prosecute forced labour, but also to take effective measures to prevent forced labour and provide victims with protection and access to remedies, including compensation. Right of Association (Agriculture) Convention Right of Association (Agriculture) Convention, 1921 (No. 11) secures all those engaged in agriculture the same rights of association and combination as to industrial workers, and to repeal any statutory or other provisions restricting such rights in the case of those engaged in agriculture.	R=13th June, 2000 R=20th May, 1957 R= 14th March, 1973
Child/Human Rights		
African Charter on the Rights and Welfare of the Child	Article 15 of the African Charter on the Rights and Welfare of the Child, 1990 states that every child shall be protected from all forms of economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child's physical, mental, spiritual, moral, or social development. State Parties are required to take all appropriate legislative and administrative measures to ensure the full implementation of this Article. For the purposes of this Charter, a child means every human being below the age of 18 years.	S=18 th August, 1997 R= 10 th June, 2005
Convention on the Rights of the Child, 1989	Commitment to defend and guarantee the rights of children and to meet these commitments before the international community. States which are members of the Convention are required to develop and implement measures and policies which consider the best interests of the child.	R = February 5th, 1990 S = February 5th, 1990
Convention on the Elimination of All Forms of Discrimination against Women (CEDAW, 1979)	The Convention defines the term "discrimination against women" as any distinction, exclusion or restriction made based on sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field.	S = July 17th, 1980 R = January 2nd, 1986
Protection of Biodiversity		
Convention on Biological	The Convention on Biological Diversity underlines those threats to biological diversity had increased everywhere in the world, mainly as a result of the continuing destruction of natural	R = August 29th, 1994

Convention	Main Characteristics	Participation of Ghana
Diversity (CBS, 1992)	habitats. It has 3 main objectives, conservation of biological diversity, sustainable use of the components of biological diversity and fair and equitable sharing of the benefits arising out of the utilization of genetic resources.	S = June 12th, 1992
International Plant Protection Convention	Aims to secure coordinated, effective action to prevent and to control the introduction and spread of pests of plants and plant products. The Convention extends beyond the protection of cultivated plants to the protection of natural flora and plant products. It also takes into consideration both direct and indirect damage by pests, so it includes weeds.	A = 22 Feb 1991
Climate Change		
UN Framework Convention on Climate Change (Rio, June 1992)	To stabilize the concentration of greenhouse gases in the atmosphere at a level that should prevent dangerous anthropogenic interference with the climate system. This level should be reached in sufficient time for ecosystems to adapt naturally to climate change, food production would not be threatened, and economic development could continue in a sustainable.	S = June 12th, 1995 AR = Sept 6th, 1995
The Montreal Protocol (1987)	The Montreal Protocol is a global agreement to protect the stratospheric ozone layer by phasing out the production and consumption of ozone-depleting substances (ODS).	S = 24 February 1988
Pesticides/Hazardous Chemicals		
International Code of Conduct for The Distribution and Use of FAO Pesticides	The basic function of the International Code of Conduct for the Distribution and Use of FAO Pesticides (Revised 2002) is to serve as a framework and point of reference for the judicious use of pesticides for all those involved in pesticide matters. The objectives of this Code include to establish voluntary standards of conduct for all public and private entities engaged in or associated with the distribution and use of pesticides and to address the need for a cooperative effort between governments of pesticide exporting and importing countries to promote practices that minimize potential health and environmental risks associated with pesticides, while ensuring their effective use	Adopted
Rotterdam Convention	The Rotterdam Convention provides Parties with a first line of defense against hazardous chemicals. It promotes international efforts to protect human health and the environment as well as enables countries to decide if they want to import hazardous chemicals and pesticides listed in the Convention. Together with the Stockholm and Basel Conventions and FAO's voluntary Code of Conduct, the Rotterdam Convention promotes a life cycle approach and provides the necessary tools for managing pesticides.	S = 11 Sept, 1998 R = 30 th May, 2003 AA = 30 th May, 2003
Basel Convention	The Basel Convention was created to protect people and the environment from the negative effects of the inappropriate management of hazardous wastes worldwide. It is the most comprehensive global treaty dealing with hazardous wastes from its generation, transport to disposal	R = 9 th June, 2005 DE = 5 th Dec. 2019
Stockholm Convention	The Stockholm Convention is a global treaty to protect human health and the environment from highly dangerous, long-lasting chemicals by restricting and ultimately eliminating their production, use, trade, release, and storage.	S = 23 rd May, 2001 R = 30 th May, 2003
Signature = S; Ratification = R; Accession = A; Authorisation for ratification or accession = AR, Letters of ratification = LR; Participation = P; Letters of Accession = LA.		

3.13 Comparison of the World Bank ESF and the EA Regulations

There are significant gaps between the World Bank ESF requirements and that of the Ghanaian Environmental Assessment Regulations. This section presents the comparison between the core requirements of the ESF and the Ghana laws, policies and legislative instruments. This has been presented in Table 3.7 below.

Table 3. 6 Comparison Between the ESF and the Ghanaian EA Regulations

Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	ESS1 sets out the Borrower's responsibilities for assessing, managing, and monitoring environmental and social risks and impacts associated with all stages of a project supported by the Bank	The Environmental Protection Agency Act, 1994 (Act 490) and Environmental Assessment Regulations, 1999 (LI 1652). These require assessment of all projects with potential environmental and social impacts	The L.I does not specifically mention social issues such as SEA/SH, persons with disability, etc. and a responsive grievance redress mechanism for project affected parties within project communities.	Clear guideline should be provided for sexual exploitation and abuse and sexual harassment (SEA/SH), vulnerability, people with disability, inclusiveness, the need for timely and effective consultation, timely and responsive grievance redress mechanism and adequate consideration of project affected persons and communities in stakeholder engagement
ESS2: Labour and Working Conditions	ESS 2 recognizes how Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. The ESS2 prescribes the minimum age of 14 years for a child to be engaged on the project and prohibits forced labour. It also promotes freedom of association	Labour Act, 2003 (Act 651): Part XV, Section 118 (1) and (2a-h) of the Act requires employers to ensure that every worker employed by him or her works under satisfactory, safe and healthy conditions, and is further obliged to provide necessary information, instructions, training and supervision to ensure the health and safety of workers as well as in compliance with other Acts such as the Workmen Compensation Act (1987); Factories, Offices and Shops Act, Act 328 (1970); and the Children's Act Section 58 to 61 of the Labour Act also prohibit the employment of young persons in hazardous work, which is defined to include work likely to expose the person to physical or moral hazard.	There is no specific requirement for the preparation of labour management procedure. Also, the Draft Occupational Safety and Health Policy is yet to be passed. Although the Labour Commission makes provision for anticipated labour-related complaints and redress, beneficiaries' access (distance and processes) to the Commission at the district-level may be a challenge.	There is a need to strengthen workers organization to ensure that grievance redress mechanism systems are set up. More focus should be given to industry standards for occupational health and safety of workers as well as issues of child labour and forced labour. The Labour Management Procedure shall specify the permitted and non-permitted work of children. Ghana's minimum age for a child to be involved in "light work" is set to 13 years, while the minimum age to be engaged in a World Bank project is set by the ESS2 to 14 years. In this case, the minimum age of 14 shall apply to light work. Ghanaian law furthermore sets the minimum age to be admitted to employment to 15 years, thus this

Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
		Children's Act 1998 defines the minimum age for children to be engaged in light work, to 13, and the right to be admitted into employment to 15 years.		higher standard shall apply for employing children to satisfy labour requirement of the project. No children under 18 should be allowed to do hazardous work, which will be defined in the LMP.
ESS3: Resource Efficiency and Pollution Prevention and Management	This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle since economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people and ecosystem services.	The Environmental Protection Act 1994 (Act 490), Part I of the Act include the environmental permits and pollution abatement notices and the prescription of standards and guidelines. Part II of the Act sets out provisions for enforcement and control. The Act empowers EPA to appoint "Environmental Protection Inspectors" and any other employees necessary to provide the functions of the Act Pesticides Control and Management (regulated under Part II of the EPA Act 490 (1994))	The regulation addresses measures to control, handle and dispose waste and also measures to deal with pollution. However, effective implementation and enforcement is a challenge. It does not specifically mention an Integrated Pest Management Plan and does not provide specific guidelines for the preparation of an Integrated Pest Management Plan	More focus must be put on effective waste management and efficient use of natural resources. A comprehensive Integrated Pest Management Plan (IPMP) has been prepared as a standalone document to guide farmers on the safe use of agrochemicals and management of pest.
ESS4: Community Health and Safety	ESS4 address the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their circumstances, may be vulnerable.	The Environmental Protection Agency Act, 1994 (Act 490) and Environmental Assessment Regulations, 1999 (LI 1652) require that the public and community members are consulted during project development and implementation to ensure proposed mitigation measures are put in place to safeguard public health. The Labour Act, 2003 (Act 651) also ensure that a satisfactory, safe and healthy	The law does not place emphasis on vulnerable groups in project communities	Beyond consultation with project affected communities stated in LI 1652, more attention will be given to vulnerable groups in project communities.

Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
		conditions that ensures the health and safety of workers are provided.		
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	This ESS emphasizes that involuntary resettlement should be avoided. Where involuntary resettlement is unavoidable, it will be minimized and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) will be carefully planned and implemented.	The Lands Act, 2020 (Act 1036) makes it a necessity for reasons for justification to be provided for causing any hardship to persons who have an interest in or right over the property, and with prompt payment of fair and adequate compensation. Section 265 of the Act requires that a land acquisition and resettlement plan is to be prepared, which is also in compliance with the Lands Commission Act, 2008 (Act 767), The Lands (Statutory Wayleaves) Act, 1963, (Act 186) and the National Land Policy, 1999.	Resettlement assistance is not recognized for those without legal rights to land. Also, there is no legislative provisions that specifies the timing of completion of resettlement and compensation. The laws also do not specify support for livelihood restoration and assistance to vulnerable groups	Clear guidelines will be provided for timing of compensation payment, calculation of compensation and valuation, livelihood restoration and assistance, vulnerable groups, squatters (illegal settlers), information disclosure, and the use of resettlement instruments such as RPF, RAP, ARAP.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	This ESS recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. It addresses sustainable management of primary production and harvesting of living natural resources and recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural resources may be affected by a project.	Forestry Commission Act, 1999 (Act 571) establishes the Commission to be responsible for the regulation of the utilization and conservation of forest and wildlife resources. The Forest and Wildlife Policy, 2012, objectives include managing and enhancing the ecological integrity of the forest, savannah, wetlands, and other ecosystems for the conservation of biological diversity.	The law does not emphasize the protection of livelihood sources for project affected parties	More attention should be given to the protection of livelihood sources for project affected parties during the implementation of project activities.
ESS8: Cultural Heritage	This recognizes that cultural heritage provides continuity in tangible and intangible forms between the past,	Ghana National Museum Act, 1969 (N.L.C.D. 387) establishes and governs the operations of the Ghana Museum and Monuments Board to	The regulations and policies does not set out measures designed to	International best practice such as provided in ESS8 must be applied to address the protection of intangible and

Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
	present and future. It sets out measures designed to protect cultural heritage throughout the project life cycle.	acquire, protect, conserve, and document the Nation's movable and immovable material cultural heritage for posterity.	protect cultural heritage throughout the project life cycle.	tangible cultural heritage/assets throughout the project life cycle.
ESS10: Stakeholder Engagement and Information Disclosure	This recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice.	Environmental Assessment Regulations, 1999 (LI 1652) Sections 15 and 17 require a proponent to initiate a public information and consultation program for the area likely to be affected by the undertaking	It does not spell out the guidelines for the development of a Stakeholder Engagement Plan for dissemination of information and grievance redress.	A Stakeholder Engagement Plan has been prepared as a standalone document. The Plan includes grievance redress mechanism for resolving grievances The use of the Stakeholder Engagement Plan is an add on to the public information and consultation program

3.14 Institutional Framework

The relevant institutions who by virtue of their statutory mandate and functions are relevant in the ESMF process include:

- Tree Crops Development Authority;
- Ghana Cocoa Board;
- Ministry of Food and Agriculture;
- Environmental Protection Agency;
- Council for Scientific and Industrial Research;
- Ministry of Gender, Children & Social Protection;
- Ministry of Employment and Labour Relations;
- Ministry of Trade and Industry;
- Ministry of Local Government, Decentralization and Rural Development;
- The Local Government Service; and
- Metropolitan, Municipal, District Assemblies.

3.14.1 Tree Crops Development Authority

The Tree Crops Development Authority was established by the Tree Crops Development Authority Act, 2019 (Act 1010) with the objective to regulate and develop in a sustainable environment the production, processing, and trading of tree crops. The functions of the Authority include:

- Promote and support the development of the tree crops industry;
- Undertake, assist, and encourage scientific, technological and economic research in tree crops;
- Co-ordinate and facilitate with relevant institutions the building of capacity of farmers in the best agronomic practices, pest and disease management and improved methods of harvesting of tree crops; and
- Provide technical advice to the actors of the tree crops value chain.

3.14.2 Ghana Cocoa Board

Ghana Cocoa Board was established by the Ghana Cocoa Board Act, 1984 (PNDCL 81) to replace the Ghana Cocoa Marketing Board existing before the commencement of this Act. The objectives of the Board include:

- To encourage the production of cocoa, coffee, and shea;
- To initiate programs aimed at controlling pests and diseases of cocoa, coffee, and shea;
- To purchase, import, undertake and encourage the manufacture of, and distribute and market inputs used in the production of cocoa, coffee, and shea;
- To undertake, promote and encourage scientific research aimed at improving the quality and yield of cocoa, coffee, shea, and other tropical crops;

- To establish or encourage the establishment of industrial processing factories for the processing of cocoa and cocoa waste into marketable cocoa products; and
- To promote the general welfare of cocoa, coffee, and shea farmers in the Republic.

The functions of the Board include providing seedlings, credit and any other facilities to cocoa, coffee, and shea farmers to plant new farms, rehabilitate old ones or redeem pledged farms.

3.14.3 Ministry of Food and Agriculture

The Ministry of Food and Agriculture (MOFA) is the lead agency and focal point of the Government of Ghana, responsible for developing and executing policies and strategies for the agriculture sector within the context of a coordinated national socio-economic growth and development agenda. By means of a sector-wide approach, the Ministry's plans and programmes are developed, coordinated, and implemented through policy and strategy frameworks. The Directorates of MoFA relevant to the project include:

- Line Directorates;
 - Statistics, Research, and Information;
- Technical Directorate;
 - Directorate of Crops Services;
 - Directorate of Agricultural Extension Services;
 - Plant Protection and Regulatory Services Directorate; and
 - Women in Agricultural Development.

3.14.4 Environmental Protection Agency

The Environmental Protection Agency (EPA) is the body responsible for regulating the environment as mandated by EPA Act, 1994 (Act 490), and ensuring the implementation of government policies of the environment. The functions of the Agency include:

- Ensuring compliance with laid down environmental assessment regulations;
- Promoting effective planning in the management of the environment;
- Controlling and monitoring the generation, treatment, and disposal of waste, and advising on regulation and management of hazardous substances; and
- Acting in liaison and co-operation with government agencies, District Assemblies and other bodies and institutions to control pollution and generally protect the environment.

3.14.5 Council for Scientific and Industrial Research

The Council for Scientific and Industrial Research (CSIR) is mandated to pursue and coordinate, among others, the implementation of government policies on scientific research and development activities in the CSIR and other scientific & technological institutions nationwide and assist the government in the formulation of scientific and technological policies for national development. The CSIR is further required to commercialize appropriate technologies, and scientific and

industrial research of importance for the development of agriculture, health, medicine, environment, technology, and other service sectors of the economy. The research institutions relevant to the project include:

- Crop Research Institute;
- Savanna Agricultural Research Institute;
- Forestry Research Institute of Ghana; and
- Plant Genetics Research Institute.

3.14.6 Ministry of Gender, Children and Social Protection

The Ministry of Gender, Children and Social Protection (MoGCSP) was created by an Executive Instrument 1 in January, 2013 as a successor to the Ministry of Women and Children's Affairs. The Ministry is mandated to coordinate and ensure gender equality and equity, promote the survival, social protection, and development of children, vulnerable and excluded and persons with disability and integrate fulfilment of their rights, empowerment and full participation into national development..

3.14.7 Ministry of Employment and Labour Relations

In line with Sections 11 and 13 of the Civil Service Act, 1993 (PNDC Law 327), the Ministry of Employment and Labour Relations (MELR) was established by Executive Instrument (EI 28), January 2017. The Ministry is the lead policy agency of government in terms of employment and labour related issues. The MELR has the mandate of formulating policies on employment and labour issues, developing sector plans, coordinating sector specific interventions, promoting harmonious labour relations and workplace safety, promoting the elimination of child labour, monitoring and evaluating the implementation of policies, programmes and projects for accelerated employment creation for national development. The Child Labour Unit of MELR and National Steering Committees on Child Labour and Trafficking are relevant Units to the project.

3.14.8 Ministry of Trade and Industry

The Ministry of Trade & Industry is the lead policy advisor to government on trade, industrial and private sector development with responsibility for the formulation and implementation of policies for the promotion, growth and development of domestic and international trade and industry. The Export Trade Development and Trade Facilitation Directorate supports services to the export sector to achieve growth and develop new value-added services for enhancing Ghana's export competitiveness.

3.14.9 Ministry of Local Government, Decentralization and Rural Development

The Ministry of Local Government and Rural Development and its departments and agencies belong to the Central Management Agencies category of Government Machinery with the mandate to ensure good governance and balanced development of Metropolitan / Municipal / District

Assemblies. The Ministry derives its mandate from the 1992 constitution and section 12 of the PNDCL 327 which provides the responsibilities of Ministries.

3.14.10 Local Government Service

The Local Government Service is a public Service institution established by the Local Government Service Act, 2003 (Act 656) which has been repealed and replaced with the Local Governance Act, 2016 (Act 936). The Service exists ‘to secure effective administration and management of the decentralised local government system in the country’. The functions of the Local Government Service include:

- Provide technical assistance to Metropolitan, Municipal and District Assemblies (MMDAs) and Regional Coordinating Councils (RCCs) to enable them to effectively perform their functions;
- Conduct organizational and job analysis for RCCs and MMDAs; and
- Conduct management audits for RCCs and MMDAs in order to improve the overall management of the Service.

3.14.11 Metropolitan, Municipal and District Assemblies

The Metropolitan, Municipal and District Assemblies (MMDAs) are assigned with functional responsibility for decentralized level policy formulation within the context of national policies, local level integrated development planning through sector coordination, resource mobilization and implementation of development policies and programs. The general functions of the departments of MMDAs includes:

- Responsible for the implementation of the decisions of the District Assemblies;
- Provide quarterly reports on the implementation of decisions;
- Co-ordinate, integrate and harmonise the execution of programmes and projects under approved development plans for the district and other development programmes promoted or carried out by Ministries, Departments, public corporations and other statutory bodies and non-governmental organisations in the district;
- Be subject to the general guidance and direction of the President on matters of national policy, and act in co-operation with the appropriate public corporation, statutory body or non-governmental organisation;
- Public corporations, statutory bodies and non-governmental organisations shall co-operate with a District Assembly in the performance of their functions; and
- In the event of a conflict between a District Assembly and an agency of the central Government, public corporation, statutory body, non-governmental organisation or individual over the application of the functions above, the matter shall be referred by either or both parties to the Regional Co-ordinating Council for resolution.

The Departments of concerns relevant to the project under the various Municipal and District Assemblies include:

- Health Directorate;
- Education Directorate;
- Social Welfare and Community Development;
- Environmental Health and Sanitation Department;
- Agricultural Directorate; and
- National Disaster Management Organization.

Additional sub-committees and units at the MMDA-level that have roles in child labour prevention and response include:

- Social Services Sub-Committees;
- District Planning Coordinating Unit;
- District Social Welfare and Development Officer;
- Domestic Violence and Victim Support Unit and Anti-Human Trafficking Unit;
- Regional Coordinating Councils;
- Community Child Protection Committees; and

School Management Committees, Community Registry and Community Schools.

The general functions of the relevant departments, sub-committees and units are presented in Table 3.8.

Table 3.7 Functions of Relevant Departments

Department	Functions
Health Directorate	• Facilitate disease control and prevention • Facilitate the prevention and dealing with the outbreak and prevalence of any disease.
Social Welfare and Community Development Department	• Facilitate community-based rehabilitation of persons with disabilities • Assist and facilitate provision of community care services
Environmental Health and Sanitation Department	• Monitor all environmental management activities in the district • Promote and encourage good health and sanitation
Agriculture Department	• Promote extension services to farmers • Assist and participate in on-farm adaptive research • Promote agro-forestry development to reduce the incidence of bush fires.
Education Directorate	• Facilitate the supervision of pre-school, primary and junior high schools in the district.

Department	Functions
	Advise on the approval of the opening of private pre-schools, primary and junior high schools
National Disaster Management Organisation	- Facilitate the organization of public disaster education campaign programmes - Assist and facilitate education and training of volunteers - Prepare and review district disaster prevention and management plans
Social Services Sub-Committees	Oversee all social issues in the district. They look at social vulnerability, including child labour. The members are elected, except the Secretary who is an appointed staff of the Local Government Service
District Planning Coordinating Unit	Is a mandatory unit at District level, whose members are the Heads of Departments of Local Government. The Unit brings these departments together to work together as a team and is supported by a Local level planning officer
District Social Welfare and Development Officer	Is the social expert at district level with a mandate in child labour risk identification and response, and has a dual reporting line, both to the district and also to the central Ministry of Gender, children and Social Protection). In the districts where such exist, they collaborate with Labour officers who also have a dual reporting line, both to the district and to the central Ministry of Labour Relations.
Domestic Violence and Victim Support Unit and Anti-Human Trafficking Unit	Investigate cases and provide support to victims
Regional Coordinating Councils	Are mandated by law to do monitoring, which may include monitoring of social issues
Community Child Protection Committees / Traditional Authorities	Have often been activated successfully to identify monitor and refer child labour cases at the community level.
School Management Committees, Community Registry and Community Schools	Have been identified in child labour prevention and response programmes as important to be stimulated and included in an area based approach to reducing and managing child labour risk

4.0 ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

4.1 Introduction

The relevant environmental and social baseline information comprise the bio-physical and socio-economic conditions of the country and proposed program districts/municipalities as well as information on cocoa, cashew, rubber, and coconut production across their value chain. Table 4.1 shows the types of tree crop commodity, selected districts/regions and their socio-economic characteristics, the farmer population and the total land area under cultivation.

The description of baseline information relevant to the GTCDP covered the following areas:

- 1) Regional demographic, health, climatic and topographical characteristics
- 2) Bono Region and project districts;
 - Wenchi Municipality;
 - Tain District;
- 3) Bono East Region and project districts;
 - Techiman North District;
 - Techiman Municipality;
- 4) Eastern Region and project districts;
 - West Akim Municipality;
 - Kwaebibirem Municipality;
- 5) Savannah Region and project districts;
 - Bole District;
 - Sawla-Tuna Kalba District;
- 6) Western North Region and project districts;
 - Bia East District;
 - Bia West District;
- 7) Characteristics of the 4 tree crops;
- 8) Social Issues.
- 9) River systems and Basins

Table 4.1 GTCDP Areas

Commodities	Region	District	Population	Commodity Farmer Population	Total Land Area (Km ²)	Land Targeted (Ha)
Cashew	Savanna	Bole	115,800	21,509	6,239	96,310
		Sawla-Tuna-Kalba	112,664	26,889	4,173	46,010
	Bono	Wenchi	124,758	63,840	1,067	49,390
		Tain	115,568	39,414	1,898	19,530
	Bono East	Techiman Municipal	243,335	27,365	639	11,190
		Techiman North	102,529	33,052	420	3,894
Rubber	Eastern	Kwaebibirem	121,698	2000	804	8,580
Coconut		Kwaebibirem	121,698	1500	804	1,000
		Suhum	126,403	500	359	1,000
Cocoa		West Akim	120,145	13,500	468	5,000

Commodities	Region	District	Population	Commodity Farmer Population	Total Land Area (Km ²)	Land Targeted (Ha)
	Western North	Bia East	53,073	8,500	795	10,000
		Bia West	115,881	8,400	1,344	10,000

M – Males, F - Female

Source: Population and Housing Census 2021; Ghana Agriculture Census 2021

4.2 Baseline Study Methodology

The baseline information was obtained mainly from literature sources. These provided, an account of the existing physical and biological environment, health characteristics and socio-economic conditions (ethnic groups, culture, economic activities, etc.). The literature sources included:

- The Composite Budget of all the beneficiary project municipalities/districts;
- Municipal/District Medium-Term Development Plan;
- The Ghana 2021 Population and Housing Census, General Report Volume 3A; and
- MOFA, Statistics, Research and Information Directorate 2019, Agriculture in Ghana, Facts and Figures (2018).

Stakeholder consultations involving institutions, district assembly departments, farmers, farmer groups and associations, etc. played a very useful role for knowledge gathering and local information sources.

4.3 Regional Demographic, Health, and Climatic Characteristics

4.3.1 Demographic Characteristics

The demography of the 11 project districts within the 5 regions are presented in Table 4.2.

Table 4.2 Demographic Characteristics of the Project Regions and Districts

Regions / Municipal/District	Population			Population Density	Average Household Size	Percentage of Classification (%)	
	Male	Female	Total			Urban	Rural
Bono Region	596,676	611,973	1,208,649	108.8	3.7	58.6	41.4
Tain District	58,382	57,186	115,568	60.9	4.1	49.9	50.1
Wenchi Municipal	60,960	63,798	124,758	116.9	4.0	51.2	48.8
Bono East Region	603,136	600,264	1,203,400	51.8	4.1	52.6	47.4
Techiman North	50,248	52,281	102,529	244.1	3.9	68.3	31.7
Techiman Municipal	118,699	124,636	243,335	380.6	3.6	77.8	22.2

Eastern Region	1,436,951	1,488,702	2,925,653	151.4	3.2	51.5	48.5
Kwaebibirem Municipal	60,110	61,588	121,698	151.3	3.2	25.3	74.7
Suhum Municipal	61,226	65,177	126,403	351.8	3.1	47.1	52.9
West Akim Municipal	58,268	61,877	120,145	256.5	3.1	55.4	44.6
Savannah Region	327,687	325,579	653,266	18.8	4.9	29.6	70.4
Bole District	59,903	55,897	115,800	8.6	3.8	33.8	66.2
Sawala-Tuna-Kalba	53,004	59,660	112,664	27.0	4.9	20.0	80.0
Western North	451,948	428,973	880,921	87.4	3.6	29.8	70.2
Bia East District	28,154	24,919	53,073	66.8	3.6	0.0	100.0
Bia West District	59,955	55,926	115,881	86.2	3.6	32.5	67.5

Source: 2021 PHC, General Report Volume 3A

4.3.2 Healthcare and Disease Conditions

The health facilities in the various regions, and municipalities/districts are presented in Tables 4.3 and 4.4.

Table 4.3 Health Facilities of the Regions

Facilities Regions	Hospitals	CHPS	Maternity Homes	Clinics	Health Centres	Total
1) Savannah	3	117	2	13	24	159
2) Bono	17	110	12	47	55	241
3) Bono East	17	285	6	19	39	366
4) Western North	17	238	24	31	26	336
5) Eastern	63	719	14	49	162	993

Source: Ghana Health Service, 2023, Composite Budget for Eastern Region, 2023

Table 4.4 Health Facilities of the Districts and Municipalities

Facilities Municipal/Districts	Hospitals	CHPS Compound	Maternity Homes	Health Centres	Clinics	Total
1) Bole District	1	21	-	7	2	31
2) Sawla-Tuna-Kalba District	1	16	-	4	1	22
3) Wenchi Municipal	2	5	1	6	1	15
4) Tain District	1	6	-	4	-	11
5) Techiman North District	-	30	-	-	-	30
6) Techiman Municipal	9	8	8	4	1	30
7) Bia East District	-	13	-	3	4	20

8) Bia West District	1	18	5	2	9	35
9) West Akim Municipal	1	32	1	6	8	48
10) Kwaebibirem Municipal	1	27	1	5	1	35
11) Suhum Municipal	4	21	-	5	3	33

Source: Composite Budgets for the Various Districts and Municipalities

The description for the various disease conditions within the project area covers:

- 1) HIV/AIDS; and
- 2) COVID-19 Pandemic.

4.3.3 HIV/AIDS

The sub-national estimates for regional adult (15-49) HIV prevalence and the number of People Living with HIV (PLHIV) by regions, districts, and municipalities for all ages (Ghana HIV Fact Sheet, 2019) have been presented in Tables 4.5 and Table 4.6.

Table 4.5 Estimates of HIV Prevalence by Regions

Regions	PLHIV-All ages	Adult HIV Prevalence (%)
1) Savannah	2,067	0.6
2) Bono	20,134	2.7
3) Bono East	12,521	1.8
4) Western North	11,331	1.9
5) Eastern	42,226	2.1

Source: Ghana HIV Fact Sheet, 2019

Table 4.6 Estimated District Adult HIV Prevalence

Regions	Municipals/Districts	Adult Prevalence (%)
1) Savanna	• Sawla-Tuna-Kalba District	0.67
	• Bole District	0.67
2) Bono	• Wenchi Municipal	1.57
	• Tain District	2.61
3) Bono East	• Techiman North District	2.25
	• Techiman Municipal	2.23
4) Western North	• Bia East District	1.86
	• Bia West District	1.52
5) Eastern	• West Akim Municipal	1.43
	• Kwaebibirem Municipal	2.00
	• Suhum Municipal	1.77

Source: Ghana HIV Fact Sheet, 2019

4.3.4 COVID-19 Pandemic

Cases of the coronavirus disease have decreased steadily across regions in the country. Table 4.7 presents the summary of recoveries and active cases from March 2020 to January 2023.

Table 4.7 Summary of Recoveries by Region

Region	Cases	Recoveries/Discharged	Active Cases
1) Savannah	385	381	0
2) Bono	2,627	2,530	0
3) Bono East	3,339	3,263	0
4) Western North	1,218	1,204	0
5) Eastern	7,669	7,507	9

Source: COVID-19 Situation Dashboard, 2023

4.3.5 Climatic Conditions

The climatic conditions (temperature and rainfall) of the project municipalities and the districts is presented in Table 4.8.

Table 4.8 Climatic Conditions of the Project Areas

Region	District	Min. Temp. (°C)	Max. Temp. (°C)	Avg. Temp. (°C)	Annual Rainfall (mm)	Rainfall Pattern	Humidity (%)
Bono Region	Wenchi	21.2	30.9	24.5	1,140-1,270	Bimodal	67.71
	Tain						
Bono East Region	Techiman North	20.0	30.0	N/A	1260-1660	Bimodal	70-80
	Techiman Municipal						
Eastern Region	West Akim	25.2	27.9	N/A	1238-1660	Bimodal	55-90
	Kwabibirem	25.0	30.0	26.5-27	N/A	Bimodal (with some rainfall each month)	65-80
	Suhum Municipal	24	29	N/A	1270-1651	Bimodal	91-48
Savannah Region	Bole	26.22	36.91	32.05	1,100	Unimodal	48.53
	Sawla-Tuna-Kalba	36-38	28-30	N/A	1000-1500	Unimodal	N/A
Western North	Bia East	25.5	30.0	N/A	1,250-2000	Unimodal	70-90
	Bia West	25.5	26.5	N/A		Bimodal	

Drought and Flood Condition

According to the Shocks and Social Safety Net Program Participation in Ghana (2022), drought risks appear to be more prevalent in the north and southeast areas of the country. Medium to high flood risks appear to be more localised and scattered across the country and connected to river systems and coastal areas. Figure 4.1 shows a map of the social vulnerability and climatic hazards in Ghana.

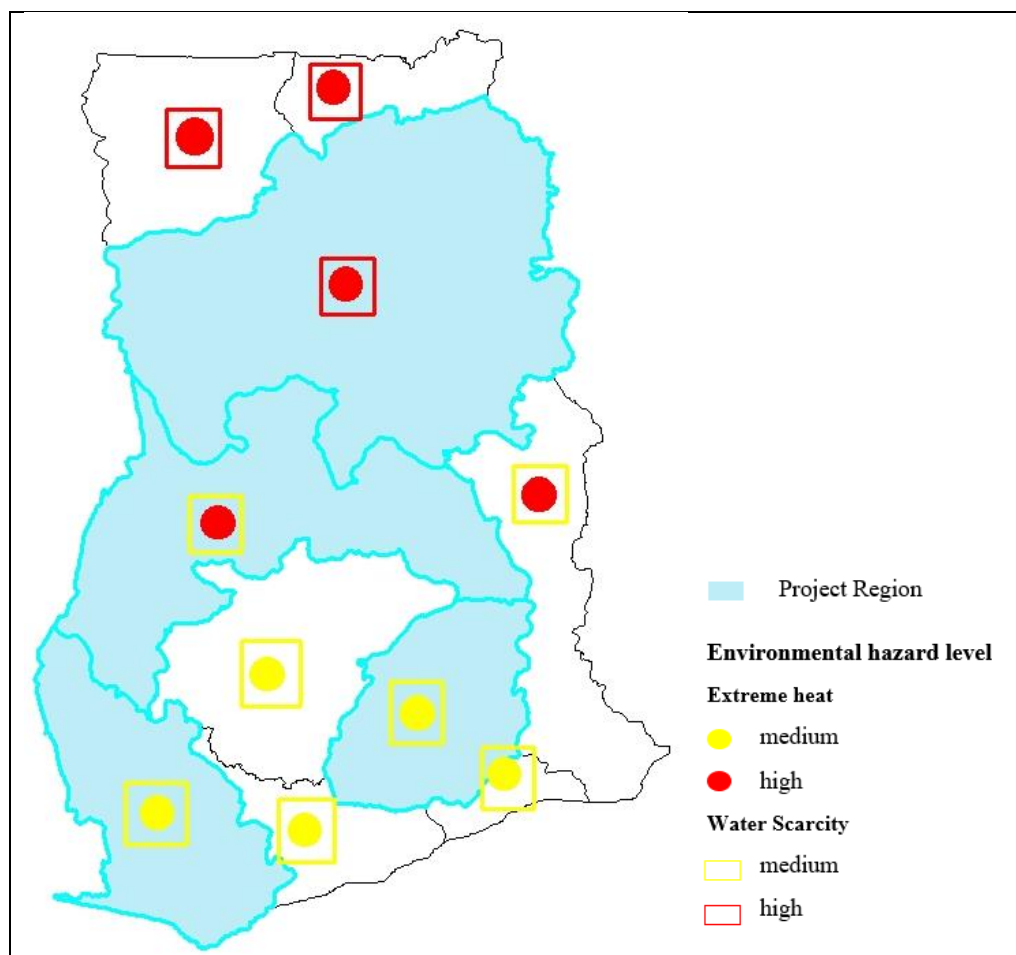


Figure 4.1 Climatic Hazards in Ghana

Source: World Bank Group, Country Climate Development Report, 2022

4.3.6 Topography

The country is characterized by low relief with few areas of moderate elevation in the north and east. The land is generally 600m above sea level. Physiographic regions include the coastal plains, the forest dissected plateau, and high hill tops which are important ecological subsystems in a generally undulating terrain (Figure 4.2).



Figure 4.2 Topographical Map of Ghana

Source: Ghana Topographical Map, 2005

4.4 Bono Region and Project Districts

The region shares a border with the Savannah Region (north), Ghana-Côte d'Ivoire international border (west), Bono East (east), and the Ahafo Region (south). The region has a land area of 11,481km². The region covers the southwestern part of the Bui Belt and lies between 7°30' and

8°N and from 2°30'W up to the Cote d'Ivoire boundary of which the Bono East Region is part (Zitzmann et al., 1997). The lithologies of the area consists of both the Birimian and Tarkwaian Supergroups striking on NE-SW. The Birimian Supergroup consists of a metavolcanic and metasedimentary rocks comprising of argillite-argillite/wacke-wacke-volcaniclastic-argillite / volcaniclastic and chert (Zitzmann et al., 1997). The fine-grained clastic facies of mostly sericite phyllite is typical for the sedimentary basins, while the coarser wacke facies accumulated closer to the volcanic belts.

The project districts Tain and Wenchi both fall within the moist semi-deciduous forest and the guinea savanna woodland vegetation zones. Timber species like Odum, Sapele, Wawa and Mahogany are found in the guinea savanna zones; for instance, in towns like Nwoase in Wenchi and Dorbor and Bungase in Tain. These districts also have forest reserves like Sawsaw and Yaya, which serve as good watersheds.

The combination of the vegetation zones – guinea savannah, transitional and forest zones — permit the cultivation of a variety of crops – cereal, tubers and vegetables and animal rearing. Both Wenchi and Tain municipalities are noted for their agriculture (farming) as the major land uses.

The region is notable for its large hippopotamus population in the Bui National Park. The park covers 1,821km² and is bisected by the Black Volta. Animals found in the park include, monitor lizards, fruit bats, elephants, waterbuck, baboons, green monkeys, patas monkey, bushbuck and other species of wildlife such as butterflies, amphibians and others. Primates like the endangered black and white colobus monkey and several species of antelopes and a variety of birds are present.

Ownership of land is based on kinship but vested in the traditional authority. Land can be leased for a definite period usually ranging from one to three years but occasionally five years depending on the vegetation type and the financial need of the landowner. Also, the current land tenure system implies that unlike the natives, migrants who settle permanently cannot own land, but depend on other arrangements such as the renting of land, share cropping and taungya (an arrangement whereby the Forestry Service Commission gives out land to prospective farmers to grow their food crops who in turn grow and tend trees for the Commission) (Adjei-Nsiah, 2006; Acheapong et al, 2016; Tittonell, 2013).

The ethnic groups are the Mole-Dagbani (22.2%), Grusi (6.9%) Mande (1.5%) Grumas (12.3%), Guans, Ewes (4.3%) and Ga-Dangmes (1.2%). Bono Ancestral Worship and Christianity are the dominant religions. There are several cultural practices and festivals - Kwafie is celebrated by the Dormaa, Berekum and Nsoatre people in November, December, or January, Munufie by Drobo and Akwantukese by the people of Suma in March. It is climaxed with a large bonfire in the palace courtyard. It is believed that the people of Dormaa Ahenkro (Aduana) brought fire to Ghana, hence this legend is symbolically re-enacted.

4.4.1 Wenchi Municipality

It is located in the western part of Bono Region, northeast of Sunyani (Bono Regional Capital), with land area covering 3,494km². It shares boundaries with the Techiman (west) and Kintampo North (northwest) Municipalities, and Tain District (east) and Sunyani Municipality to the south. The topography is undulating with gentle slopes of less than 1% inclination. The land generally rises from about 30m ASL to over 61m in the north-west (Ministry of Food and Agriculture, 2021).

Wenchi is made up of the Bonos, Dagaabas, Badu, Banda, Mo, Sisalas and other northern tribes. These ethnic groups who are permanent residents with each group having its own local head and displaying its own culture. However, the natives of the land are the Bonos with their own unique traditions and culture. The main religions practiced are Christianity (about 67%), Islam (about 22%) and the remaining being traditional religion and others (2010 PHC).

The major festivals celebrated are the Apour and Yam festival. The annual Apour festival is celebrated between April and May. The yam festival is also celebrated between August and September, annually to mark the two farming seasons.

There are three (3) water systems which supply the urban communities such as Wenchi, Nchiraa and Awisa. The municipality has 142 boreholes in rural areas (of which 18 had broken down), 317 hand dug wells and 48 private water operators. About 62 communities do not have access to potable water (e.g., boreholes and hand dug wells). About 11 communities have access to electricity.

There are 71 public and 29 private Kindergartens (KG), 82 public and 28 private Primary Schools, 72 public and 18 private Junior High School (JHS), 4 public and 2 private Senior High School (SHS), 1 Senior Technical High School (SHTS), 1 private National Vocational Technical Institute (NVTI), 1 Agric. Institute, 1 Methodist Nursing Training School, 1 College of Education and a campus of the Methodist University College (WMA Composite Budget, 2022).

Agriculture is the main occupation, with cashew and mangoes grown on large scale. The major crops grown are yam, maize, cassava, cocoyam, plantain and vegetables. There are two main markets at Wenchi and Subinso with Nchiraa and Botenso being minor ones. The unavailability of storage facilities in the municipality compels farmers to sell off their produce immediately after harvest.

Gender disparities such as early marriage and relegation of women exist in the municipality. About 12 cases (7 boys and 5 girls) of child labour were reported to Social Welfare and Community Development Department in 2021. Also, about 40 cases of teenage pregnancies were recorded among the 2021 BECE candidates but through the efforts of the Guidance and Counselling Unit and Girl Child Coordinator, the cases were reduced to 2 in 2022 (Appendix 5.3).

In 2021 about 127.6 ha of farms got burnt because of bushfires and affected about 47 farmers. This reduced to about 50.6 ha in 2022 with about 41 farmers affected. The causes of bushfires are attributed to the activities of the hunters, herdsman and cooking on farms (Appendix 4.2).

About 74,855 kg of solid waste is generated daily. Waste management within the municipality has been contracted to ZoomLion Ghana Limited to collect waste and transport to final disposal site at Akrobi. About 68% of the population have access to toilet facilities (WC, VIP, KVIP and Aqua Privies), dig and bury (3%) while rest engage in open defecation.

The top 10 medical cases recording in the municipality in 2022 according to the Health Directorate include:

1. Malaria – 28,590;
2. Upper Respiratory Tract Infection – 16,628;
3. Diarrhoea Diseases – 8,822;
4. Hypertension – 8,789;
5. Anaemia – 8,272;
6. Rheumatism / Other Joint Pains / Arthritis – 6,859;
7. Skin Diseases – 6,047;
8. Intestinal Worms – 5,523;
9. Acute Urinary Tract Infection - 5,478; and
10. Acute Eye Infection – 3,685.

4.4.2 Tain District

The district covers a land area of 2,120km² and shares boundaries with Wenchi (east), Jaman North (west), Sunyani West (south), Berekum District (south-west) and Banda District to the north. The land generally rises from about 30m ASL to 61m in the north-west with high elevations occurring around Banda (592.2m) (Ministry of Food and Agriculture, 2021). Apart from the north-western highland, the others are basins of the tributaries of the Black Volta and therefore are low lying.

The Akans form the largest ethnic group, followed by the Mole-Dagbani. The other ethnic groups are Guans, Ewes, and Dagartis, among others. There are four (4) paramount areas namely: Nsawkaw, Seikwa, Badu and Debibi/Menji Zone. Christians, Muslims and African Traditionalists are found, with Christians being in the majority followed by Muslims. The main festivals are Krufie by the people of Nsawkaw, Tano Yam Festival by the people of Seikwa and Gbono by the people of Debibi and its environs.

Agriculture is the main source of income and expenditure of households. It accounts for about 87.7% of the total employment. Agro based industries - gari and cashew processing factories (medium and small scale in nature) also provide employment opportunity for the people. The major

crops grown are cashew, maize, rice, groundnuts, cassava, pepper, beans and livestock such as cattle, sheep, goats, pigs, etc.

Women (and girls), have minimal access and control over resources like land, education, equipment, labour, extension services, training, agriculture inputs, irrigation, technology, and credit. Women control money for small household items and generally have low self-esteem. It is considered not feminine if women ask for credit.

Poor solid waste management such as open dumping and burning of waste is practiced due to the inadequacy of waste collection bins and containers (Bayer 2019). Out of a total 16,313 households, 30.1% have no toilet facilities (use bushes or fields as places of convenience) (Tain District Assembly Medium Term Development Plan, 2018 - 2021).

The three main sources of lighting in households are electricity, flashlight/torch and kerosene lamp. About 94.6% of households have access to improved drinking water sources, including boreholes/pump/tube wells (60.2%), protected well (0.8%), pipe-born water (33.0%) and protected spring (0.6%). There are about 265 educational institutions, including 99 KGs, 99 primary schools, 62 JHS, 4 SHS and 1 Nursing Training College. The total enrolment from KG to SHS is 35,977 of which 52.4% are males and 47.62% are females.

4.5 Bono East Region and Project Districts

The region shares a border with the Savannah Region (north), Bono Region (west), Ashanti region (south), the Volta Lake and the Oti region (east). The region has a total land size of 22,952km². The geology of the Bono East Region is the same as the Bono Region which have been elaborated above.

The region houses diverse wildlife species with over 236 species of birds, elephants, antelopes and at least six primate species including the black and white colobus which are found in the Digya National Park. The park occupies an area of 3,478km² and is bordered on the north, south and east by the Lake Volta. Manatees and clawless otters also extend to the park.

There are three main vegetation zones in the districts, namely, the guinea-savanna woodland (in the northwest), the semi-deciduous zone (in the south), and the transitional zone (which stretches from the South-east and West to the North of both districts). Crops such as cashew, cassava, maize, and cotton thrive in these districts, because of the land properties, especially in towns in the southern parts where there are nitisols. Damongo soils.

In Techiman North, about 50km² of the semi-deciduous forest cover in the municipality has been put under teak plantation. The Asubingya forest, which is located at the north-west covers an area of about 32.5km² (about 9.8% of District's total land area).

Majority of the lands are stool lands under the ownership of chiefs and elders. The chiefs control the ‘ownership’ of the land, but the Assembly controls the ‘use’ of the land (Techiman Municipal Assembly 4-Year Medium Term Development Plan, 2018-2021). Techiman municipality and Techiman North District both practise the customary tenure system (Kiddo et al, 2017) and some agricultural lands are also, acquired through rentals in the land market (Kiddo et al, 2020).

The Region is one of the most ethnically diverse in the country. However, the predominant groups are the Bonos and Akans who make up 41.5% of the entire population. Most inhabitants of the Bono East region speak the Bono dialect. Bono Ancestral Worship and Christianity form the dominant religions of the region.

The festivals celebrated are the Apoo festival, Kurubi festival (mainly celebrated by the people of Kintampo in November to unite all Wangara descendants in Ghana). Virgins normally dance on stilts as an interesting part of the festival. Nkyifie, the people of Prang celebrate it in September and October.

4.5.1 Techiman North District

It is in the western part of Bono East and covers about 420km². The district shares a boundary with Kintampo South District to the north, Nkoranza North District to the north-east, Wenchi Municipal to the north-west, and the Techiman Municipal to the south.

The topography is generally low lying and gently undulating. The main relief features are highlands and lowlands with part of the district around Buoyem reaching a height of 579m. The lowest point of about 305m is found around Krobo in the south-western part.

The district is predominantly Akan, with most of the population being natives of the Bono East (and former Brong Ahafo) region with other ethnic groups like the Mole Dagbani, Guan and Ewe. Majority are Christians, followed by Muslims (mostly Mole Dagbani people) and then Traditionalists. The Apour and Yam festivals are the major tribal celebrations in the area. The former is celebrated between April and May, and the latter falls between August and September.

The agricultural sector employs about 60% of its households. The major food crops grown are yam, maize, cassava, cocoyam, plantain and vegetables like tomatoes, garden eggs, onions and okro. Cash crops such as cashew, cocoa and mango are also cultivated. Women are more engaged in the informal sector, while men are more employed in the formal sector (Techiman North Assembly Composite Budget, 2021).

There are about 169 public schools comprising of 60 Nursery, 61 Primary Schools, 42 JHS, 5 SHS and 1 Community Health Nursing Training School with about 60 private educational institutions.

About 30% of the population had access to electricity as of 2020. The main sources of water supply include pipe-borne water, boreholes, hand-dug wells, rivers, streams, ponds, uncovered wells among others.

4.5.2 Techiman Municipality

The municipality is in the southern part of the Bono East Region, and shares boundaries with Techiman North and Nkoranza South in the Bono East Region, Wenchi District in the Bono Region and Offinso-North in the Ashanti Region. The district has a total land area of 639km². The topography is generally low lying and gently undulating. The main relief features are plane lands and lowlands. The lowest point of about 305m is found around Nsuta in the south-western part.

Techiman has over forty permanent resident ethnic groups, namely Akans/Bono people, Gonjas, Dagombas, Sisalas and Mamprusis, all with their local heads and distinct cultures. However, since the Bonos are the natives of the land, their culture dominates. The Techiman Traditional Council serves as the traditional authority in the area. Christians constitute the overwhelming majority, followed by Muslims and then Traditionalists. The major festivals celebrated are the Apour and Yam festivals.

Agriculture is the main occupation, employing about 37.3% of the economically active population. The agricultural sub-sectors include crops, livestock, fisheries, agro-forestry, etc. Some cash crops like cocoa and cashew are also produced on a large scale. The Techiman Market is one of the largest markets in the Bono East region, constituting about 25% of the region's trading activities. It even attracts agricultural distributors from countries like Burkina Faso and Niger, etc.

Children who engage in labour activities in the area mostly fall between the ages of 11 to 15 and are found either roaming the streets for menial jobs during school hours. This is prevalent in communities like Tunsuase and Abanim (which are closer to the market and expose children to trading activities) and Dagombaline and Wangaraline (where many children of migrant farming families can be found).

The municipality has 201 pre-schools, 203 primary schools, 81 JHS, and 7 SHS and 3 university campuses - Valley View University, the University of Education (Winneba) and University of Cape Coast. About 73.1% of the households are connected to the national grid. The sources of water include borehole, public tap, pipe borne water and river/stream. Solid waste generated is managed by Zoomlion with about 80% coverage. There are 2 refuse dumps at Gyarko and Mamprusi and 40 communal containers placed at 25 locations. Liquid waste generated are either disposed of into catch pits, soakage pits, drainage systems or streets/neighborhoods.

4.6 Eastern Region and Project Districts

The region is located in southern Ghana and it is bordered by Lake Volta (east), Bono East Region (north), Ashanti Region (west), Central Region and Greater Accra Region (south). It covers an area of 19,323 km², which is about 8.1% of Ghana's total land.

The geology comprises the late Proterozoic-Paleozoic Voltaian Group (which forms a thick sedimentary cover in the eastern part of the West African Craton), the Togo Formation (which is part of the Precambrian Mobile Belt), the intrusive basin-type Eburnean granitoid (Cape Coast granite complex) and the Proterozoic Birman Supergroup belonging to the West African Craton. Abonse and Mamfe areas are mainly underlain by quartzites and phyllites, which belong to the Togo Formation. The Togo Formation, which trends in the northeast direction, originally consisted of alternating arenaceous and argillaceous sediments which have now been converted to phyllites, schists and quartzites except in few places, where unaltered shales and sandstones are seen (Kesse, 1985).

The topography of Kwaebibirem and West Akim Municipalities is undulating with gentle slopes, ranging between 60m and 460m. The highest point is around the Atewa Range northern sector of the municipalities. Suhum Municipality is undulating with gentle slopes ranging between 80m and 240m. The municipality generally slopes towards the south-eastern section.

The region is a centre of significant plant diversity with at least 1,100 plant species including 56 that are threatened with extinction found in the Atewa Forest Range. Butterfly diversity of the forest is the highest of any site in West Africa, with over 700 species thought to occur including two that are known only from this forest (*Mylothris atewa* and *Anthene helpsi*). Amphibians are represented by 40 species, a third of which are threatened. The Region has 3 Key Biodiversity Areas (KBAs), 11 critically endangered, 20 endangered and 29 vulnerable species. The critically endangered Togo Slippy Frog (*Conraua derooi*) has a stronghold in the Atewa forest. Thirteen threatened and near-threatened birds have been recorded including Grey Parrot (*Psittacus erithacus*), Brown-cheeked Hornbill (*Bycanistes cylindricus*), Blue-moustached Bee-eater (*Merops mentalis*), Western-wattled Cuckooshrike (*Lobotos lobatus*), Yellow-bearded Greenbul (*Criniger olivaceus*), Green-tailed Bristlebill (*Bleda eximia*), Nimba Flycatcher (*Melaenornis annamarulae*), Rufous-winged Illadopsis (*Illadopsis rufescens*) and Copper-tailed Starling (*Lamprotornis cupreocauda*).

Special species of ornamental plant collection located at the Aburi Botanical Gardens include, *Araucaria spp.*, *Bambusa nana*, *Brownea grandiceps*, *Calophyllum mophyllum*, *Cedrela spp.*, *Delonix regia*, *Dillenia indica*, *Elaeocarpus searratus*, *Enterolobium cyclocarpum*, *Ficus lepreuri*, *Garcinia xanthochymus*, *Murraya exotica* and *Naulea latifolia*.

The Region has four major ethnic groupings, namely Akan (52.1%), the Ga-Dangme (18.9%), the Ewes (15.9%) and the Guans (7.2%). Of these, the Ewes are the only non-indigenous ethnic group. The languages spoken are Twi, Krobo, and Anum. The three major religious groups are Christianity, Islam and Traditional religion. Christians constitute 82.8% of the population, followed by Muslims (6.1%) and Traditional religion (2.4%). The festivals celebrated are Bobum or Dipo, Odwira and Ohum, Ngmayem, Akwantukese, Begoro Odwira, Klovero Sikplemi, etc.

4.6.1 West Akim Municipality

The municipality is in the southern portion of the Eastern Region. It shares boundaries with Denkyembour District to the north; Birim Central District to the west; Upper West Akim District to the east and Agona East to the south with its capital known as Asamake. The municipality covers an area of about 468km² (District Medium, Term Development Plan, 2018).

The municipality falls within the semi-deciduous forest ecological zone. The vegetation is mainly characterized by tall trees with evergreen undergrowth and contains valuable economic trees like Odum, Wawa, Sapele, Obeche, Onyina, and Emire. Scattered particles of secondary forest are characteristic of the vegetation due to indiscriminate farming, lumbering, building and mining activities. The West Akim district contains about 42km² of the Atewa Range Extension Forest Reserve.

Gold deposits are located at Awaham, Akanteng and Kobriso. Diamond deposits are found at Akanteng and Anomakwadwo near Osenase, and clay deposits also located around Odumkyere-Darmang.

Farmlands are acquired through inheritance, lease, family head, purchase and chiefs. About 33.0% through lease, 24.2% through family head, 9.1% through purchase and 3.0% through allocation by chiefs (West Akim Municipal Assembly, 2019). Majority of the lands are stool lands, which requires a tenant to pay yearly to the traditional authorities. However, majority of the farming lands in the area, are leased out on the terms of Abunu and Abusa. The abusa involves hiring a caretaker by the owner of the cocoa farm. The caretaker bears the cost involved in ensuring the maintenance of the farm, i.e., buying of agrochemicals, weeding, etc. The profit from the produce of the cocoa farm is however divided into three where the owner of the farm takes two third while the caretaker takes one third.

Abunu involves directly taking the farmland from the traditional authorities and sharing with other farmers. The other farmers grow food crops in addition to cocoa, the owner of the farmland takes one third of the food crops, but the produce of cocoa is shared equally. The owner makes the yearly payment to the traditional authorities.

There are over a dozen permanent resident ethnic groups, namely Ashantis, Akwamus, Gonjas, Ewes, Nzemas, Ga-Adangbe, and others. Each group has its own local head and displays its own culture. However, the modern city of Asamankese was founded and occupied by the Akwamu. It is under the jurisdiction of the Oseawuo Division of the Akyem Abuakwa Traditional Council and predominantly Christian (about 81.6%), followed by Muslims (8.5%), traditional religions (1.0%) and other religions (9.0%). The festival celebrated is Ohum.

There are a total of 313 schools including 113 KGs, 110 primary schools, 87 JHSs, 2 SHSs and 1 NVTI. The sources of drinking water includes boreholes, streams, and rivers. About 60% of the communities are connected to the national grid.

The economy is mainly agrarian, employing about 63.2% of the labour force. The most economic crops include cocoa, plantain, oil palm, cassava, cocoyam and citrus. Women are more active in agriculture than men, especially in food production. Men predominate in cocoa farming, citrus and oil palm farming, as these require individualized land ownership, which is not easily accessible to women, though women supply the needed labour in cocoa, citrus and oil palm plantations. (West Akim Medium Term Development Plan, 2018).

There are no records on child labour within the Social Welfare and Community Development Department (SWCDD) and DOVVSU. Children mostly join their parents in the farms just for security reasons but do not engage them in any farm work. Child labour situations within the districts are negligible. There are Child Protection Committees (CPC) within each of the cocoa cooperatives in the communities. The CPC mostly conduct monitoring to avoid the use of child labour and educate parents on child labour.

The top 10 medical cases recording in the municipality in 2022 according to the Health Directorate include:

1. Malaria - 40,058
2. Upper respiratory tract infection – 14,099;
3. Rheumatism/other joint pain/arthritis – 12,263;
4. Intestinal worms – 6,237;
5. Skin diseases – 5,950;
6. Diarrhoea diseases – 5,215;
7. Anaemia – 4,507;
8. Acute urinary tract infection – 4,067;
9. Typhoid fever – 3,214; and
10. Acute eye infection 2,278.

4.6.2 Kwaebibirem Municipality

The municipality is in the south-western corner of the Eastern Region. It shares boundaries with Atiwa West District to the north, to the south with Denkyembour District, to the east with East Akim Municipality and to the west with Birim North District. The land area is 804km².

This municipality lies within the moist semi-deciduous forest zone, which abounds with different tropical hardwoods with high economic value. The vegetation consists of low-lying species of wood of economic value, such as Odum, Ofram, and Teak. The district boasts of some forest reserves covering very large areas, and some support teak plantations outside their borders. Currently, the forest vegetation provides economic trees for lumber, furniture production, and construction, as well as fuelwood for energy. The forest also provides game and wildlife species that serve as sources of food and medicine (MAFA, 2021).

The municipality is also endowed with mineral deposits such as gold and diamonds. The methods of extracting these minerals, especially gold by small-scale miners and illegal miners are a major source of concern.

Land is acquired through Lease land, Stool lands, Family lands and share cropping (Abunu or Abusa). Also, Stool Lands form (75%) and families (25%) of total land acquisitions (Kwaebibirem Municipal Assembly, 2018). The economy is predominantly agrarian, with 77% of the inhabitants being farmers majority of whom are engaged in subsistence farming in crop production and livestock keeping. Fire on farms is usually caused by natural causes such as lightning strikes, but there has been no reported incidence of fire on tree crop farms (Appendix 4.2).

The people are predominantly Akyems. The area falls under the Akyem Abuakwa jurisdiction with the Okyehene (title of the Tribal King) as its traditional and paramount head. In terms of Division, the area is under the Oseawuo, with the Oseawuohene as the Divisional head. (Kwaebibirem Municipality Medium Term Development Plan - KbMMTDP, 2018-2021). The 2010 PHC, indicated that Christians (85%) are in majority, followed by Muslims (5%). There are several traditionalists and those of other religions or no religion. The major festivals of Akyem Abuakwa are Ohum Kan and Ohum kyire.

There are a total of 305 schools in the municipality, comprising 95 pre-schools, 96 primary schools, 112 JHS and 2 SHS. About 17% of total pregnant mothers who received care from 2017-2019 were teenage mothers. Cases of teenage pregnancy however, reduced to 10% in 2022. Sources of water supply include hand dug wells, boreholes, rivers, and pipe borne water.

4.6.3 Suhum Municipality

The municipality is bounded by the New Juaben Municipal to the north-east, East Akim Municipal to the north, Ayensuano District to the west and south, and Akwapim North Municipal to the east.

The capital, Suhum, is 60 km northwest of Accra on the Accra-Kumasi Highway (GSS, 2010). It covers an area of about 359 km².

The area lies within the deciduous forest and the transitional zone, with an original semi-deciduous forest cover. However, human activities, such as cultivation, lumbering and extraction of fuel wood have drastically reduced the original vegetation to re-growth thickets and secondary forests. Agriculture is a dominant land use, comprising cultivation of cash crops such as cocoa, cashew, oil palm and citrus, as well as food crops like maize and yam. As the main occupation, agriculture employs about 70% of the population. Food crop production is mostly subsistence characterized by low yields as a result of land degeneration caused by shortened fallow periods and bush fires. There are two major markets, these are Suhum and Akorabo markets.

Land is generally owned by individuals and families as a result of freehold acquisitions from the allodial title owners - the Akyem Abuakwa Stools (Suhum Municipal Assembly, 2022). Migrant farmers acquire tracts of land from chiefs and some practice sharecropping (Amanor et al. 2021).

The area is part of the Akyem Abuakwa Traditional Area whose overlord is the Okyehene. The major ethnic groups and the proportion of the population they command are Akan (37.4%), Ga-Dangme (25.6%), Guan (17.4%), Ewe (17.4%). The major festival of the people of Suhum Municipality is the Odwira, however, settlers travel to their hometowns to celebrate the festivals of their indigenous towns (GSS, 2010).

There are 42 pre-schools, 114 KGs, 115 primary school, 86 JHS, 3 SHS and 1 NVTI. Majority of the households are connected to the national grid. About 85% of the populace has access to safe drinking water. The main source of water in the urban areas include borehole/well with hand pump, pipe borne, and rivers/streams. About 51% of solid waste is generated and about 10% of the communities have access to safe toilet facilities.

4.7 Savannah Region and Project Districts

The region shares a border with the Upper West Region (north), Ghana-Côte d'Ivoire international border (west), Bono and Bono East Regions (south), and the North – East and Northern Regions (east). It has a total land size of 35,862km². The region falls within the Birimian and Voltaian basins which cover more than a third of the total area of Ghana. The Birimian formation is made up of granitoids, phyllite, etc. while the Voltain formations consist of quartzite, shale, mudstone, siltstone, sandstone, and conglomerate or pebbly beds (William, 2013). The Birimian supergroup constitutes rocks of metavolcanics and metasediments but extends up to an area of 4047km². These very lithological units are evident in the towns of Damongo, Sawla, Larabanga, and Kulmasa along the major road linking the Savannah Region to the Upper West Region.

The project districts Bole and Sawla-Tuna-Kalba are in the savannah high plains, which generally, is undulating. The elevation of the BD ranges between 160m and 300m ASL, while the STKD has an average height ranging between 300m and 400m.

The vegetation of these districts is of the guinea savannah type, characterized by tall grasses and woodland. Majority of the lands in these districts are used for crop and livestock farming, tree planting (afforestation), game/forest reserves, human settlement, developmental infrastructures, and mining activities, among others. Plants such as cashew, shea nuts, dawadawa, kapok, and mango are cultivated in these districts. Part of the Mole National Park Forest Reserve also falls within the Sawla-Tuna-Kalba District.

Forest reserves are perennially vegetated areas, protected for either protective or productive functions (Ghana Forestry Department, 1962). The Bole Forest district covers two political districts, namely Bole and Sawla-Tuna-Kalba. The Bole Forest district has two natural forest reserves: KeniKeni and Yerada Forest Reserves, with no plantation reserves (Husseini & Issifu, 2015).

The region houses diverse plant and animal species such as *Burkea Africana*, *Isoborlinia doka*, *Terminalia macroptera*, *Adansonia digitata*, *Cassia sieberana*, *Celastrus senegalensis*, *Combretum ghasalense*, *Detarium microcarpum*, *Grewia lasiodiscus*, *Grewia mollis*, *Lannea acida*, *Maytenus senegalensis*, *Diospyros mespiliformis*, *Feretia apodanthera*, *Flueggea virosa*, *Tinnsea spp.*, *Urginea spp.*, most of which are found at the Mole National Park. The park which covers an area of 4,840km² houses over 93 documented mammal species including an elephant population, hippos, buffalo, and warthogs. It is considered a primary African preserve for antelope species such as kob, defassa waterbuck, roan, hartebeest, oribi, the bushbuck, and two duikers, the red duiker and yellow-backed duiker. Olive baboons, black-and-white colobus monkeys, the green vervet, and patas monkeys are the known resident species of monkeys. The slender-snouted and dwarf crocodile are some of the 33 known species of reptiles. Among the 344 listed bird species are the martial eagle, the white-headed and palm-nut vultures, saddle-billed storks, herons, egrets, the Abyssinian roller, the violet turaco, various shrikes and the red-throated bee-eater. The IUNC status of the typical flora and fauna for the guinea savannah zone have been provided in Appendix 14.

Land is owned by families, clans and chiefs (in trust for the people). The chiefs are however custodians of uncultivated lands. Thus, migrants will have to gain right to use the land through the chiefs. The family head could however give the right to the use of a relatively small piece of land but if large tracts of land are required the chief with jurisdiction over the entire land area gives the right to use (Dittoh, 2013).

Most inhabitants speak a language of the Oti-Volta subfamily in the Niger-Congo language family, such as Gonja, Vagla, Dagbani, Mamprusi, or Tamprusi. Most residents identify as Muslims. The Jintigi (Fire) Festival is an annual festival celebrated by the chiefs and people of Gonja Traditional Area in the Savannah Region. Damongo which is the capital of the region serves as the epicentre of the festival.

4.7.1 Bole District

The district is located at the extreme western part of the Savanna Region. It shares boundaries with Sawla-Tuna Kalba District to the north, West Gonja District to the north-west, Central Gonja District to the east, Kintampo North Municipal to the south-east and Kintampo South District and Wenchi Municipal to the south. It has a total land area of 6,239km².

The major ethnic groups include Gonja, Vagla, Safalba and Mo. There are also migrant ethnic groups such as Brifor, Lobi and Dagaaba. All the ethnic groups practice a patrilineal system of inheritance. The dominant religion is Islam, followed by Christianity and Traditional. Places with cultural resources include the Royal Mausoleum at Mankuma, the Ancient Mosque at Maluwe, Tinga and Banda Nkwanta, Crocodile Pond at Sonyor, Hippo Sanctuary at Ntereso and Gama and Wildlife Conversation at Bui. The major festivals celebrated are Deng, Damba, Jintigi, Achan, Eleishi and the Kachunu.

The district has about 80.0% coverage of potable water supply. Sources of water include river / stream, well, standpipes. About 83.5% of the communities are connected to the national grid. There are a total of 256 educational institutions including, 102 KGs, 102 primary schools, 48 JHS and 4 SHS.

Agriculture is the predominant economic activity. The sector employs about 76% of the population. Marketing of agricultural produce is mostly done in the 5 main markets (Bole, Bamboi, Jama, Tinga and Sonyor). The market centres are far apart and characterized with poor road network. Child labour is predominant in illegal mining (galamsey) areas, including Banda Nkwanta, Kui, Lampoga and Dakrupe and fishing communities such as Jama, Nsunua, Nsuanum, Bale and Chache.

4.7.2 Sawla-Tuna-Kalba District

The district is located at the north-western part of the Savannah Region. It shares boundaries with Wa West District and Wa East to the north, Bole District to the south, West Gonja District to the east and La Cote d'Ivoire and Burkina Faso to the west. It has a total land area of 4,173km².

The ethnic groups are Gonjas who are the landowners, Brifos, Lobis, Safalba, Walas, Vaglas and Dagabas. The most spoken languages are Wali, Gonja and Brifo. Majority of the population are Christians, followed by Traditionalists and Muslims. Festivals celebrated among the people are

“damba” and fire festivals. Gonjas, Vaglas and Walas mostly celebrate these festivals. The minority groups include Dagaabas and Sefalbas. There are two tourist sites (cultural resources) which are the Jentilpe Mass Grave and Kulmasa Crocodile Pond.

Agriculture is the predominant economic activity. The sector employs about 80% of the population. Most households practice mixed farming. The major crops cultivated include maize, yam, cassava, sorghum, etc. Agro-based industrial activities in STKD is mainly focused on shea butter extraction, and rice processing. The major marketing centres within the STKD are the Sawla and Kalba Markets which operate every 5 days and the Tuna Market which operates every Monday.

Men are generally involved in the farming that requires lots of strength while women are involved in sowing or planting till harvesting. About 90% of women are either fully engaged in agriculture or combine with petty trading. Women are mostly side-lined during decision making, giving men more access and control to resources such as land. Women, children (especially the girl child, orphans and vulnerable children), PLWHIV and the PWDs are classified as vulnerable.

There are a total of 242 schools comprising of 82 KGs, 111 Primary Schools, 45 JHS, 3 SHS and 1 NVTI. The main sources of water are borehole, river/stream, public tap and pipe borne water. About 71 of the population has access to safe water supply. About 165 communities are yet to be connected to the national grid.

4.8 Western North Region and Project Districts

The region is bounded by La Cote d'Ivoire (Comoé District) on the west, the Central Region in the southeast, and the Ashanti, Ahafo, Bono East and Bono regions in the north. It has a total land size of 10,079km². The geology of the region is mainly Precambrian Metamorphic Rock of the Birimian and Tarkwain formation which contains the mineral bearing rocks. There are also granite rocks and deposits of minerals such as gold and Bauxite.

The project districts form part of the country's dissected plateau. The greater proportion of this plateau is between 240m and 300m ASL. There are few valleys that do not exceed 150m ASL.

The region has 8 KBAs, 8 critically endangered species, 8 endangered and 25 vulnerable species. It is home to diverse wildlife species which are located at the Bia National Park and Bia Resource Reserve. Both cover a total area of 355.62 km². There are about 62 species of mammals (including 10 primate species which are the Black-and-White colobus, the olive colobus, red colobus monkeys and chimpanzees) known to live in the park, and over 189 bird species, including the endangered white-breasted guinea fowl, Black-collared lovebird, Cassin's hawk Eagle, Honeyguide greenbul, Black-headed oriole, Brown and Puvel's illadopsis, Finch's Flycatcher-Thrush, Grey-headed Negrofinch, Western nicator, Spotted greenbul, Grey-headed bristlebill,

Fire-bellied woodpecker and Melancholy woodpecker). The park is also the only known home of the newly discovered species of lizard, *Agama Africana*. The forest elephant and the bongo (which is claimed to be highly threatened) can be found there.

Traditional rulers, family heads and other landowners are mostly the managers/custodians of the land. Farmers and prospective land developers purchase land from traditional leaders. The “abunu” and “abusa” land tenancy is widely used for the cultivation of food and cash crops. Part of the land is also used as forest reserves and settlement development. Multiple land ownership framework is practiced. This includes customary tenure agreement via chiefs, or other customary authorities (Bia East District Medium Term Development Plan, 2014; Touton, 2018).

The cultural practices are not different from the rest of the Akan-speaking communities in the country. The ethnic groups in the region is dominated by the Sefwis, Brusas and Anyins. The main languages spoken are Sefwi, Akan, French (due to its closeness to La Cote D’Ivoire) and English. According to the 2010 PHC, Christianity is the major religion followed by non-Christians and those not affiliated with any religion.

The main festival is the Yam Festival called “Aluelue” (Ellue) which is celebrated annually on convenient dates by both the Paramount and the Divisional Chiefs. Aside from this festival, there is another occasion observed every three weeks (on Thursdays) called “Abiedue Huhue”. This festival is to pacify the royal stools and to perform a ritual to appease the ancestors.

4.8.1 Bia East District

The district is in the north-eastern part of the Western North Region and has a total land area of 795km². It shares boundaries with Dormaa West District to the north, Asunafo South District to the east, Bia West District to the west and Cote d’Ivoire to the south.

Bia East falls within the moist semi-deciduous forest zone of Ghana, and its vegetation is made up of many economic tree species such as Wawa, Onyina, Odum, Mahogany, Sapele, Emire, Oframo, Cedar, and Asamfina. The district has two forest reserves - Akosua Anto and Camp Road - which have a rich diversity of fauna and flora. The district is mainly noted for agricultural activities involving crops such as cocoa, coffee, oil palm, etc.

The district falls under the jurisdiction of the Sefwi Wiawso Traditional Area with its overlord, the Paramount Chief (Omanhene) residing at Sefwi Wiawso. There are divisional and sub-chiefs in the major and minor communities respectively. The major ethnic groups include Sefwi, Bono, Ashanti, Krobo and Ewe, with majority of the population being Christians, followed by Muslims and Traditionalists. The chiefs and people celebrate the Elluoe (Yam) Festival between the months of December and February every year.

The agricultural sector employs about 78.7% of the working population while the service sector employs about 18% with about 3.3% being self-employed. The major crops grown are cocoa, oil palm, plantain, cocoyam, etc. The major problems under the sector are inadequate processing and storage facilities, inadequate extension service delivery, inadequate access to micro-credit, among many others.

Women have limited access to agric extension services and training, in most cases, they will only participate in trainings if they are encouraged/persuaded by trainers and extension workers. They also have limited access to financial institutions – Credit Union, Local Banks, etc. – and they are rarely involved in public consultation or discussion that relate to land use decision-making (Mobilising More for Climate, 2020).

There is a total of 161 Basic Schools, with about 63 pre-schools, 63 primary schools and 35 JHS. About 94.3% of the population are connected to the national grid with about 71% also having access to safe water supply.

4.8.2 Bia West District

The district is in the northwest part of Western North Region with a total surface area of about 1,287.27km². It shares boundaries to the north with Bia East District, Juaboso District to the south, Asunafo South District and Asunafo North Municipality to the east, and the west by the Cote d'Ivoire border line.

The vegetation is of the moist semi-deciduous type. The forest vegetation is made up of many different economic tree species, including *Triplochiton scleroxylon* (Wawa), *Celtis mildbraedii* (Esa), *Terminalia superba* (Ofram), *Entandrophragma angolense* (Edinam), *Ceiba pentandra* (Onyina), and *Antiaris toxicaria* (Kyenkyen). The main land use activity in this area is the farming of crops like cocoa, coffee, yam, rice, oil palm, and vegetables, while the rest is used for forest reserves and settlement developments. There are two forest reserves in the district: Bia North and Bia South Forest Reserves. The former is a protected reserve, while the latter is a productive reserve where timber harvesting is done.

About 74.7% of the working population is involved in the production of cocoa as either farm owners, tenants, or farm laborers. Agriculture is the main economic activity with cocoa as the main crop. Plantain, yam, cassava, cocoyam, rice and maize among others are also widely cultivated. Some households also engage in fish farming and rearing of animals/livestock for commercial and domestic consumption.

Plots of land that are allocated to women tend to be smaller and less productive than the land managed by male relatives, impacting their overall yield and constraining their productivity. Young men and women (Youth in Cocoa, 60% men and 40% women) also form farmer groups

aiming to achieve more access to finance and other resources. However, since much of the land they occupy lies in state forest areas, land tenure is still insecure, limiting their access to finance. They have moderate access to extension services, training, finance and markets (Mobilising More for Climate, 2020). Other labour challenges faced by farmers include - difficulty in taking weather data because there is no Weather Station or Meteorological Office to give an accurate rainfall measurement and over-reliance on rain-fed agriculture (Bia West District Planning and Coordinating Unit, 2016).

The district has 165 public educational facilities including 97 primary schools, 64 JHS, 3 SHS and 1 College of education and 31 private basic schools. There are 3 Small Town Water Systems and 2 limited mechanized systems (in Elluokrom and Kwametawiakrom) and 59 boreholes in the various communities. Access to potable water supply stood at 45.1% at the beginning of 2014 and 51.3% in 2017. About 25 communities are connected to the national grid. The various forest reserves within the project areas are presented in Figure 4.3.

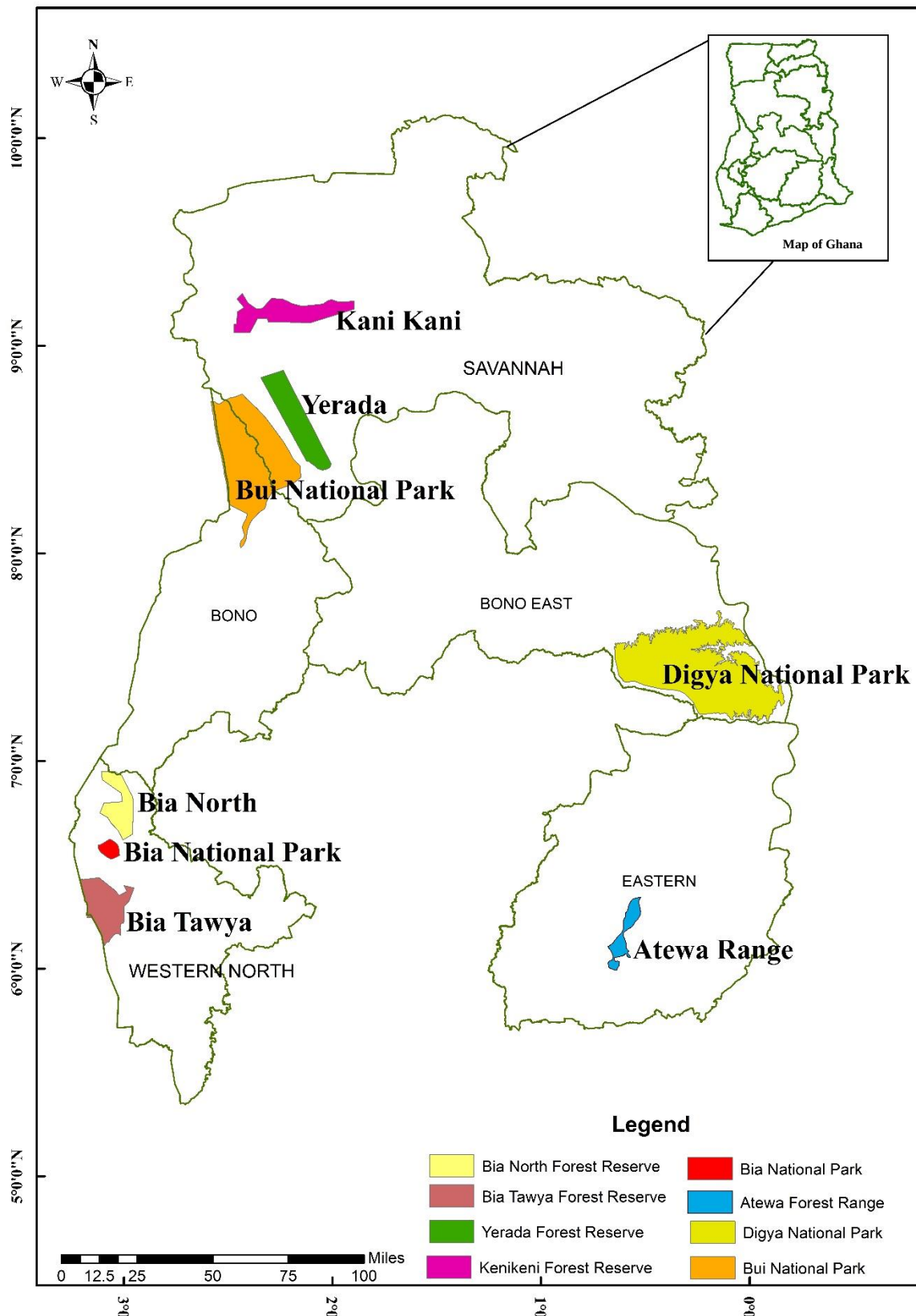


Figure 4.3 Forest Reserves within the Project Regions

4.9 Characteristics of Tree Crops

4.9.1 Cocoa

Cocoa generally requires high temperatures, precipitation, and humidity to achieve optimum productivity, and cultivation is restricted to the “cocoa belt” (20°N and 20°S of the Equator). It requires high rainfall (1000-2500mm) and temperatures (21–23 °C) to grow, as well as rainforest trees (tall/dense trees) to offer shade and protection from too much light and damage caused by wind. Cocoa is currently cultivated in 8 regions of the country: Ashanti, Eastern, Western, Western North, Ahafo, Bono, Bono East and Volta Regions.

Ghana remains the second largest producer of cocoa in the world (after Cote d’Ivoire) producing 771,000 MT, for the 2019/20 and a 1,047,000 MT for the 2020/21 season. In 2019/20 cocoa season, an estimate of 512,137 MT was shipped to various locations abroad and this accounted for 67% of the total volume of metric tonnes produced, while the remaining 254,840 MT (about 33%) was sold locally for grinding by local cocoa processing companies. Most of cocoa exports from Ghana in 2020 went to Holland with a share of 24.13% of total exports. This was followed by Malaysia with a share of 12.35% and USA 9.79%. Belgium and Japan follow with shares of 9.55% and 7.66% respectively. In 2021, in real terms, the contribution of cocoa to GDP was GHS3.1 billion, around 533 million U.S. dollars. The cocoa industry is also a major employer of labour in Ghana, with around 800,000 cocoa farmers (including many seasonal workers). It is estimated that cocoa production covers an arable land area of 1.2 million hectares spread across 64 cocoa districts (GCB Strategy & Research Dept., 2022).

4.9.2 Rubber

The rubber tree grows well in humid lowland in the tropics. The recommended annual rainfall is between 2000 and 4000 mm however it does well at a minimum of 1200 mm. The most important thing is that the rainfall must be evenly distributed throughout the year with not more than one dry month. The average annual temperature of 25°C is desirable for rubber growth. Rubber is least sensitive to soil conditions but does well on fertile soil. The most important factor is the structure of the soil than the level of nutrients in the soil. It cannot be planted under forests, whether primary or secondary. The land area must be cleared completely before planting. Rubber can be grown in the Western, Central, Eastern and parts of Bono, Ashanti and Volta regions (World Bank, 2018).

The total acreage of rubber cultivation as at the end of 2017 was 61,000 hectares (ha), with 41,000 tons of dry rubber content produced. The rubber industry contributed a total of USD 315 million to GDP between 2013 and 2017 (World Bank, 2018). Average yield currently stands at 3,783 kg/ha/year wet. The industry employs about 120,000 people, including farmers, tappers, collectors, transporters, loaders, and factory workers.

Aside the economic benefits, rubber trees are environmentally friendly and can sequester carbon from the atmosphere, enhance soil fertility through nutrient recycling, can be used as forest cover

on degraded land and harvested for timber and biofuel at the end of its useful life (World Bank, 2018).

Termites and mistletoe are the main pests associated with rubber trees. Termiticides are applied around the base of the tree to ward off the pests. Mistletoe is controlled by cutting the parasitic plant from the infested tree as chemical means of control is not currently available. Diseases include the Black Stripe/Black Thread/Black Rot, Leaf Fall and Leaf Disease (all fungal infections) and are treated by applying recommended fungicides. In the case of Leaf Fall, severely affected trees must be felled to prevent spread (MoFA, 2017).

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4.9.3 Coconut

Coconut is a perennial which grows best under tropical conditions and in sandy shorelines. Areas suitable for coconut production include the coastal savannah and forest zones of Western, Central, Greater Accra, Volta, Eastern, Ashanti and Brong-Ahafo regions.

Coconut thrives in a wide range of soil types provided they are well drained and have no hard or iron pans within one meter depth. It grows well in infertile and saline soils with pH environments between 5.0 - 8.0, average temperatures between 12 - 32°C and minimum average annual rainfall of 1,000mm.

Ghana accounts for 2.7% of total worldwide production and was the 14th largest producer of coconut in 2020. Total cultivated area stands at 97,000 ha out of which an average 60,000 ha is harvested annually with post-harvest losses at less than 1%. Average yield is 19.2 MT/ha as against achievable yield of 40 MT/ha (52%), depending on ecology and agronomic practices. 60% of produce goes to the domestic market while the remaining 40% is exported, yielding a total export of \$6.3m-21.9m from 2020-2021. The main export markets are Italy, Switzerland, Germany, Dominican Republic, and Indonesia.

Coconut creates employment for both primary and secondary actors; producers, input suppliers, aggregators, processing, transportation, marketing and especially women as they are the ones actively involved in its production and trading. Coconut farming does not require a high level of education to indulge in and hence has contributed to the employment of 120,000 people especially in the rural areas.

There are three varieties of coconut mainly commonly found in Ghana:

- Tall varieties: Starts fruiting from the 7th year after planting. An example is Vanautu tall (VTT);
- Dwarf varieties: Start fruiting from the 3rd year after planting. Examples are Sri Lanka Green (SDG), Equatorial Green Dwarf (EDG), Malayan Yellow Dwarf; and
- Hybrid varieties: Starts fruiting the 4th year after planting. Examples are MYD X VTT; SDG X VTT.

Both organic and inorganic fertilizers such as cow dung, poultry manure, NPK, MOP, Kieserite and TSP are applied in specified quantities recommended by MoFA. Organic fertilizer is used to supplement the inorganic application of fertilizer. To promote sustainability, mono-cropping and intercropping are common farming practices done in the cultivation of coconut. There are two notable pests and one disease that affect coconut production. These are the:

- Rhinoceros beetle;
- Termites (*Odontotermis sp.*); and

- Cape Saint Paul Wilt Disease.

Notable amongst them is the effect of Cape Saint Paul Wilt Disease (CSPWD) which had devastated about 11,000ha of coconut farms in the country out of the 44,000ha in 2020. Currently there are varieties of coconut resistant to the disease, hence a drop in the occurrence of the disease in coconut farms.

4.9.4 Cashew

Cashew fares well in both marginal and rich, well-drained loamy soils and is grown substantially in the Guinea, Sudan and Coastal savannahs and the Forest Savannah Transition zone. It requires average rainfall of between 889 mm and 3084 mm with temperature between 20-30°C (MoFA 2018). Suitable areas include the Bono, Bono East, Savannah, Northern and Oti regions.

Current production of raw cashew nuts (RCN) is 80,000 MT, with average yield of 900 kg/ha which is below the anticipated yield potential of 1,500 kg/ha. The contribution of cashew to agriculture GDP (without cocoa) is 13.69% (MoFA, 2018). Since 2014 cashew has been the highest non-traditional export (NTE) earner, raking in US\$ 271m in 2017 rising from US\$ 196.7m in 2016.

The sector employs over 100,000 farmers and another 100,000 direct laborers involved in picking or harvesting the RCN. There are more indirect seasonal employees along the value chain activities such as aggregators, dryers and transporters, accounting for another 5000 plus jobs. Further employment is generated in processing, but this has declined considerably since 11 out of 14 processing concerns have shut down due to difficulty in securing nuts and technical non-competitiveness.

Land preparation involves total land clearing with zero burning. Planting is usually done between May-July using improved planting materials (seedlings and grafts). Mixed cropping can be done with crops such as legumes (soya and groundnut), cereals and yam, and can be grown interspersed with shea (MoFA, 2018). Organic manure is applied at the time of planting.

Currently, about 10-15% of annual cashew production is processed domestically, with installed capacity of about 20%, employing more than 2,900 people (70% female). Raw material for processing includes the RCN which develops outside the fleshy yellow/reddish fruit, the fleshy fruit itself and cashew nut liquid (CNSL) that is extracted from the testa during nut processing. Only nut processing is actively pursued with small percentage of apple (fruit) processing. The rest of the apple is thrown away whilst the shell is either used as fuel or also thrown away (MoFA, 2018).

More than 90% of harvested RCN is exported to India and Vietnam for processing, while about 3% is consumed locally and sold through supermarkets. An estimated 400,000 MT of cashew apples is produced but largely unused. CRIG Tafo Wine and Mim Brandy are known beverages but are produced on ad hoc basis. About 25% of cashew nut shells are used in firing boilers at processing factories and also sold to the ceramic industry (MoFA, 2018).

The major insect pests are the sap-sucking bugs, stem borer and branch girdler. Minor insect pests are mainly thrips and cashew leaf miner which affect plants at the nursery and early crop establishment phase and do not cause significant harm to mature trees.

There are several diseases, mainly caused by fungi that affect the leaves, stem, root and fruit of cashew plants, with three of these (damping off, seedling blight and root rot) occurring only at the nursery stage. Diseases that affect the leaves include inflorescence blight, anthracnose, leaf blight, die-back, leaf spot, leaf rust, leaf mosaic and leaf rosette and leaf chlorosis. Stem and root diseases are gummosis and polyporus root-rot. Apple and nut rot affect the fruit.

4.10 Social Issues

a) Child Labour

Working Children in Agricultural Households

Findings from the 2020 National Opinion Research Centre (NORC) survey on child labour in cocoa growing areas in Ghana and Cote d'Ivoire (Sadhu et al., 2020) indicated that 55% of children living in agriculture households in cocoa-growing areas are engaged in cocoa production, with many engaged in hazardous labour. Of about 770,000 children engaged in cocoa production, some 92% (710,000 children) were exposed to at least one form of hazardous labour.

Efforts to combat child labour, including investments in education appear to yield dividend. The NORC survey found that children's school attendance increased between survey periods (from 89% to 96%). The majority of children in the cocoa sector (93%) work when school is not in session, either on weekends (89%) or during vacations (3%). The research, however, gave no pointers to incidence of child trafficking, but the pattern looks more like children from farmer-families or farming households.

Cocoa is the most child labour prone of all the 4 tree crops, due to the labour-intensive demands of cocoa cultivation and limited availability of labour force. It is followed by cashew, especially during the harvesting season. Cashew harvesting involves picking the dropped nuts on the farm, and though simple, requires large labour force where children could readily be deployed. Appendix 16 provides the generic guidance on preventing and mitigating child labour risk in Ghana projects.

Rubber production (especially tapping and collecting) is specialized and workers are specially trained for that purpose, therefore, children cannot be involved, as that can lead to harming the trees and affecting productivity. Likewise, children are not involved in coconut cultivation due to

the delicate nature and the skills needed to handle the seedlings. It is therefore risky to involve untrained people, hence children are completely excluded. Children are also unable to weed fast enough to keep pace with the rate of cultivation and using children would unduly retard progress of work.

COCOBOD's Existing Initiatives Towards Elimination of Child Labour

Some initiatives by COCOBOD, for instance to establish a functional and credible traceability system to account for child labour through the Cocoa Management System (CMS) is crucial in the face of impending European Commission regulation requiring due diligence related to deforestation and traceability to access the EU markets. It is expected that the Regulation will be approved and made public by the European Parliament in May 2023 and that compliance with the Regulation will become mandatory in 2025.

COCOBOD in its Cocoa Sector Development Strategy (CSDS II) stipulates that child labour is a social menace that threatens sustainable cocoa production. It has therefore through its Child Labour Desk supported the National Programme for the Elimination of Child Labour in Cocoa (NPECLC) through the Ministry of Employment and Labour Relations to implement intervention programmes to eliminate child labour. While supporting NPECLC, COCOBOD implemented complementary programmes to facilitate the child labour campaign.

Also, COCOBOD's Environmental and Social Management System (ESMS), in consideration of the need to adopt new instruments for the prohibition and elimination of the worst forms of child labour, as a priority for national and international action, including international cooperation and assistance, adheres vehemently to the ILO convention 182 on child labour.

b) Teenage Pregnancy

Teenage or adolescent pregnancy is quite prevalent in Ghana with several thousand cases recorded annually. Ghana recorded about 2,856 adolescent pregnancy cases in 2020 (GHS, 2020) while statistics also depict that 2 out of 10 girls become pregnant or welcome their first child before the age of 18 years (Amoadu et al., 2022).

c) Gender-Based Violence and Disparity

Gender-based violence is a phenomenon deeply rooted in gender inequality and continues to be one of the most notable human rights violations within all societies. Gender-based violence is violence directed against a person because of their gender. Both women and men experience gender-based violence but majority of victims are women and girls (European Institute for Gender Equality, 2023). In Ghana, persistent gaps exist between women and men across the country, particularly among rural populations engaged in agriculture. About 50% Ghanaian women are employed as farmers, yet they fall behind men in accessing agricultural resources such as productive assets and extension services (Abdu et al., 2022).

The risk of exposure to violence is often greater in jobs and sectors where work is informal (such as casual laborers in construction (WEIGO, 2022) or precarious, where wages are low, where workers are stopped from joining or forming trade unions and where management accountability is low. Victims of GBV suffer from physical and mental health problems including self-harm, depression and suicide (COE, 2022).

Gender disparity is the differences in women and men access to resources, status and well-being, which usually favour men and are often institutionalized through law, justice and social norms (European Institute for Gender Equality, 2023).

Non-standard forms of work, including temporal and informal work, are key factors in creating power differentials for perpetrators to carry out sexual exploitation and abuse and sexual harassment (SEA/SH) against women workers. SEA/SH occurs in commercial agriculture when also combined with cultural norms that tend to tolerate such activities, and structural environments that distance perpetrators from accountability. Sexual violence and harassment among commercial agricultural workers are widespread and prevalent (Henry, C., & Adams, J. 2018).

The perpetrators and victims of sexual violence and harassment can be, potentially, anyone, including “employers, workers and third parties, including clients, customers, service providers, users, patients and the public in the world of work”. Moreover, victims can be targeted based on such factors as gender, class, race, disability etc. Nevertheless, sexual violence and harassment affect women disproportionately, and men tend to be the perpetrators (ILO, 2018).

4.11 River Systems and Basins

Ghana is drained by three (3) main river systems comprising the Volta, South-Western and the Coastal River Systems. The Volta River system in Ghana occupies nearly two thirds (70%) of the land area of Ghana, followed by the South-Western (22%) and the Coastal (8%). The Volta River System includes the Black and White Volta Rivers, Oti River and the Lower Volta, including Lake Volta. The South-Western system consists of the Bia, Tano, Ankobra and Pra Rivers whereas the Coastal system is made up of the Ochi-Amisshah, Ochi-Nakwa, Ayensu, Densu and Tordzie/Aka rivers (Water Resources Commission, 2023) (Figure 4.4). The total annual runoff for Ghana is 54.4 billion m³ out of which the Volta, South-western and Coastal Rivers Systems contribute a total of 38.3 billion m³ in the proportions of 64.7%, 29.2% and 6.1% respectively (Ghana Maritime Authority, n.d.). The river basins that are of relevance to this project are the Black Volta, Tano, Pra, Densu, Bia and Pru.

A buffer zone of 100m is reserved on either side of major rivers and about 60m for tributaries, depending on the type of tributary. Activities of all sorts are not permitted within the buffer including pesticides application. The buffer established helps to prevent erosion.

a) Black Volta Basin

The Black Volta Basin is a trans-national river system that cuts through Mali, Burkina Faso, Ghana and Cote d'Ivoire with its main tributaries being the Bougouriba, Gbongbo, Grand Bale, VounHou, Sourou, Wenare, Bambassou, Bondami, Mouhoun (main Black Volta), Tain and Poni rivers. The Ghana portion of the basin covers an area of 18,384km² constituting 14% of the basin, covering 26 districts including Wenchi, Bole and Sawla-Tuna-Kalba, and six sub-catchments namely Lerinord, Nwokuy, Bui, Dapola, Nounbiel and Bamboi (Water Resources Commission, 2023).

b) Tano Basin

The basin lies between latitudes 50°N and 70°40'N, and longitudes 20°00'W and 30°15'W and a total catchment area of about 15,000km² shared between Ghana (93%) and Cote d'Ivoire (7%) (Ghana Maritime Authority, n.d.). Tributaries include the Abu, Amama, Bo, Disue, Soro, Atronie, Sabom, Gaw, Kwasa, Sumre, and Totua. The basin traverses 21 districts (including Techiman Municipality and Techiman North District) across 3 administrative regions, Bono East, Bono, Ahafo, and Western North regions.

The basin constitutes a major source of domestic water supply from surface and groundwater. Arable lands occupy the highest percentage of the total landmass. There is commercial farming of cocoa, plantain, and other food crops. Only about 10% of the landmass is used for human settlement. The forest cover represents the second highest land use pattern in the basin and follows closely after agricultural lands, occupying about 50% of the total landmass of the basin. The remaining 40% of the landmass is covered by forests which are largely protected areas (Water Resources Commission, 2023).

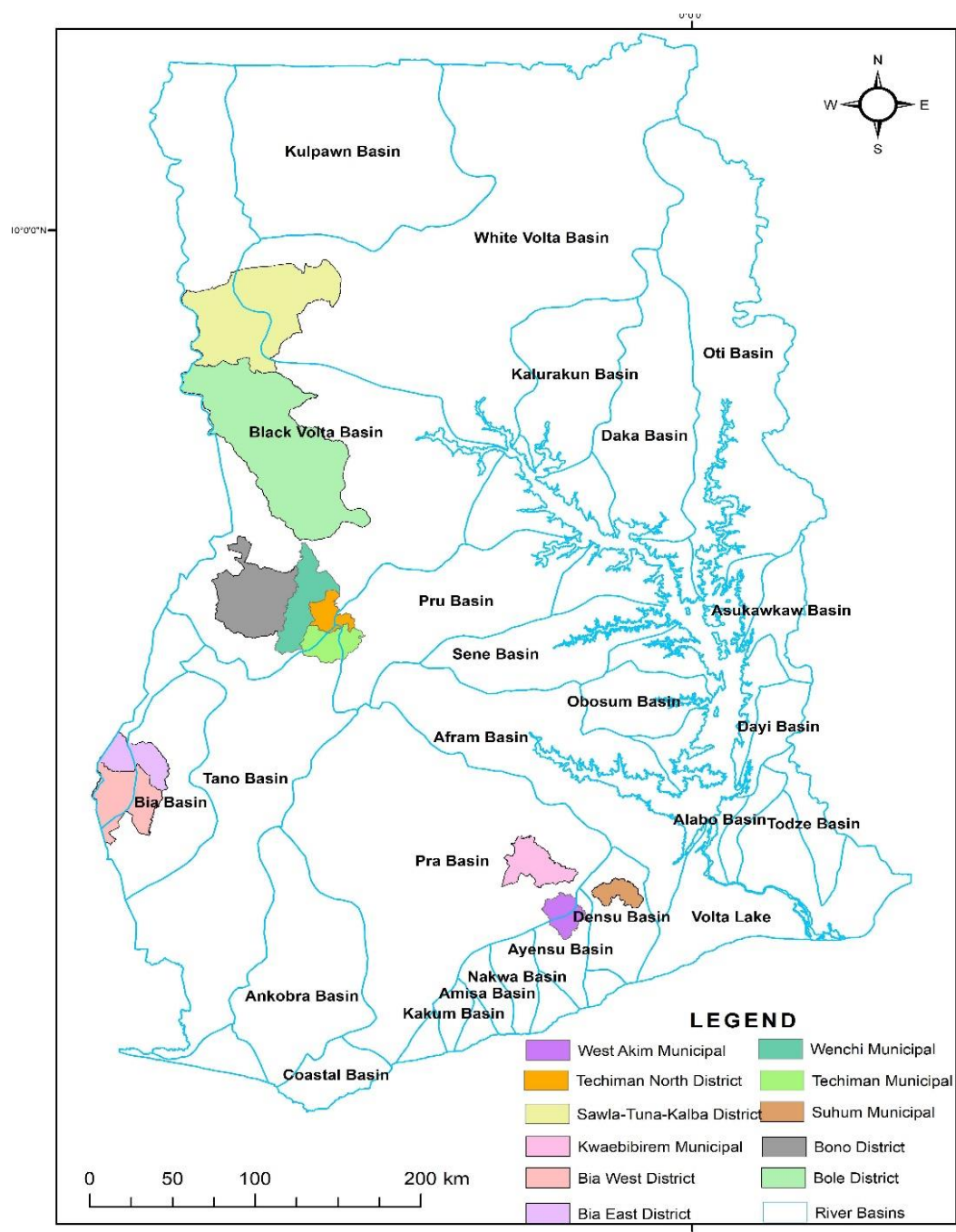


Figure 4. 4 River Basins in Ghana and Respective Project Districts

c) Pra Basin

The Pra Basin is located between Latitudes 5° 0' N and 7° 30' N, and Longitudes 2° 30' W, and 0° 30' W, in south-central Ghana. The Pra River, together with its tributaries, form the largest river basin of the three principal south-western basins systems of Ghana (i.e. Ankobra, Tano and Pra). Its total basin area of approximately 23,200 km² extends through almost 55% of Ashanti, 23% of Eastern, 15% of Central and 7% Western Regions. The main Pra River and its major tributaries

(Rivers Anum, Birim, Offin and Oda), takes its source from the highlands of Kwahu Plateau in the Eastern Region and flows for some 240km before entering the Gulf of Guinea near Shama in the Western Region.

d) Densu Basin

The Densu River Basin is located between latitude 5°30'N - 6°17'N and longitude 0°10'W - 0°37'W. The river takes its source from the Atewa range and flows from its upstream sections in an easterly direction towards the Akwadum -Koforidua area, from where the river gradually changes its course and flows in a southerly direction into the Weiija reservoir - one of the two main sources of water supply for the Accra metropolitan area. When the Weiija reservoir is full excess flow discharges into the Densu delta (Sakumo) lagoon and salt pans complex, which constitutes one of Ghana's internationally recognized protected areas (Ramsar sites), before discharging into the Bay of Guinea (Atlantic Ocean) some 10 km west of Accra. The Densu River belongs to the Coastal River System group and the basin encompasses an area of about 2,600 km². The total length of the Densu River is about 120 km, and its main tributaries are the Pompon, Kuia, Adeiso, Dobro and Nsaki rivers (Ghana Maritime Authority, n.d.).

e) Bia Basin

The basin is a transboundary watershed between Côte d'Ivoire and Ghana and an area of about 9,500 km². The Bia River flows entirely under dense forest with an average flow of 82m³/s. The region receives an average annual rainfall of about 1,450mm. The main tributaries of the Bia River system are Sui, Suhien, Kunuma, and the Yoyo. The Bia East and Bia West districts are found in the basin.

The mean discharge at the river mouth of the Basin is 45m³/s. The specific discharges at lower reaches of the mainstreams is 0.45 m³/s per 100km². The mean runoff coefficient is between 0.08 and 0.11 (Japan International Cooperation Agency, 2021). The average longitudinal slope is 3.5%. Slopes greater than 15° represent 11.07% of the Bia watershed area, slopes less than 15° represent 88.92%. The average longitudinal slope is 3.5%. The agriculture is varied and includes rubber trees, palm trees, coffee trees, cocoa trees, and banana trees. These crops are in the form of agro-industrial plantations (Meledje et al., 2021).

f) Pru Basin

The Pru Basin is a sub-basin of the Lower Volta Basin which consists of other sub-basins such as Sene, Obosum, Dayi, Asukawkaw, Alabo, Afram, Daka and Kalurakum basins. The Pru Basin covers an area of 8,728km² and extends through Ashanti, Bono East, Volta and Savannah Regions. The specific yield of the basin reaches 2.18m³/s per 1000km² with an estimated annual basin flow of 19.00m³/s. Figure 4.3 shows the various river basins in Ghana.

5.0 Stakeholder Engagement and Consultations

5.1 Purpose of Stakeholder Engagement

Stakeholders were engaged as required by good EA practice, and in line with the Ghana Environmental Assessment Regulations, 1999 (LI 1652) and the World Bank Group's Environmental and Social Framework (i.e., Standards 1 & 10) to demonstrate and engender openness in eliciting useful contribution to project design and implementation, improve environmental sustainability and enhance social acceptability of the project. The stakeholder list will be continuously revised to cater for new stakeholders to be engaged in the course of project preparation and implementation. This will be facilitated by the standalone Stakeholder Engagement Plan which has been developed for this project.

Public involvement in the assessment process involves engages relevant stakeholders, including those likely to be affected (either positively or negatively) and those that have power or interest in the proposed undertaking. This helps identify potential conflicts and minimize misinformation, develop alternatives and aide in decision making through increased mutual understanding. It promotes the feeling of ownership and cooperation, helps to establish good rapport, manage single-issue viewpoint, and gain technical expertise and first-hand knowledge on a subject matter.

5.2 Stakeholder Engagement Methodology

5.2.1 Stakeholder Identification and Mapping

A stakeholder mapping and analysis has been conducted to identify key stakeholder groups and the nature of their relevance and role to the issues linked to the project, based on the Consultant's experience in similar assignments and international best practice. It was also based on the review of the relevant legislative and institutional mandates which define the relevance of the stakeholder to the assignment and their areas of interest.

The key stakeholder groups that were engaged have been identified and categorized in Table 5.1 as well as the reason for engaging such stakeholders. These include those that:

- Are likely to be affected by the project impacts (Affected parties) which includes disadvantaged or vulnerable groups; and
- Have power over or interest in the project (other interested parties).

Table 5.1 Stakeholders Mapping

Description	Category of Stakeholder	
Affected Parties	Trade Unions, Cooperatives, and Associations	- Farmer Based Organisations/ Associations (FBO/A) - Rubber Out growers Association (ROGA) - Rubber Farmers Association - Kwakusae Cocoa (Cocoalife) - Brekumanso Cocoa Cooperative - Amaforo Cocoa Cooperative - Asafoatse Cocoa Cooperative - Anuado Cocoa Cooperative - Cashew Buyers Association (CBA) - Wenchi Municipal Cooperative Cashew Farmers and Marketing Union Limited (WMCCFMU) - Coconut Farmers Association (CFA) - Crop Life Ghana (CLG)
	Other Value Chain Actors (VCA)	- Farmers - Aggregators/Buyers - Processors - Input suppliers - Retailers - Individual Agent (IA) - Nursery Operator (NO) - Henry 86 Enterprise
Disadvantaged or Vulnerable Group	Women	- Women Farmers (WF) - Women laborers (WL) - Wives of farmers (WoF)
	Persons with Disability (PWD)	Physically challenged laborers
	Children	Children of farmers (under 18 years)
Other Interested Parties	Government Ministries	- Ministry of Lands and Natural Resources - Ministry of Employment and Labour Relations - Ministry of Gender, Children and Social Protection (MoGCSP) - Ministry of Food and Agriculture (MoFA) - Directorate of Crop Services (DCS) - Directorate of Agricultural Extension Services (DAES) - Plant Protection and Regulatory Services Directorate (PPRSD) - Women in Agricultural Directorate (WIAD)
	Regulatory Institutions & Enforcement, Safety and	- Environmental Protection Agency (EPA) - Water Resources Commission (WRC) - Forestry Commission (FC) - Forest Services Division (FSD)

Description	Category of Stakeholder	
	Protection Agencies	○ Wildlife Division (WD) ● Domestic Violence and Victims Support Unit (DOVVSU) ● Ghana National Fire Service (GNFS)
	Research Institutions	● Oil Palm Research Institute (OPRI) ● Crop Research Institute (CRI) ● Wenchi Agricultural Station (WAS)
	Implementing Agencies	● COCOBOD ○ Cocoa Health and Extension Division (CHED) ○ Seed Production Division (SPD) ● TCDA
	Municipal and District Assemblies	● West Akim Municipal Assembly (WAMA) ● Kwaebibirim Municipal Assembly (KbMA) ● Wenchi Municipal Assembly (WMA) ○ Department of Agriculture (DoA) ○ Environmental Health and Sanitation Department (EHSD) ○ Education Directorate (ED) ○ Health Directorate (HD) ○ Social Welfare and Community Development Department (SWCDD) ○ National Disaster Management Organisation (NADMO) ○ Physical Planning Department (PPD)
	Community level	● Traditional Authorities including chiefs ● Community Child Protection committees ● School Management Committee (SMC) ● Community level self-help groups ● Community Beneficiaries Welfare Associations (BWA)
	Non-Governmental Organisations/ Community-Based and Civil Society	● Action Against Child Exploitation (ACE), ● International Cocoa Initiative (ICI) , ● SEND West Africa, ● Global March Against Child Labour ● General Agricultural Workers Union (GAWU)

5.2.2 Stakeholder Engagement Planning

In identifying issues for engagement, the initial prospective stakeholder list was matched against the main components of the project, as well as potential impacts and baseline areas in a Stakeholder Identification Matrix (SIM). Appendix 1 presents the SIM used to help highlight which areas to elicit inputs from stakeholders.

The key stakeholders identified were notified to participate in an engagement program through engagement notification letters. A formal introduction was made by COCOBOD/ TCDA to all

government agencies and value chain actors for the various tree crops introducing the proposed GTCDP and requesting their involvement in the consultative engagement process. The contact details of key persons for consultation were taken to enable follow up and confirmation of the suitability of the proposed meeting dates. This enabled the preparation of the final engagement plan for execution. The engagement plan which guided the stakeholder engagement program carried out between 3rd February and 17th March, 2023 is presented in Appendix 2..

5.3 Stakeholder Engagement Highlights

The highlights from the respective engagement with stakeholders has been provided in the Table 5.4 with the full engagement outcome in Appendices 3- to 78. These outcomes informed the assessment of risks and impacts as well as the ESMF implementation plan and subsequent project assessment.

Table 5.2 Major Highlights from Engagements

Stakeholder	Key Highlight/Concern	Proposed Actions to address the concerns
Cocoa Health & Extension Division	Risk of elite capture where the national level personnel take up the capacity building opportunities while the implementing persons at the district level are side-lined.	This risk has been addressed, and mitigation measures provided
Ministry of Gender, Children and Social Protection	- Child labour prevalence in cocoa production appears lower than portrayed in international media. - Extensive effort has and is being made in that area by multiple government and non-governmental agencies.	The occurrence of child labour is a major concern and measures for identification, prevention, monitoring and remediation provided
Environmental Protection Agency	- In Ghana, the level of assessment for an agricultural development project is dependent on the size of land (EIA - >1000ha, PER - 500-1000ha and Initial Assessment - <500) - Farmers should be encouraged to practice inter-cropping to avoid converting food crop farms to tree crop farms completely	This has been applied in the E&S screening criteria but based on the official record
Oil Palm Research Institute	The Cape St. Paul Wilt Disease is a major problem on coconut farms and a big threat to the industry.	Provision of disease resistant seeds by the project
Crop Research Institute	One of the critical supports needed by the Institute is the rehabilitation of existing structures and laboratory equipment	Provided for under relevant project component
Wenchi Agricultural Station	Intercropping can be practiced only at the early stages (i.e 1 to 4 years) of the cashew farm when the leaf canopies have not completely closed. Crops such as maize and sorghum could be intercropped with the cashew.	Intercropping applied as a mitigation measure to enhance food security

Stakeholder	Key Highlight/Concern	Proposed Actions to address the concerns
Water Resources Commission	A buffer zone of 100m is reserved on either side of major rivers and about 60m for tributaries, depending on the type of tributary. Activities of all sorts are not permitted within the buffer including pesticides application.	A buffer zone reservation was applied to mitigate the use of agrochemicals, spent oils etc.. close to waterbodies.
Forestry Services Division	- Though deforestation is of concern in tree crop plantation, it is considered as forest giving way to agriculture if it occurs off-reserves. Biodiversity is lost when forests are cleared to make room for a tree crop. - Tree crop plantations are not encouraged around forest reserves, the reason being that the farmer can gradually encroach and take over the reserve. Tree crops planted close to reserves are cut down.	- Provision for biodiversity offset - Tree crop plantations will not be permitted close to or in forest reserves, protected areas and national parks
West Akim Municipal Assembly	- Some farmers use banned agrochemicals while others also taste the chemicals before usage. The chemicals that are mostly tasted by the farmers are the ones for de-greening (i.e., to enhance the ripening of fruits) - The agrochemical containers are mostly left behind on the farms after usage - Some plastics containers are buried on the field while others are mixed with domestic solid waste as a disposal option.	Mitigation measures provided for the handling, use and disposal of agrochemicals
Kwaebibirim Municipal Assembly	- There has not been any recorded fire incident on rubber farms. Complaints have been received from other crop farmers where one farmer set fire to a part of their farm and this spread to another farm - Chiefs and opinion leaders are usually the first point of call, in reporting grievances. Some farmers go to the Police directly and then write to the Directorate. Where crops are destroyed the Directorate conducts a valuation exercise to ascertain the damage	- Mitigation measures to train fire volunteers by the Ghana National Fire Service for firefighting - Provision made through Grievance Redress Mechanism
Wenchi Municipal Assembly	- Children are only sent to the farms during weekends or after school periods. They are mostly engaged during the harvesting period to either detach the fruits from the nuts or pick the nuts. The farmers use their own children and do not employ the services of other people's children. Nonetheless, the Directorate does not have a sensitization programme for educating the farmers or children on child labour neither do they have any monitoring system in place. - Farmers should be incentivised to separate their used chemical containers.	- Measures provided to prevent children from engaging in hazardous work - Mitigation measures provided for the handling, use and disposal of agrochemicals
Domestic Violence and Victim Support Unit	Physical, emotional, psychological and sexual abuse are the types that members of the area face (Wenchi). About 96% of abuse cases recorded are physical abuses and 80-90% of these victims are women. The trigger for most of these abuses are claim to ownership of properties (i.e., preventing women from going to the farms or not	The percentage of cases of abuse within the municipality helped to establish the likelihood and significance of sexual

Stakeholder	Key Highlight/Concern	Proposed Actions to address the concerns
	giving the women their share of profits from the sale of cashew nuts). Child labour does not occur within the municipality (West Akim), and there are no records in that regards.	exploitation and abuse and sexual harassment. .
Ghana National Fire Service	Bush fires usually affect farms such as cashew since it is the most grown commodity within the area. This year (2023) there have been 4 incidences of bush fires within the municipality (Wenchi).	Mitigation measures to train fire volunteers by the Ghana National Fire Service for firefighting
Rubber Out growers Association	Children do not work on rubber farms. There is a certain level of skill required, for example, in tapping, which children cannot do. The only activity children can be involved in is collecting cup lumps but this does not happen.	Measures provided to prevent children from engaging in hazardous work
Coconut Farmers Association	- Farmers who use agrochemicals do not usually have their PPEs on during this activity. Most farmers also do the spraying themselves and do not use certified sprayers. - Due to the skill required in handling coconut seedlings and growing them, children are usually not involved in the farming activities.	- Mitigation measures provided for the handling and use of agrochemicals - Mitigation measures provided to prevent the use of child labour
Farmer Based Organisations/ Associations (Rubber)	There are a few women farmers, some own their farms. Majority of the women are collectors, and a few are tappers.	Measures provided to prevent women farmers from being disadvantaged
Farmer Based Organisations/ Associations (Cocoa)	- Women involved in agriculture, particularly the tree crop sector are not sexually harassed by their male counter parts - Cooperative meetings or extension trainings are mostly characterised with low participation of women as compared to the men. This due to the domestic and other economic duties they engage in outside farming hours.	Extension trainings will be organized for FBOs and other beneficiaries, with a particular emphasis on women's groups, in various communities
Wenchi Municipal Cooperative Cashew Farmers and Marketing Union Ltd	- There are 3 main ways of obtaining land for cashew farming within the area and this includes family land (inheritance), lease of land and the “Do ma yen ky3 ” (share cropping) system where the farmer goes into an agreement with the landowner to grow and maintain the farm and at the end of each season, the produce is shared equally between the two parties for some agreed number of years (mostly 8 years), after which the farm is now divided into two equal halves where both parties take one each. - Cashew within the Wenchi area is predominately grown by men and majority of these men work with their wives on the farm with the perception that the farm belongs to the couple, however the operation of the farm is led by the males. Most females who own	Measures provided to prevent vulnerable groups from being disadvantaged

Stakeholder	Key Highlight/Concern	Proposed Actions to address the concerns
	cashew farms are mostly obtained through inheritance from their family or when they lose their husband.	

5.4 Proposed Program Lifecycle Stakeholder Engagement

Meaningful stakeholder engagement during the life cycle of the program, is an essential aspect of good project management and provides opportunities for the TCDA and COCOBOD to solicit feedback to inform various aspects of project design, implementation, monitoring and evaluation. A citizen engagement plan (Appendix 11) has been developed as part of this ESMF to guide future engagement throughout the project implementation as well as a standalone SEP.

5.5 Grievance Redress Mechanism

The overall objective of the Grievance Redress Mechanism (GRM) is to provide an effective, transparent and timely system that would give aggrieved persons redress and avoid litigation, minimize bad publicity, avoid/minimizes delays in project implementation, ensure public health and safety, and sustainability of the GTCDP interventions. Specifically, the GRM:

- Provides affected people with avenues for making a complaint or resolving any dispute that may arise during the implementation of projects;
- Ensures that appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants through Alternative Dispute Resolution (ADR) strategies; and
- Avoids the need to resort to the Court of Law.

5.5.1 Grievance Process

The grievance management guide (excluding child labour and SEA/SH cases) to be followed by TCDA/ COCOBOD is provided in Table 5.4 below.

Table 5.3 Grievance Management Guide

Step	Process	Description	Time Frame	Other Information
1	Identification of grievance	Face to face; phone; letter, e-mail; recorded during public/community interaction; others	1 Day	Email address; hotline number
2	Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e., in a logbook)	4-7 Days	Significance criteria Level 1: one off event; Level 2: complaint is widespread or repeated; Level 3: any complaint (one off or repeated) that indicates breach

				of law or policy or this SEP/ESMF/RPF provisions.
3	Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	7-14 Days	
4	Development of response	- Grievance assigned to appropriate party for resolution; - Response development with input from management/ relevant stakeholders	4-7 Days 10-14 Days	
5	Response signed off	Redress action approved at appropriate levels	4-7 Days	TCDA/COCOBOD should sign off
6	Implementation and communication of response	Redress action implemented and update of progress on resolution communicated to complainant	10-14 Days	
7	Complainant's Response	- Redress action recorded in grievance logbook; - Confirm with complainant that grievance can be closed or determine what follow up is necessary	4-7 Days	
8	Close grievance	- Record final sign off of grievance; - If grievance cannot be closed, return to step 2 or refer to sector minister or recommend third-party arbitration or resort to Court of Law.	4-7 Days	Chief Executive Officer, TCDA

Any grievance received from the public shall be treated confidentially and resolved in a transparent and fair manner. The process of resolving grievances shall comprise the following tiers:

- Farmer (Project Site) level;
- Complaint lodged at COCOBOD/TCDA District Office;
- Project-level (Zonal Office) grievance resolution;
- COCOBOD/TCDA National Office; and
- National legal level.

The general process is that a project affected person and/or other stakeholders should first raise a grievance at the project location/office and the farmer level. If unresolved, it is referred to the COCOBOD/TCDA District Office. Beyond this level, the issue will be referred to the Grievance Redress Committee (GRC) at the COCOBOD/TCDA Zonal Office, and subsequently to the COCOBOD/TCDA national level if still unresolved. If the COCOBOD/TCDA level proves unsuccessful in resolving the grievance, the complainant may seek legal redress at the law court to resolve the issue. The process of resolving grievances is summarized in Figure 5.1 below.

Settlement of Disputes

A number of methods are available to the GRC and PAPs for use in resolving disputes and complaints. These include the following:

- Settlement by negotiation;
- Settlement by mediation;
- Settlement by arbitration;
- Court of Law; and
- International experts.

5.5.2 Grievance Cases Related to Child Labour or Child Rights / Child Protection Concerns

Grievance cases that involve children under 18 are to be given special considerations. For grievance cases related to cases of child labour, violations of child rights or child protection concerns, the project GRM will establish collaboration and referral procedures that respect the mandates established in the Children's Act, 1998. This Act articulates the special procedures for child protection which are mandated to specialized officers with training to deal with the inherent vulnerability of children that is due to their young age. The Inter-Sectoral Standard Operating Procedures for Child Protection and Family Welfare categorises risks and vulnerabilities in 4 levels as follows:

- Level 1: Higher risk - meaning that there has been significant harm, there are urgent safety risks, and/or health risks. Such cases should be reported immediately and response be underway within 24 hours;
- Level 2: Medium risk, for example, all cases of worst forms of child labour that do not fulfil the criteria for a high-risk case, these should be reported within 48 hours and a response received within one week;
- Level 3: Lower risk should be reported within 1 week and response received within 1 month; and
- Level 4: Risk reduced, needs met well-being outcomes -no further response needed other than periodic monitoring, counselling and/or guidance as needed.

Furthermore, pathways for the report/case differ with criminal offences and non-criminal offences. If it is a criminal offence, it should be reported to DOVVSU, if a non-criminal case to the DSWCD.

The procedure for child labour redress mechanism will include:

- Receive and acknowledge grievance claim;
- Investigation (and if high risk, referral of case to formal child protection system);
- Develop timebound action plan;
- Implementation and communication of plan; and
- Monitor and report progress.

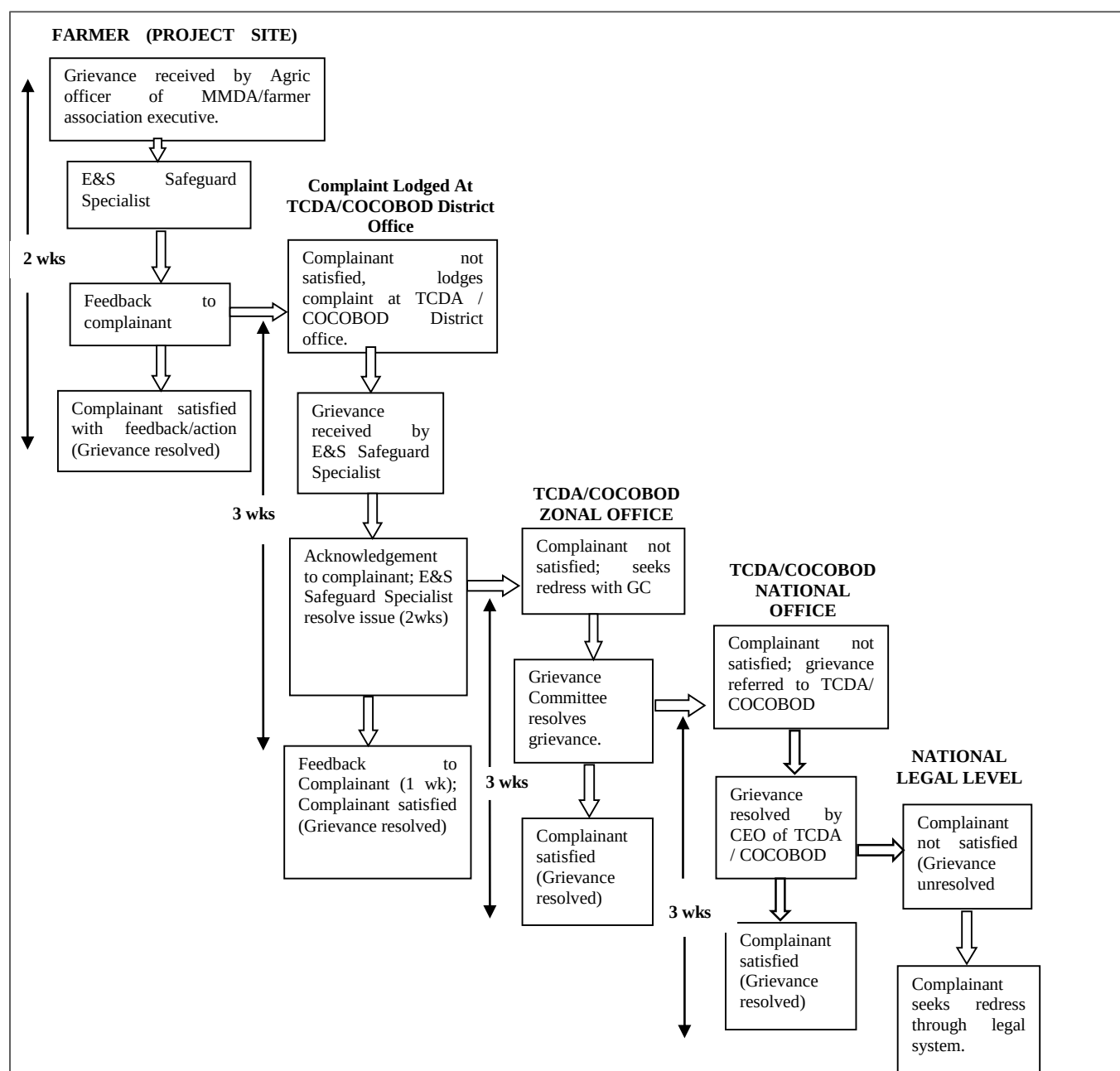


Figure 5.1 Grievance Mechanism for GTCDP

1If the grievance cases concern the functioning of activities, performance of professionals, programmes implemented in an area to reduce and respond to child labour, the project GRM will establish collaboration and referral procedures that respect the mandates established for social risk management and complaints in accordance with the Local Governance Act, 2016.

The procedure for child labour redress mechanism will include:

- Receive and acknowledge grievance claim;
- Investigation (and if high risk, referral of case to formal child protection system);
- Develop timebound action plan;
- Implementation and communication of plan; and
- Monitor and report progress.

5.5.3 Sexual Exploitation and Abuse and Sexual Harassment

If the GRM receives a case on sexual exploitation and abuse related to the project, complaint will only be recorded after securing full consent of the complainant in line with survival centred approach. The GRM administrator will then refer the complainant to the appropriate SEA/SH service provider or relevant government authorities in line with the SEA/SH Risk Mitigation and Response Action Plan. The PIU will report activities and outcomes of SEA surveillance and management to the World Bank on a regular basis. The procedure for SEA/SH mechanism will include:

- Reporting of SEA/SH;
- Investigation and referral of complaint to national authority; and
- Disciplinary measures.

5.5.4 Grievance Redress Form

The complainant's name, date and nature of complaint, follow-up actions and their dates will all be logged for referencing and tracing. Once grievances are resolved, the Chairman of the committee will complete the Grievance Redress Form (Appendix 15) detailing and confirming the resolution. The form will be signed by the complainant, and other parties. A complaint logbook will be opened for all complaints at the project level. All GRC minutes will be recorded and made available for review upon request.

5.6 Information Dissemination and Disclosure Measures

The WBG ESSs and the Ghana EA Regulations recognize the importance of open and transparent engagement with project stakeholders as an essential element of good practice.

Stakeholder engagement is described by the ESS10 as an inclusive process conducted throughout the project life cycle. When properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement must be initiated at an early stage of the program development process to be effective as an integral part of project decisions on risks and impacts and planning.

Information dissemination and disclosure actions are required at all stages of projects financed by the World Bank. It is to promote effective engagement of all stakeholders including project implementers, regulatory agencies, bureaucrats, project affected persons and project beneficiaries.

Effective consultation and information disclosure promote community ownership and participation and help to:

- Establish a systematic approach to identifying and engaging stakeholders to help build and maintain constructive relationships, particularly with project-affected parties;
- Assess the level of stakeholder interests and support to enable their views taken into account in project design and social performance;
- Promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle;
- Ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely and appropriate manner and format; and
- Provide project-affected parties with accessible and inclusive means to raise issues and grievances, which will be appropriately responded to and managed.

Information dissemination to stakeholders was carried out using various communication tools including:

- Meetings;
- E-mails;
- WhatsApp; and
- Phone communication

After approval of this ESMF and other E&S instruments such as the Integrated Pest Management Plan (IPMP), Stakeholder Engagement Plan (SEP) and Resettlement Policy Framework (RPF), a public notice will be served through newspaper advertisement indicating where copies of the report could be accessed.

The final report will be distributed for the records of the beneficiary MDAs, TCDA and COCOBOD, Regional and District CHED Offices, Regional and District TCDA Offices for public information. The document will also be disclosed electronically on the World Bank infoshop (e-library).

During project component implementation, information dissemination and disclosure would include local processes to ensure that project information is disseminated using local languages, ensuring that the communities are fully aware of developments.

6.0 ASSESSMENT OF POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

The potential impacts and risks assessed were based on the baseline conditions and the predicted change in the environmental and social variables, with implementation of the proposed projects activities; various stakeholder inputs on perceived impacts associated with the project; policy and legislative review; specialized knowledge of the consultant; and evaluation of significance of impacts relying on eight-point criteria for scoring impact significance.

The beneficial impacts and potential opportunities associated with the project include:

1. Employment generation;
2. Increased farm yield;
3. Increased income and economic growth;
4. Institutional strengthening to prevent child labour;
5. Institutional strengthening and value chain governance; and
6. Mitigating and adapting to the impact of climate change
7. Improved institutional capacity to prevent deforestation and forest degradation; and
8. Improved biodiversity.

The potential adverse impacts and risks assessed were grouped under the applicable ESSs and include the following:

ESS 1:	1) Inefficient ESMF implementation
ESS 2:	2) Occupational health and safety
	3) Infringement of labour rights
	4) Child labour
ESS 3:	5) Impact on water resources
	6) Improper waste handling and disposal
	7) Pest infestation and diseases
	8) Inappropriate handling, usage and disposal of agrochemicals
	9) Resource efficiency and GHGs
	10) Pollution from SMEs
ESS 4:	11) Community health and safety
	12) Loss of cocoa farmlands to illegal mining
	13) Gender based violence and disparity
	14) Increased rate of teenage pregnancy
	15) Spread of HIV and STIs
	16) Transmission of COVID-19
ESS 5:	17) Farm loss
	18) Land take
ESS 6:	19) Deforestation and forest degradation

- 20) Biodiversity loss
 ESS 8: 21) Socio-cultural conflict

6.1 Methodology for Assessing and Ranking Impacts

The likelihood of occurrence of adverse environmental and social risks and impacts associated with the project as well as the level of significance were evaluated, based on a modified methodology for assessing and ranking impacts adapted from the ISO 14001 Environmental Systems Handbook (Whitelaw, 2004). The ranking system used eight assessing criteria, qualitatively scoring 'low', 'medium' or 'high' scores for ranking the likelihood of occurrence and significance of impacts. The eight criteria used are listed and further outlined in the box below:

- a) Knowledge about similar/past projects;
- b) Level of risk of impact;
- c) Actual or potential nuisance;
- d) Spatial scale of impacts (spatial extent);
- e) Timescale of impacts (temporal extent);
- f) Inducing future incompatible activities;
- g) Legislative requirements and standards; and
- h) Information availability.

a. Knowledge of Similar/Past Projects or Project Environment

The knowledge of similar projects or various aspects of a project or in relation to the project environment were used. Aspects and related activities that have had environmental and social problems in the past would have a higher score, since they would have a higher likelihood of occurrence as compared to incident-free record of other activities. Likewise, aspects that generated complaints in the past would be deemed significant.

b. Level of Risk of Impact / Likelihood of Impact Occurrence

This looked at the probability of impact (or risk) occurrence (i.e., likelihood), and the likely consequences should an incident occur. It also assessed concerns such as whether there could be associated risks before and even after mitigation measures are taken (residual risks).

c. Actual or Potential Nuisance

Actual or potential damage or nuisance that the impact could cause surrounding areas or recipients, or any potential nuisance resulting from the proposed activities to the public or other sensitive receptors within the area of influence. Also considered impacts that are direct or indirect, reversible or irreversible.

d. Spatial Scale of Impacts

The spatial extent of impacts considered were whether local only (spatially limited), or community-wide, or district-wide effects or at the national scale.

e. Time Scale of Impacts

The duration over which impacts would occur or would be experienced (duration of exposure). Impacts could be intermittent or occasional, or frequent, persistent, but of less acute or long-term consequence (less serious) than effects with serious and/or long-term consequences.

f. Future Induced Activities

The likelihood of induced activities or adverse situations that may arise (could be cumulative) in the future due to the presence of the project, and what the nature or scale of these potential activities or situations could be (social- or environmental- or health-wise). Any likelihood of future incompatible activities or situations in the area of influence that may affect the objective or environmental and social management goals of the project.

g. Legislative Requirements and Standards

The available legislation, policy, standards/discharge limits or guidelines in place to facilitate evaluation of significance and management of impacts; where available the relevant aspects or impacts were considered less significant, or otherwise considered significant.

h. Information Availability

Where there is lack of information to base a satisfactory assessment on, the relevant aspect or impact was considered significant. In other words, knowledge gaps in the assessment meant it would be based on inadequate information/data, potentially introducing a high degree of uncertainty, hence an evaluation of high significance.

6.2 Beneficial Impacts

6.2.1 Employment Generation

Unemployment is one of the key issues facing Ghana. About 1.74 million (13.4%) of the total working population of 13 million (in the age bracket of 15 years and above) in the first quarter of 2022 were unemployed (Ghana Statistical Service, 2022). Agriculture and Agribusiness are identified by the World Bank as one of the key sectors that can offer increased employment opportunities (Youth Employment Programs in Ghana: Options for Effective Policy Making and Implementation, World Bank, 2020). The GTCDP will present employment opportunities and increased economic and social benefits in line with the 8th goal of the 2030 agenda for sustainable development which calls for decent work and economic growth.

The project will provide jobs throughout the value chain of the targeted tree crops, mainly cashew, coconut and rubber. During the establishment of nurseries, production, processing and storage/marketing phase, employment opportunities will be opened for unskilled, semi-skilled and professional personnel, both temporary and permanent. Cultivation and maintenance of cashew, rubber and cocoa is labour intensive and this, therefore, will generate employment for a number of farmers, workers, transporters, and loaders who cart the farmers' produce to the processing factories, etc. Rubber employs about 120,000 people (World Bank, 2018), cashew employs over 100,000 farmers and another 105,000 workers along the value chain (MoFA, 2018), cocoa employs over 800,000 people (GCB Bank, 2022) and coconut employs over 500,000 people across the

value chain (B&FT, 2022). These employment opportunities are projected to increase with the implementation of the GTCDP.

The construction of laboratory structures and installations are also expected to open employment opportunities for skilled and unskilled labour, including construction workers, engineers, extension officers, research scientists, laboratory technicians, electricians, agriculture input suppliers, etc. Also, the support to SMEs to enhance post-harvest management, quality processing and value addition of cocoa, cashew and coconut will provide several direct and indirect employment opportunities.

6.2.2 Increased Farm Yield

The project will develop true-to-type planting materials, integrated soil fertility management technologies (ISFM), integrated pest management (IPM) techniques, and postharvest management technologies. The use of genetically superior planting materials can increase crop yields by possessing desirable qualities like high yield potential, resistance to diseases and drought, and early maturity. Employing integrated soil fertility management technologies is essential to enhance soil health, increase organic matter, and improve nutrient availability for crops. Implementing integrated pest management techniques, which use a combination of biological, cultural, and chemical control measures can reduce damage caused by pests and diseases in crops. The application of post-harvest management techniques can aid in minimising post-harvest losses and enhancing the quality of harvested produce by utilizing proper storage, processing, and packaging methods. These sustainable agriculture practices help farmers to increase production, improve food quality, reduce harmful chemical use, and promote environmental health, ultimately leading to better farm yields.

The establishment of commercial nurseries offering high-volume, high-speed quality multiplication services, and the Tree Crops Service Centres (TCSCs)-certified agricultural input distributors, will ensure that farmers have access to improved planting materials, which are essential for improving crop productivity.

The development and rollout of competency-based trainings for farmers in tree crop farming, Good Agricultural Practices (GAPs), mechanization, and other related areas will help farmers to acquire new skills and knowledge that will improve their productivity. This will help them to adopt more efficient and effective farming practices, leading to increased yields and profitability.

6.2.3 Increased Income and Economic Growth

The project will focus on improving the production and productivity of Ghana's key tree crops, namely cocoa, cashew, coconut, and rubber. The project, in addition, aims to enhance the quality and quantity of farm produce. As a result of this, farmers will be able to achieve higher yields (as

seen above) and better-quality produce, which will lead to increased income from farming activities.

Also, the proposal to employ farmers as workers on cocoa farms under rehabilitation and the sale of plantains and bananas used as temporary shade trees will provide additional income to farmers.

Furthermore, with improved production and productivity, Ghana's agricultural exports are expected to increase. The agricultural sector already accounts for 30% of export earnings in Ghana, and with higher yields and better-quality produce, this percentage is likely to increase. This increase in export earnings will help to reduce Ghana's trade deficit and boost its foreign exchange reserves. Moreover, the investment in research and development of tree crops will enhance the competitiveness of Ghana's agricultural sector in the global market.

Also, as the agricultural sector constitutes 19.7% of Ghana's Gross Domestic Product (GDP), any improvement in the sector's performance will have a positive impact on the overall economy. With higher agricultural production and productivity, Ghana's GDP is likely to increase, and this will support economic growth. All the job opportunities that will be created (discussed in section 1.1) could result in enhanced economic gains for the project areas and the nation as a whole.

The development of resistant plant varieties can improve food security by increasing crop yields and reducing crop losses due to pests and diseases. This can lead to more stable food prices and reduced dependence on food imports, ultimately contributing positively to the GDP and the balance of payments. It also requires significant research and development efforts, which can lead to new discoveries, innovations, and technologies that can be applied to other sectors. These innovations can result in new businesses and industries, contributing to the GDP and economy.

6.2.4 Institutional Strengthening to Prevent Child Labour

Child labour is widespread in all subsectors of agriculture, and hazardous child labour is very common. According to the Ghana Living Standards Survey (GLSS, 2016/17), the agricultural sector accounts for 79.1% of all cases of hazardous child labour. Reports indicate that reliance on child labour is high in production, especially during harvest. The practice reflects factors like labour shortages, limited access to finance and low household incomes, lack of access to quality education, and a host of traditions.

During the NORC-Survey, 55% of children living in cocoa-growing households in Ghana were engaged in cocoa production, and the vast majority of those were engaged in hazardous labour. That said, the prevalence of child labour and hazardous child labour in cocoa production did not increase in step with cocoa production between the 2013/14 and 2018/19 surveys. The NORC survey found that children's school attendance increased between survey periods from 89% to

96%. The majority of children in the cocoa sector (93%) work when school is not in session, either on weekends (89%) or during vacations (3%).

The objective of the project under the sub-component 1.3 is to activate and make functional, an integrated area-based child labour prevention, monitoring and response system which includes building capacity of district and community level stakeholders, including District Assemblies, the Social Services Subcommittees and the District Planning Coordinating Unit, District Social Welfare and Community Development Officers and Labour Officers. It will also mobilize law enforcement such as police, prosecutors, and judges, as well as community structures such as Community Child Protection Committees, traditional authorities, FBO, school management committees, community registry and community schools. The project will also create a national oversight, coordination, and monitoring of child labor interventions in project districts, which will include involvement and capacity strengthening (in addition to COCOBOD and TCDA), the Ministry of Employment and Labor Relations, Ministry of Gender, Children and Social Protection, Ministry of Local Government, Decentralization and Rural Development and Office of the Head of Local Government Service. This will create baseline data for child labour on various farms in the targeted districts and allow for monitoring on occurrences of child labour in sector. The adoption of this system can lead to more effective interventions and better enforcement of labour laws, ultimately contributing to the protection of children's rights to education, health, and social protection.

In addition, the project will bridge the knowledge gap on the concept of child labour among farmers and address the difference between child labour and apprenticeship in the cultural view. This will address misconceptions on cultural and academic understanding of child labour. Farmers will be educated on what age bracket of children should not be involved in helping on their farm or be involved in any sort of apprenticeship.

6.2.5 Institutional Strengthening and Value Chain Governance

The project will help build the institutional capacity of cashew, coconut and rubber value chain associations, and their respective umbrella organisations. This will strengthen their ability to provide services to their members, such as training, access to credit, and market information. This, in turn, will increase the competitiveness and profitability of these value chains, which will benefit farmers, processors, and traders alike. This project will also help improve service delivery in the cashew, coconut and rubber value chains. This will help to increase productivity, reduce post-harvest losses, and improve the quality of the products. This will, in turn, increase the income of farmers and other actors in the value chain.

Strengthening the governance of the cashew, coconut, and rubber value chains will help to promote transparency, accountability, and effective decision-making. This will create a more conducive environment for private sector investment and help to attract more investors into these value

chains. The project will facilitate policy formulation, advocacy, and implementation in the cashew, coconut, and rubber value chains. This will help to create an enabling environment for investment and ensure that policies and regulations are supportive of the growth and development of these value chains.

6.2.6 Mitigating the Impact of Climate Change

Trees absorb carbon dioxide from the atmosphere and store it in their biomass and in the soil. This process of carbon sequestration can help to mitigate greenhouse gas effects and reduce the concentration of carbon dioxide in the atmosphere, thus reducing the impact of climate change. This project aims to increase tree cover by rehabilitating, and sustainably intensifying production of tree crops through several interventions including the development, promotion, and adoption of climate-resilient varieties of the targeted tree crops. The project will improve agroforestry practices in cocoa to improve long term production, resilience, and biodiversity. An increased tree cover will therefore contribute to significant carbon sequestration, thus reduce the impacts of climate change.

Coconut growth can also help restore degraded lands. This can potentially help reduce the impact of climate change in several ways:

- Coconut trees are well-suited to growing in degraded soils, which are often low in nutrients and water-holding capacity. When grown on degraded land, coconut trees can help to restore soil fertility and structure by fixing nitrogen, increasing organic matter content, and improving soil water retention.
- The deep roots of coconut trees can help to prevent soil erosion, while the tree's leaves and branches provide shade, reducing soil temperature and helping to retain moisture.
- Mature coconut trees can also store several tons of carbon per hectare, making them an effective tool for carbon sequestration.

The project will also include the building of laboratory structures and installations, etc. and their operation for the development of resistant plant varieties. The development of climate-resilient plant varieties can help to prevent deforestation by providing farmers with crops that can grow faster and more reliably than traditional crops. These new varieties are designed to withstand adverse weather conditions and produce higher yields, which can reduce the pressure on farmers to expand into forested areas. This can help to mitigate climate change by reducing greenhouse gas emissions and increasing carbon sequestration.

Also, climate-resilient plant varieties are often designed to use water more efficiently, which can help to conserve water resources and reduce the impact of droughts. Furthermore, climate-resilient plant varieties are designed to store more carbon in the soil or reduce emissions of nitrous oxide, a potent greenhouse gas. This can help to mitigate the impact of climate change on the environment.

6.2.7 Improved Institutional Capacity to Prevent Deforestation and Forest Degradation

Under sub-component 1.2 of the project, COCOBOD and TCDA will be supported in digitization of the value chain for traceability to combat deforestation and forest degradation. Digitization and traceability allow supply chain actors to verify the geographical origin of the tree crops, link sustainability characteristics to specific batches of tree crops, collect information on certification payments and inform and engage with consumers. Value chain digitization and traceability ensures that the production and export of tree crop products are not associated with deforestation and forest degradation and meet related international requirements.

COCOBOD, under its CMS has mapped about 72% of total cocoa farms (Cocoa and Forests Initiative, 2022), in the face of impending European Commission regulation requiring due diligence related to deforestation and traceability to access the EU markets. COCOBOD will be supported to improve its CMS where prevention of deforestation is concerned. TCDA will be supported to establish a digital system for traceability, learning from COCOBOD's CMS.

6.2.8 Improved Biodiversity

The establishment of tree crops plantation would have a significant positive impact on biodiversity by creating new habitats for wildlife. Trees provide a variety of habitats for wildlife, including nesting sites, food sources, and shelter. By creating new areas of forest, the establishment of tree crops can increase the diversity of habitats available to wildlife in the project areas.

Birds are an essential component of many ecosystems, and they play a vital role in pollination, seed dispersal, and controlling insect populations. Tree crops can provide food and shelter for a wide range of bird species, including forest-dwelling birds such as Yellow-headed Picathartes, Black Bee-Eater, etc. The presence of these birds in the project areas can help to improve the biodiversity of the local ecosystem and support the pollination of other crops.

Insects are also an essential part of many ecosystems, and they play an essential role in pollination, decomposition, and nutrient cycling. Tree crops can provide a variety of habitats for insects, including leaves, flowers, and bark. The presence of these insects can help to support the local ecosystem by pollinating other crops and providing food for other wildlife.

The establishment of tree crops can also provide shelter for mammals such as rodents, bats, and primates. These mammals play a crucial role in seed dispersal and the maintenance of forest ecosystems. The presence of these mammals in the project areas can help to support the local ecosystem and improve the overall biodiversity of the area.

6.3 Adverse Impacts / Risks

6.3.1 Inefficient ESMF Implementation

Component 4 of the project has one of its key activities being the provision of requisite E&S capacity for effective coordination, project M&E and E&S risk management responsibilities. There could be a risk to the effective implementation of the ESMF due to the following:

- Absence of clear E&S safeguards policy and institutional systems;
- Absence of E&S risk management unit at national, regional and district levels; and
- Lack of E&S capacity of personnel in project districts/municipalities.

Tree Crop Development Authority

The TCDA has no functional E&S policies and systems that guide planning for and management decisions of project E&S risks. The absence of an E&S policy and system disallow TCDA to actively partake in the implementation of E&S screening, scoping and EA review processes (in collaboration with EPA). Also, there are no clear communication/reporting lines for the management of E&S issues from the local level to national due to the unavailability of an E&S risk management units at the national, regional and district levels. This could potentially affect the effective implementation of this ESMF.

The presence of Environmental Specialist at the Head Office only, leaves E&S gaps in the 8 project districts/municipalities and 4 regional offices, where there is a need to exercise oversight in areas such as child labour, deforestation, responsible pesticide handling/use, empty container management, nursery and input supply centres.

Despite the availability of a well-qualified Environmental Specialist, the absence of a Social Development Specialist leaves a gap in the effective management and monitoring of the social risks and impacts associated with the activities of the Authority.

COCOBOD

COCOBOD has a policy and systems in place for managing E&S issues associated with their operations in the form of an Environmental and Social Management System (ESMS) and Environmental and Social Management Plan (ESMP). However, the regional and district CHED Officers as part of the E&S management unit (at the district and regional levels) have limited E&S experience for effective implementation of this ESMF.

Again, the Environmental Specialist at the head office has the requisite qualification and experience for the environmental safeguard role, however, the Social and Gender Specialist's educational background and experience are largely geared towards climate/environmental management. This could potentially affect the effective implementation and monitoring of the social safeguard measures associated with the project activities.

The absence and/or inadequacy of capacity and systems will not enable the successful implementation of the ESMF for both TCDA and COCOBOD. The need to fill in these gaps through enhanced capacity building opportunities and training tour under the ESMF for deserving technical officers could, however, be frustrated, if these are diverted and exploited by high senior management personnel, since that would bring no tangible beneficial outcome to the institutions.

Component 1 of the project seeks to identify and build the institutional capacities of TCDA and COCOBOD. This would reduce the likelihood of risk of inefficient ESMF implementation, hence, the significance is ranked **low**.

6.3.2 Occupational Health and Safety

Building of laboratories, rehabilitation of CSSVD-affected farms, establishment of commercial nurseries and certified agricultural input distribution centres, etc. could pose some occupational health and safety risks. The associated risks are presented in table 6.3.

Table 6.1 Risks Associated with the Project Activities

Project Activity	Associated Occupational Health and Safety Risks
Rehabilitation of CSSVD-affected farms and maintenance of farms	• Farm accidents and snakebites (accidents from chainsaw operation, manual handling hazards, hits from falling trees, cuts from farm tools, etc.) • Noise and vibration from cutting trees • Agrochemical (arboricides, pesticides, etc., etc.) poisoning
Establishment and operationalization of commercial nurseries	• Workplace accidents during construction (trip, falls, manual handling hazards, knockdowns by haulage trucks, etc.) • Noise and vibration from construction machinery • Injuries from the nursery operation (repetitive strain, cuts from the use of sharp tools, etc.) • Agrochemical (fertilizers, pesticides, etc.) poisoning
Building and operationalization of laboratories	• Workplace accidents during construction • Noise and vibration from construction machinery • Exposure to dust and other emissions • Exposure to hazardous chemicals/laboratory reagents
Certified agricultural input distribution centres	• Workplace accidents during construction • Noise and vibration from construction machinery • Exposure to dust and other emissions • Agrochemical poisoning
Establishment and operation and maintenance of SME's Value Chain Facilities	• Workplace accidents during construction • Noise and vibration from construction machinery • Exposure to dust and other emissions

Farm Accidents and Snakebites

The use of chainsaws in the rehabilitation of CSSVD-affected farms could have associated hazards such as kickback, pushback, and pull-in of the machine. Operators and workers nearby could be hit by falling trees resulting in severe wounds. The continuous lifting and handling of chainsaws could lead to repetitive strain injuries. Flying debris, e.g., sawdust and wood chips could enter the eyes of the operators/workers causing pain, blurry vision, redness, and swelling of the eyes.

Cutlasses and machetes, etc. used to clear weeds in tree crop farms could strain the lower back of workers hunching over for long hours. Long-term effects could include back injuries, sprains and even physical deformities. Inappropriate use of arboricides, pesticides, etc. could pose health risks if inhaled or ingested, and workers/farmers suffer from difficulty in breathing, irritation of the nose, skin, eyes and poisoning. Snakes and scorpions could hide underneath tree logs and attack/bite workers. Also, insects like bees, wasps, etc., could sting workers resulting in pain, swelling, and itching of the affected area and in some cases, severe allergic reactions.

Injuries from the Nursery Operation

The multiplication of nursery seedlings for cashew, coconut and rubber involving manual labour - digging and raising nursery beds to an appreciable height, planting seedlings, mulching, clearing weeds, pruning, etc. - require several hours of bending, squatting, and sitting, which could exert pressure on the lower back. Workers could be at risk of repetitive strain injuries from forceful exertions and sustained/awkward postures.

The grafting and budding techniques in cashew and rubber nursing requiring sharp tools - knives, blades, etc., to incise the budwood plants for vegetative propagation, could cause workers to sustain cuts or minor injuries. Infected knives could be shared among workers resulting in the transmission of viral diseases.

Workplace Accidents during Construction Activities

During the construction of laboratories, nurseries agricultural input centres and SME's value chain facilities, obstacles such as trailing cables, tools and poor levelling of the work surface could cause workers to trip, fall, cuts, etc. Lower back pain may occur as a result of repetitive forceful movements, awkward postures and over-exertion on the back of workers through manual lifting of heavy items.

Unsupervised manoeuvring of haulage trucks during the delivery and offloading of materials (sand, gravel, etc.) for construction could result in knockdowns of workers. The contributing factors may include disregard for site safety precautions, nonchalant attitude of drivers, workers operating at the blind side of truck drivers. Accidents could lead to broken bones, fractures, spinal injuries and in the worst case, death.

Noise and Vibration

The use of construction machinery such as haulage trucks, concrete mixers, plate compactors, etc. for building laboratories, nurseries, agricultural input centres, and SME's value chain facilities could generate noise levels between 85dB -107dB at a 15m radius. Also, the rehabilitation of the CSSVD-affected farms involving the use of chainsaws in cutting diseased trees could generate noise levels of about 106dB at a 15m radius. These activities could span a short period (up to 4 weeks). However, workers could be exposed to high noise level for 8 hours working period continuously, which could cause annoyance, stress and impair hearing, especially for those working with or close to the noisy equipment.

Increased noise from the use of machinery often goes along with vibration effects. The operation of the plate compactors and other machines could produce vibrations resulting in Whole Body Vibration (WBV) of workers. High levels of vibration from the use of chainsaws could be transmitted to the operator's hands and may affect muscles and joints of the hand, wrist and arm and in more severe cases, lead to Hand-Arm Vibration Syndrome (HAVS).

Exposure to Dust and Other Emissions

Dust and emissions could be generated from site clearing, excavation works and the movement of haulage trucks delivering aggregates to the worksite. The workers involved in these construction activities could be exposed to high levels of cement dust, particularly when emptying bags of cement. Construction machinery (concrete mixers, plate compactors, haulage trucks, etc.) could also produce emissions when in use. Prolonged exposure of workers to dust and emissions from these sources could pose health effects such as asthma, silicosis, bronchitis and other respiratory health risks.

Finishing and touch up works would involve the use of paints and solvents on various buildings (such as the laboratories, agricultural input centres, SME's value chain facilities, etc.) and workers performing this task could be exposed. Short-term exposure to solvents could cause dizziness, eye irritation, nausea, coughing and other symptoms, while long-term exposure could lead to damage to kidney, liver and nervous system.

Exposure to Hazardous Chemicals/Laboratory Reagents

The use of laboratory chemicals/reagents could expose personnel to accidental spills/splashes, inhalation and oral ingestion during laboratory operations with potential skin irritation/burns, poisoning, headaches, disorders of the lungs, kidney and nervous system.

Agrochemical Poisoning

Agricultural inputs such as fertilizers, pesticides, etc. improperly kept in storage at the centres, and handled (for supply to farmers) could lead to spills from fertilizers bags, pesticide containers, and other chemicals. Workers could be exposed to health risks if the appropriate safety apparel is not

used. Prolonged exposure could cause serious damage to the nose, throat, and lung tissue when inhaled continuously, and could lead to poisoning and other fatalities.

The occupational health and safety risks from farm and workplace construction accidents, dust/emissions, noise and vibration, laboratory reagents and agrochemical exposure though localized, the associated health implications could be dire, therefore the significance of the impact is ranked **high**.

6.3.3 Infringement on Labour Rights

The project types and associated activities will require both formal and informal workers, the latter usually having no form of agreement or conditions of employment, making them susceptible to infringement on their rights. The main sources/causes of infringement of labour rights could include:

- Non-issuance of employment contracts to workers;
- Unfair compensation for workers;
- Inability of workers to organize; and
- Marginalisation of women and PWD.

The rights of the informal workers (FBOs and beneficiaries) may not be protected due to the absence of various employment structures.

Non-issuance of Employment Contracts to Workers

Due to the casual nature of their work, informal workers are not usually given written contracts by their employers. This gives room for employers to do as they please concerning the employment terms, leaving the workers with no formal protection regarding their employment rights.

The construction of laboratories, tree crop centres for commercial nurseries and agricultural input supplies, etc will involve temporal employment for construction workers who may not be given written employment contracts thereby giving them no protection regarding their rights and threaten their job security.

Unfair Compensation for Workers

Informal workers could be paid low wages, below the national minimum wage, in an attempt by the project to cut costs and maximise profit. Workers could also be made to work overtime without adequate compensation for the extra hours of work. Female workers could be paid lower wages as compared to their male counterparts on similar work schedule, enforcing gender pay gaps. Social protection benefits such as pension scheme could be denied the workers, putting them at risk of not being able to cater for themselves in their old age.

Workers exploited this way have their motivation to work reduced, makes it difficult for them to support themselves and dependents/families and reduces their ability to access basic social amenities including healthcare and decent housing. Being denied a pension also puts them at risk of not being able to cater for themselves in their old age. All combine to adversely affect their quality of life. In addition, low motivation also affects their work performance, inhibiting productivity and possibly leading to lags in the completion and achievement of the project objectives.

Inability of Workers to Form Unions

Unions play an important role in helping workers negotiate employment contract terms including wages and other non-wage benefits, undertake industrial action, educate workers about their rights and generally ensure conducive and improved working conditions. There could be situations where workers are not allowed to form unions. Also, the agriculture and construction sectors in Ghana have the least union presence, a workplace union is likely to not be in place for the construction workers, thereby limiting them from enjoying the various benefits that unionisation provides. Although the National Labour Act protects employees' right to form unions, the contractor could also not honour such protection and is likely to not be sanctioned for failure to adhere to the provisions.

Marginalisation of Women and People with Disability (PWD)

The construction sector is known to be male-dominated. As such, there is a preference for male hires over women, even though they may be capable of performing certain roles/activities like plumbing and electrical works. Again, on the average, women tend to earn less than their male counterparts on the same/similar work schedule. In view of this any woman who may seek employment could be denied that opportunity by the contractor, even if they may be able to perform the role. Even when they are hired, they could be compensated less than their male counterparts of the same role.

Persons with Disability could also be denied employment by the contractor due to low expectations of their capabilities and stigma attached to disability. Where any PWD are hired, they could be compensated less than other able-bodied employees on account of their disability. Again, lack of adequate access facilities such as ramps and sanitary provisions could impede their work. They could also not be given required specialised working tools and proper fitting PPEs to be able to carry out their work satisfactorily.

From the above enumeration, informal workers stand the greater risk of labour rights infringement compared to their formal counterparts, due to the informal nature of their work and its inherent precarious characteristics. Again, women and PWDs may be discriminated against in any employment opportunities that could be suitable to them on the grounds of male preference in the industry. Although the Labour Act exists to protect the rights of all categories of workers, informal

employers do not usually adhere to its provisions and are rarely sanctioned for any breeches. Therefore, the likelihood and significance of infringement on labour rights could be ranked **high**.

6.3.4 Child Labour

Child labour can deprive children of their childhood, potential and dignity, and harm their physical and mental development. It is socially or morally dangerous to children and could interfere with children education, educational prospects and attainments. Thus, it can affect the transition paths of youth and their eventual employment outcomes, minimizing their opportunities for decent work in adulthood, while approximating them to poverty. They could also be injured in the course of such labour and subjected to physical violence when tasks assigned to them are not properly executed due to the child's physical limitation for such work.

The 2018/19 NORC survey found that efforts to combat child labour, including investments in education have yielded dividend, and children's school attendance increased between survey periods (from 89% to 96%). Most children in the cocoa sector (93%) work when school is **not** in session, either on weekends (89%) or during vacations (3%). The research, however, gave no pointers to incidence of child trafficking, implying that the children were from farmer-families or farming households.

The key issues associated with child labour and its adverse label for the tree crop sector could arise from the following:

- Informalities associated with the tree crop (agricultural sector) labour practices;
- Lack of structured farmer (and contractor) education and strict accountability on child labour;
- Lack of understanding of reporting and response requirements in relation to different types of child labour cases; and
- Absence of ready provision for custody and care of victims and trafficked children.

Other project components where contractors could deploy children as cheap means of labour could include:

- Establishment of Tree Crops Development Centres (TCDCs) as commercial nurseries for high-speed quality multiplication services for cashew, coconut and rubber plant varieties;
- Establishment of Tree Crops Service Centres (TCSCs)-certified agricultural (private-sector-driven) input distribution channels for farmers;
- Building of laboratory structures; and
- Rehabilitation of CSSVD-affected farms involving cutting, spraying, etc.

Field evidence (Appendix 6.3 and 3.1), suggest that the current situation of child labour and its label in the cocoa sector perhaps persists because of past practices, and also lack of appreciation

of the cultural phenomenon of child apprenticeship and development in farming communities/households. labour

Cashew harvesting involves picking the dropped nuts on the farm, and though simple, requires large labour force where children could readily be deployed. The level of informality in the agriculture labour sector, scarcity of labour force/farm hands and desire for cheap labour could lend to the propensity for child labour in the sector.

Rubber production (especially tapping and collecting) is specialized and workers are specially trained for that purpose, therefore, children are not commonly involved, as that can lead to harming the trees and affecting productivity. Likewise, children may not be involved in coconut cultivation due to the delicate nature and the skills needed to handle the seedlings. It is therefore risky to involve untrained people, hence children are completely excluded. Children are also unable to weed fast enough to keep pace with the rate of cultivation, and using children would unduly retard progress of work.

Child labour educational campaigns for farmers by organizations such as Cocoa Health and Extension Division and Cocoa Life Ghana are achieving good results. The Educational Directorate of the municipality (Appendix 5.1 and 5.3 – West Akim and Wenchi) also indicated awareness programs offered at school on child labour. Engagement with the Social Welfare and Community Development Department (SWCDD) of the West Akim Municipality, for instance indicated no records of child labour, but cited security and child protection reasons why children from cocoa growing households follow their parents to the farms after school, rather than remain alone at home.

Despite the level of awareness and good progress, there is nonetheless lack of accountability on child labour on the part of farmers, and measures taken against child labour offenders are rather relaxed and not punitive enough. It therefore serves no deterrent purpose. There are also no reliable provisions for taking custody and caring for such victims and of child trafficking. The lack of understanding of reporting and response requirements in relation to different types of child labour cases (criminal and non-criminal) as well as child labour cases of different risk-levels is also a concern.

Some initiatives by COCOBOD, for instance to establish a functional and credible traceability system to account for child labour through the Cocoa Management System (CMS) is crucial in the face of impending European Commission regulation requiring due diligence related to deforestation and traceability to access the European Union markets. Also, COCOBODs ESMS, in consideration of the need to adopt new instruments for the prohibition and elimination of the worst forms of child labour, as a priority for national and international action, including

international cooperation and assistance, adheres vehemently to the ILO convention 182 on child labour.

Analysis of the potential significance of child labour in the tree crop sector, and the risk to COCOBOD and TCDA's international obligations and trade is ranked **high**, in spite of the existing major efforts and milestones towards control and elimination of the phenomenon.

6.3.5 Impacts on Water Resources

Water resources face a host of threats, such as degradation of ecosystems through alteration of landscapes, e.g., clearance of forest, and the conversion of natural landscapes to farmland (Green Facts, 2022). Agriculture, which accounts for 70% of water withdrawals worldwide, plays a major role in water pollution. Farms discharge large quantities of agrochemicals, organic matter, sediments and saline and other residual drainage into water bodies (FAO, 2023).

The growth in crop production has been achieved mainly through the intensive use of inputs such as pesticides and chemical fertilizers. This has its consequence on the health of billions of people and the environment (FAO, 2023). Wastes such as oils, antifreeze and brake fluids are generated during the maintenance of agricultural machinery and vehicles (NetRegs, n.d). Sub-component 2.2 of the project involving rehabilitation of CSSVD-affected farms and the establishment of TCDCs as commercial nurseries and for the tree crop farms generally would rely on a varied range of pesticides, arboricides and other agrochemicals.

Project activities that could lead to water resource contamination include:

- Land clearing and site preparation activities;
- Contamination by agrochemicals;
- Abstraction of water resources; and
- Machinery and equipment use.

Land Clearing and Preparation Activities

Project activities would involve clearing and preparation of tracts of land for the nurseries and SMEs to develop value chain facilities, deploying machinery such as tractors, harrows, ploughs, etc. construction of labs, establishment of TCDC, etc. Land preparation activities tend to expose, loosen, and disturb the soil, making it susceptible to erosion, especially during the rainy season.

Clearing of vegetation for the nurseries and TCDCs, ground cutting, and levelling would lead to major disturbance of the top and sub-soil layers, exposing the soil surface to potential sheet erosion. This situation could be worsened in the case of rubber plantation since the land has to be totally cleared as this could increase runoff from the farm which would carry soil particles and sediment, and other waste materials over a large area of land into nearby waterbodies, also leading to siltation, thereby reducing the holding capacity.

Extreme rainfall episodes (due to Climate Change) could lead to intense sheet erosion and massive silt-laden run-off into nearby waterbodies and tributaries silting stream beds. This would reduce water depth in the stream, and render the water quality poor, especially for people and farmers who depend on it for domestic use and irrigation of farms respectively. Also, shallow water depth presents potential flood risk to farms close by. It could also lead to early drying up of the channel and deprive farmers of water.

Contamination by Agrochemicals

Waterbodies could easily be contaminated by chemicals such as pesticides, fertilizers, fungicides, and herbicides used on the tree crop farms. This could be easily washed through run off into surface waterbodies or infiltrate into groundwater resources. This could affect downstream users when these chemicals are used. Also, the use of arboricides in killing affected trees to control the spread of CSSVD, could affect water resources in the affected areas through runoff. When arboricides are applied to trees, they can be absorbed by the soil and eventually make their way into nearby streams, rivers, and other waterbodies. This can cause contamination of the water, which can harm aquatic life and make the water unsuitable for human consumption. Arboricides can also leach into groundwater. This can occur when arboricides are applied to trees in areas where the soil is porous, and the groundwater is close to the surface. When this happens, the arboricides can contaminate the groundwater, which can then affect nearby wells and other sources of drinking water.

The pesticides and other agrochemicals used for the tree crop activities could contain organic compounds such as nitrogen, phosphorus, potassium, organochlorines, glyphosate, etc. which could be discharged into nearby waterbodies. This could increase the Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD), which would reduce the level of oxygen in the waterbodies. Decline in dissolved oxygen levels will deplete the quality of the water and cause some sensitive species to move away or introduce invasive species.

Also, there could be cases of eutrophication which could further lead to algal bloom and fish kill in the nearby waterbodies as a result of excess use and releases of chemicals containing nutrients such as nitrogen, phosphorus, potassium, etc. which could be washed into the waterbodies. This will render the waterbodies used for domestic activities unusable. Where, the waterbodies have to be treated of contamination, this may result in increased costs of water treatment.

Abstraction of Water Resources

The project does not include irrigation of tree crops, however, water could be required for the nursery center operations. Water abstraction for irrigation purposes could leave downstream users of streams/rivers with limited water for other activities. This can be particularly problematic in areas with low rainfall or limited water sources. Abstraction of water from a river or lake can

impact the water levels and flow rates, which can affect the habitats of fish and other aquatic species.

Machinery and Equipment Use

Use of the various machinery and equipment in the farm activities and their regular maintenance could generate waste oils. Spilled, spent and other waste oils from accidental spill or leakage of fuel during works of farm machinery, could be released into the soil and washed into nearby waterbodies through run off.

Contaminated soils in sections of farms could be fouled with oil and lubricant from machinery and equipment. This could be as a result of inadequate knowledge on the storage, physical and environmental hazards of spent oils and the rather poor habit of disposing of waste oil by farmers. The contaminated soil washed into waterbodies could pose a threat to living organisms in it. In the worst case, the native species of the waterbodies could be lost.

Spent oils contain high levels of lead and other heavy metals and would adhere to the surface of soils and leach into and contaminate groundwater as well as surface water. Waste oils may also contain polycyclic aromatic hydrocarbons (PAH), benzene and heavy metals such as Lead, Chromium, Arsenic, and Iron associated with cancer and cardiovascular diseases. The oily waste could also leave a permanent footprint at the points of release or disposal and beyond, since most of the toxic heavy metal contents persist in the environment with usually irreversible effects.

Water quality deterioration could affect all users, who would also be deprived of water from the effect of early stream (shallow) dry up due to siltation. Also, in situations where the nearby waterbodies are already contaminated, the land clearing activities, servicing of machinery close to the waterbodies, chemical discharge from the farms into the nearby waterbodies, could make the situation worst especially when the required minimum buffer is not observed.

Therefore, the significance of the potential impacts of mainly the sub-components 2.2 and 2.3 activities on water resources will be **high**.

6.3.6 Improper Waste Handling and Disposal

The implementation of key project activities would generate different types of waste including:

- Vegetative waste from land clearing and preparation activities;
- Construction waste (broken bricks, broken tiles, concrete, pieces of wood, etc) during the construction and rehabilitation of laboratories, tree crop centres for commercial nurseries and agricultural input supplies, etc.;
- Domestic solid waste – food and other packaging materials, plastics, paper, leftover food, cans, bottles, etc. generated by workers;
- Agrochemical waste – containers and bags from used pesticides and fertilisers; and

- Spent oils and lubricants from the maintenance and repairs of clearing machinery and equipment such as chain saw.

Vegetative Waste

Land clearing activities for the establishment of nurseries, and agricultural input distribution centres, and new farmlands will lead to the generation of vegetative waste. The size of a typical tree crop plantation ranges from 2-30 acres. Clearing of such lands for tree crop plantation would lead to the generation of huge quantities of vegetative waste.

Rehabilitation of CSSVD-affected farms involving cutting the cocoa trees would generate vegetative waste which could be heaped and burned by farmers on the farms. The vegetative waste could quickly dry up due to high temperatures, making the heaps susceptible to fire. The fire could spread to other nearby farms and bushes/forest and get out of control as wildfire. Fire can also destroy the organic content of the soil and soil organisms rendering the soil fertility poorer. The exposure to smoke could adversely affect farmers and the public to diseases such as nausea, headaches, and bronchitis.

Construction Waste

The construction of laboratories, tree crop centres for commercial nurseries and agricultural input supplies would lead to the generation of construction waste including concrete, pieces of wood, broken bricks, gravel, ceramics, etc. Most parts of construction waste will not be easily degradable. Many substances present in construction waste may include finishing materials (e.g., paint, dyes, etc.) which can be toxic. Inappropriate disposal of these materials can result in land, water, or air pollution, posing serious health problems.

Domestic Waste

Workers/farmers would generate domestic waste consisting of plastics, papers, leftover food, food scraps, etc. The different waste types could be disposed of indiscriminately around the farms and the tree crop centres, and nearby communities, etc. leading to littering of the surroundings. The organic portion of the waste could putrefy, causing odour nuisance and other health risks to the workers and in the communities nearby.

Agrochemical waste

Improper handling, usage, and disposal of agrochemicals including containers of pesticides, fertilizer bags, etc. can lead to soil and water contamination, harm to non-target organisms and negative impacts on human health. A detailed assessment on agrochemical waste impact have been provided under section 6.3.5

Spent Oil and Lubricants

Maintenance and servicing of machinery and equipment for land clearing activities could generate waste oil and lubricant residue which may contain lead and other heavy metals. Accidental release of lubricants and waste oils could occur, which would be washed into nearby waterbodies and have negative environmental impacts.

Due to the potential improper handling and indiscriminate disposal of the different types of waste generated (e.g. chemical containers, spent oils and lubricants, construction and vegetative wastes), with health exposure and fire risks, the significance of the impact is ranked **high**.

6.3.7 Pest Infestation and Diseases

Pests and diseases can have a huge impact on agricultural productivity. The United Nations Food and Agricultural Organization (FAO) estimates that plant pests and diseases account for the reduction of between 20% and 40% of global crop yields per year. In Ghana, pest and diseases are named among the main sources of agriculture production risk. Pests and diseases are the cause of around 25% of total yield losses in Ghana (Wessel & Quist-Wessel, 2015). Table 6.1 presents significant pests and diseases of the tree crops and their extent of damage.

Table 6.2 Extent of Damage of Significant Pests and Diseases

Tree Crops	Pests/Diseases	Extent of Damage
Cashew	Sap-sucking bug, stem borers and damping off-disease	The sap-sucking bugs, stem borers and the damping off-disease occurs at the nursery stage and destroys a lot of seedlings.
Coconut	Cape St. Paul Wilt Disease	CSPWD as of 2001 had devastated about 11,000ha of coconut farms out of the 44,000ha in the country
	Beetles	An attack on a tree can easily spread to other trees.
Rubber	Root and leaf fall fungal diseases	The root fungal disease attacks and eventually kills some trees. Leaf fall severely affected trees must be cut down

General factors contributing to the spread of the pests and diseases include:

- Climate change and extreme weather conditions;
- Use of susceptible plant varieties;
- Low adoption rate of pest and disease control recommended measures; and
- Overaged trees.

Climate change and extreme weather events have a major impact on crop production and agricultural pests. The rising effects of temperature could trigger an expansion of the geographic

range of pests and disease, increase the number of generations, increase their risk of invasiveness, as well as changes in their interaction with host plants. These as a result increase the risk of exposure of the selected crops to disease and pest infestation.

Some plant varieties are highly susceptible to diseases and pest infestation. The use of these varieties and other unimproved seedlings could expose tree crop farms to disease and pest infestation. For instance, the Malayan Yellow Dwarf (MYD), Malayan Green Dwarf (MGD) and West Africa Tall (WAT) varieties of coconut are highly susceptible to CSPWD. The use of these varieties will increase the prevalence of the diseases.

Inadequate extension services on pest and disease control measures could deprive farmers of the knowledge on pests and diseases and their control measures. This will in turn lead to the non-adoption of these measures. Also, the high cost of recommended agrochemicals, the lack of pesticide spraying machineries and equipment, could result in low adoption rate of the recommended measures. Non or low adoption of these measures could result in the prevalence and spread of crop pests and diseases.

Overaged trees have a higher risk of contracting diseases and are overall less resistant and productive than younger trees. Their existence therefore could pose the risk of other trees to pest infestation and diseases due to their proneness and susceptibility.

The occurrence of tree crop pests and diseases is prevalent in Ghana. However, Component 2 of the project is to improve tree crop productivity and climate resilience with investment to support the improvement of existing infrastructure and laboratory equipment for research work to develop and make available, through the appropriate extension mechanism, true-to-type planting materials with a genetic advantage, integrated soil fertility management (ISFM) technologies and integrated pest management (IPM) techniques. Therefore, the likelihood of occurrence and the significance of the impact are both ranked **low**.

6.3.8 Inappropriate Handling, Usage and Disposal of Agrochemical

Agrochemicals such as herbicides, arboricides, pesticides, fungicides and fertilizers are integral parts of current agriculture production systems around the world. The use of agrochemicals remains a common practice, particularly in many farming areas. About 56.94% of Ghana's total land area is classified as agricultural land (MOFA, 2018). However, about half (50.27%) of these lands are not cultivated because the soils are infertile and are only productive with proper management and good agricultural practices (JR Fianko et al, 2011; MOFA, 2019). The use of agrochemicals has been critically important in protecting crops from pests and diseases, enhancing crop growth and yield, and controlling weeds. However, the inappropriate storage, handling, and use of these chemicals, as well as the disposal of their containers can have adverse environmental

and health impacts, which detracts significantly from the benefits gained by its use. The causes of the impacts include:

- Inappropriate storage, handling and use of agrochemicals;
- Use of sub-standard/unlicensed agrochemicals; and
- Indiscriminate disposal of agrochemical containers.

Inappropriate Storage, Handling and Use of Agrochemicals

Agrochemicals of various chemical compositions may be applied to cashew, rubber and coconut at the nursery and farm production stage to boost productivity and fight against pests and diseases. The storage of such chemicals, for instance, pesticides, in bedrooms of farmers could be inhaled, if not covered properly, by the entire family continually with dire consequence. Children could also get access if not stored securely and could have severe health issues when they come into contact with or ingest the contents. Long-term exposure due to unsafe storage could lead to skin and respiratory diseases, cancer, depression, neurological deficits, diabetes, genetic disorders, or even death (Tago D et al, 2014).

Careless application and mishandling of these chemicals could cause a variety of conditions including eye and skin irritation or corneal injury when in contact with the eyes and skin, and chemically poisoned when ingested. Also, the use of inappropriate clothing and footwear when spraying exposed the farmers/sprayers leading to some short-term effects include diarrhoea, abdominal pain, headaches, nausea, and vomiting (Tago D et al, 2014).

Indiscriminate use of agrochemicals, for instance pesticides, can also harm non-targeted organisms such soil invertebrates i.e., earthworms, predatory mites, centipedes and carabid beetles. Pesticide residues in soil, in addition to eliminating or reducing parasitic microbes, could also be toxic to the non-parasitic and ecologically useful soil microbial and invertebrate population. Soil chemical properties could also be altered by accumulation of pesticide residual and their metabolites thereby reducing soil fertility and its ability to support life (Iyaniwura TT, 1991).

Furthermore, agrochemical application on farms could be washed by runoff into nearby streams/ rivers affecting the quality. Also, continuous transportation of nutrient-rich sediments (through fertilizer application) into nearby streams/ rivers could also result in nutrient enrichment (eutrophication) with implication on the water quality and aquatic life such as altering biodiversity composition and ecosystem balance. Residue of agrochemicals could adhere to ground surface and leach into the soil and contaminate groundwater upon excessive use.

Use of Sub-standard/Unlicensed Agrochemicals

The high cost and inaccessibility of farm inputs coupled with inadequate extension services (for cashew, rubber and coconut production) could present the risk of proliferation of sub-standard / unlicensed fertilizers, pesticides, and other agrochemicals by covert industries. These usually

cheap products could easily thrive and capture the market and patronized by smallholder farmers and exploited due to low level of education. For instance, coconut farmers in search of remedies to beetle infestation in the absence of extension services could resort to sub-standard/unlicensed chemicals. The unlicensed chemicals mostly have their instructions in other languages other than English, making it difficult to know its chemical content in order to address a safety/health issue when a user is exposed. The use of these chemicals could further increase the cases of upper respiratory tract infections, diarrhoea, skin diseases and acute eye infection in Wenchi and West Akim where these diseases are amongst the top 10 within the municipality.

Indiscriminate Disposal of Agrochemical Containers

The use of agrochemicals would generate empty chemical containers and sacks which could be disposed of indiscriminately in the farms. The containers could also be used for various purposes including as drinking containers, storage and for fetching water from nearby stream/rivers. This would be dangerous as the residue of chemical could adhere to the containers and get into the blood stream of users with its consequent health challenges. The containers could also be carried in runoff into nearby streams and other water bodies. For containers dumped at the dumpsite and disposed of without triple rinsing, scavengers at dumpsites in search of plastics could come into contact with such containers.

The impacts associated with agrochemical storage, handling, use and disposal are largely localized however, the environmental implications and health risks are deleterious, therefore the significance of the impact is ranked **high**.

6.3.9 Resource Efficiency and GHG Emissions

The use of equipment, machinery and vehicles require certain amounts of energy and water. Processing and construction machinery and equipment require large amounts of energy such as electricity, natural gas or fuel to run. Vehicles for transporting materials similarly need fuel to operate. In addition, some processing activities, particularly in food processing, also need large quantities of water to carry out. The inefficient use of energy and water in machines, equipment and in processing operations contributes to unsustainable use of resources and pollution. This puts a strain on limited water supply. The inefficient use of energy and water could occur in the use of machines, equipment and vehicles associated with the following activities:

- Construction of laboratories, nurseries and agricultural input supply centres; and
- Processing of cocoa, cashew and coconut by SMEs.

The construction of laboratories, nurseries and agricultural input supply centres would require the use of machines and vehicles such as cement mixers, graders, loaders and heavy-duty trucks which rely on fuel to run. Again, the processing of these cocoa, cashew and coconut requires the use of various types of machinery and equipment, including roasting and grinding equipment, blenders, and packaging machines. These machines, equipment and vehicles run on energy sources such as

electricity, natural gas, or diesel, which can produce emissions during their operation. These machines and vehicles generate greenhouse gas emissions including carbon dioxide and nitrous oxide which can contribute to air pollution and global warming. The use of energy inefficient machines and vehicles exacerbate these emissions and their effects.

Certain processing activities such as washing and cleaning require a significant amount of water. Inefficient water use in processing activities can result in wastage as well as lead to increased demand for water, putting a strain on water supply. Using more water than is needed also means that more wastewater or effluent would be generated, which would then require more energy to treat, thereby leading to pollution. The project does not include irrigation of tree crops, however, water could be required for the nursery centre operations. Overland rainwater harvesting in artificially constructed depressions to trap runoff and pumped into storage water tanks will complement groundwater extraction through boreholes. There is no record of water shortage in any of the project districts, hence, there will not be any need to withdraw surface water for the processing operations of the SMEs.

Inefficient use of energy and water (which also requires energy to produce) during construction and operation of laboratories, nurseries and agricultural input supply centres and processing operations by SMEs would cumulatively result in high GHG emissions responsible for global warming and climate change. However, the significance of inefficient resource use resultant GHG emissions from this project is ranked **low**.

6.3.10 Pollution from SMEs

SMEs involved in the post-harvest management, quality processing, and value addition of cocoa, cashew, and coconut could contribute to pollution through the following:

- Waste disposal;
- Emissions; and
- Use of harmful chemicals.

Value addition on cocoa, cashew, and coconut involves processing these raw products into various finished goods such as chocolate, roasted cashew nuts, and coconut oil. The processing of these raw products requires the use of machinery, equipment, and packaging materials that would generate waste such as shells, husks and other by products. Improper handling and disposal of the waste could lead to pollution of the environment.

The use of processing machinery, vehicles for transportation of raw materials and finished products, and energy sources would lead to generation of emissions that can pollute the environment. The processing of these raw products requires the use of various types of machinery, including roasting and grinding equipment, blenders, and packaging machines. These machines run on energy sources such as electricity, natural gas, or diesel generators, which can produce

emissions during their operation. For example, diesel generators emit harmful pollutants such as particulate matter, nitrogen oxides, and sulphur dioxide, which can contribute to air pollution.

Chemical additives such as preservatives, artificial flavours, and colours may be added during the processing of cocoa, cashew, and coconut. These chemicals could be present in effluents from the processing centres and could end up in waterways, altering the chemical composition of water bodies and negatively impacting aquatic life.

The disposal of the waste generated, emissions and harmful chemicals released from the operations of SMEs involved in the post-harvest management, quality processing, and value addition of cocoa, cashew, and coconut could pollute the environment and compromise public health, however, the significance is ranked **low**.

6.3.11 Community/Public Health and Safety

Hazards arising from the project activities could impair the health and well-being of the surrounding communities. The potential community health and safety risks will include the following:

- Noise from the use of machinery/equipment during construction and rehabilitation of CSSVD-affected farms;
- Accidents by haulage trucks during construction phase activities;
- Pesticide spray drift; and
- Dust and emissions from haulage trucks especially on untarred community roads.

Noise from the Use of Machinery

Noise-generating machines deployed in the construction of laboratories, nurseries, agricultural input centres, SME's value chain facilities and chainsaws in the rehabilitation of the CVSSD-affected farms could exacerbate noise effects. Also, the simultaneous use of machines such as concrete mixers, plate compactors, etc. for constructing laboratories and agricultural input centres could produce high noise levels ranging from 85dB -107dB at a 15m radius. These activities will be done for a short period and exposure to noise levels will be minimal since the farms would be far from the communities/residents. However, these operations could cause stress and annoyance and affect the sleep pattern of the communities.

Accidents by Haulage Trucks During Construction Activities

Construction materials such as gravel, sand, etc., delivered to the worksite using haulage trucks commuting on public roads to the site could indulge in recklessness, e.g., speeding, tailgating, aggressive driving, drunk and fatigue driving, distracted driving and failing to use turn signals. These could cause road accidents and potential knockdowns of pedestrians and inhabitants in project communities or along the roads.

Pesticide Spray Drift

Synthetic pesticides are extensively used in farming to control harmful pests and prevent crop yield losses or product damage. Wind direction could enable the spread of pesticides in the air. These chemicals applied to crops could volatilize and may be blown by winds into nearby areas or off-targeted areas, potentially posing a threat to the communities/people in surrounding farms. Exposure could cause short-term and chronic health effects. The acute health effects include stinging eyes, rashes, and blindness while long-term exposure could pose cancers, birth defects, neurodevelopmental disorders in children and developmental toxicity (Riaz Shah, 2020). Further analysis of the dangers associated with pesticide use has been treated in Section 6.3.8.

Dust and Emissions from Haulage Trucks

Haulage trucks transporting construction materials to the sites will pass through communities, hence fly-offs/blow-ups of fine aggregates from uncovered trucks and movements on untarred and dusty road sections could generate dust. This could affect nearby communities as well as pedestrians or food vendors along the road corridors. Additionally, the combustion of fuel by trucks while in transit would release significant amounts of exhaust emissions containing carbon monoxide, sulphur, and nitrogen oxides. Health effects from prolonged exposure to dust and exhaust emissions could include respiratory tract infections such as asthma, bronchitis, pneumonia and tuberculosis, as well as gritty eyes, impaired vision and other health problems.

The significance of the adverse health and safety risks of noise from machinery/equipment use during construction and sawing of CSSVD-affected trees (farms), dust and emissions and accidents by construction trucks, as well as chemical/pesticide spray drift on nearby communities is ranked **high**.

6.3.12 Loss of Cocoa Farmlands to Illegal Mining

Ghana's cocoa industry is facing one of its biggest threats ever as illegal gold miners (Galamsey) continue a major onslaught on cocoa farms, including those recently rehabilitated under a national program. Recently, about 36.5 hectares rehabilitated farms have been reportedly destroyed by Galamsey (COCOBOD, 2023). Factors accounting for farmers/landowners offering their lands to illegal mining (galamsey) include:

- The devastative nature of the CSSVD on farms and its associated economic losses;
- The labour intensiveness of cocoa cultivation making it less competitive; and
- The decline in yield of moribund cocoa trees coupled with low productivity and profitability.

The CSSVD could affect an entire farm and greatly reduce yield, depriving the farmers and landowners of the economic benefits they would have realized from the cultivation. The worst of it is that the affected farms require cutting down all trees, spraying the farm and replanting. During this process through to its fruiting when the farmer could harvest again (i.e., about the fifth year

of planting), the farmers/landowners are deprived of economic gains. Although compensations are paid to both parties, the inadequacy and delay in the payment of the compensation and the rehabilitation process could inhibit their capacity to meet the enormous financial challenges that confronts them (e.g., payment of school fees, utilities, medical expenses, among others). This could compel them to give out their farmlands, including rehabilitated farms for galamsey activities which appears more lucrative in order to generate income to cater for their families.

Cocoa cultivation from the nursery through to harvesting and the post-harvest practice of pod opening, fermentation and drying is labour intensive. Galamsey, however, on the surface appears more lucrative and a phenomenon of ‘quick’ money or ‘instant cash’. When compared to the labour intensiveness cocoa cultivation, Galamsey could readily lure some farmers/ landowners to allow conversion of their farms into galamsey.

In some instances, farmers could be unwilling to cut the low yielding moribund cocoa trees for replanting, due to its associated economic losses (5 years of not earning as cocoa plant takes 5 years to start fruiting) This could demotivate farmers/landowners from farming and rather convert to galamsey for quick profit.

The National Cocoa Rehabilitation Program being undertaken by COCOBOD was at a cost of about 4.8 billion Ghana Cedis. This huge sum of money and the efforts put in could be completely wasted if the cocoa farmlands are given out for galamsey. The about 2 billion dollars of foreign exchange cocoa generates annually for the country could also be lost. The inadequacy of compensation, coupled with the 5-year or more waiting period for the rehabilitated cocoa farm to be ready for harvesting, deprive farmers of earning and become impoverished over a long period, hence the significance of the enticement to give cocoa farmlands for galamsey is **high**.

6.3.13 Gender-Based Violence and Disparity

Gender-based violence is a phenomenon deeply rooted in gender inequality and continues to be one of the most notable human rights violations within all societies. Gender-based violence is violence directed against a person because of their gender. Both women and men experience gender-based violence but the majority of victims are women and girls (European Institute for Gender Equality, 2023).

The risk of exposure to violence is often greater in jobs and sectors where work is informal or precarious, where wages are low, where workers are stopped from joining or forming trade unions and where management accountability is low. Victims of GBV suffer from physical and mental health problems including self-harm, depression and suicide (COE, 2022).

Several policy/legal/legislative instruments and frameworks as well as institutions exist to address GBV, sexual exploitation, abuse and sexual harassment (SEA/SH) in Ghana. However, the

relevant institutions, including the Domestic Violence and Victims Support Unit of the Ghana Police Service, health facilities, the Department of Social Welfare and Community Development at the Assemblies, Gender-Based Violence Courts and GBV non-governmental organisations, are often handicapped in providing support to victims due to logistical challenges, inadequate funding, training and prevention activities, lack of coordination and inaccessibility (MWH, 2021). The implementation of project activities under Component 2 of the GTCDP, such as building of laboratories, rehabilitation of CSSVD-affected farms, could result in instances of:

- Gender-based discrimination/disparity; and
- Sexual exploitation and abuse and sexual harassment.

Gender-Based Discrimination/Disparity

Gender disparity refers to the differences in women's and men's access to resources, status and well-being, which usually favour men and are often institutionalized through law, justice and social norms (European Institute for Gender Equality, 2023).

Women farmers in Ghana make up nearly half of the country's crop producers but face multiple disadvantages. These include lack of land ownership and limited access to extension services and markets (IIED, 2022). Engagements within the project areas however revealed that female members of all the FBOs have equal access to extension services just as the male farmers, but rather exhibit lower participation than the male farmers.

The potential sources of gender-based discrimination/disparity during the implementation of the GTCDP could include:

- Low participation of women in extension training as compared to their male counterparts; and
- Women being side-lined from compensation process.

Low Participation of Women in Extension Training

Engagement with the Female Cocoa Farmers (Appendix 6.4) revealed that, women involved in farming activities are mostly engaged in other forms of economic activities such as trading and are also responsible for the maintenance of their homes. Juggling these responsibilities leaves little to no time for them to attend FBO meetings, particularly training sessions that are organized far away from their homes or communities. This could also make such women unwilling to attend extension trainings, hence accounting for the low participation of women in trainings that are aimed to increase the capacity of tree crop farmers.

Again, in the Northern sector, it is custom that in a gathering of men and women, the women must seek approval from their spouses before they are able to make any contribution to the group. This usually deters the women from speaking in such gatherings. Whenever extension training sessions

are organised which have both men and women in attendance, the women are side-lined and usually sit at the back without contributing (Burigba, 2022). This makes it hard for them to learn anything new or voice out some of the major challenges associated with their farming activities as they mostly feel intimidated by the presence of their men.

Women Being Side-lined from Compensation Process

About 80% of the land in Ghana is classified as customary land and therefore under traditional control, inherently assigning greater control over land to men. While 40% of agricultural land in rural Ghana is cultivated by women, their land rights are limited by patriarchal norms in these customary systems (Mobilising More for Climate, 2020). Additionally, women's control of land is further limited by marital status. Women are also less likely to exercise independent control over the land they farm and often do not retain control over the resources they produce.

The rehabilitation of cocoa farms affected with the CSSVD, and the acquisition of land for the development of laboratories and the TCDCs could call for the land/farm owners to be duly compensated. In customary practices where women's control of land is limited by their marital status or by patriarchal system, the woman could easily be side-lined during compensation payment. The impact could be severe particularly where the records of the farms/lands are taken solely in the name of the man. This could deny the women the right to negotiate for fair compensation, specifically in the case of the land acquisition.

Due to the low participation of women in extension trainings and compensation process, the significance of the impact is ranked **moderate**.

Sexual Exploitation and Abuse and Sexual Harassment

Non-standard forms of work, including temporary work and informal work, are key factors in creating power differentials for perpetrators to carry out SEA/SH against women workers. SEA/SH occurs in commercial agriculture when also combined with cultural norms that tend to tolerate such activities, and structural environments that distance perpetrators from accountability.

The perpetrators and victims of sexual violence and harassment can be, potentially, anyone, including “employers, workers and third parties, including clients, customers, service providers, users, patients and the public in the world of work.” Moreover, victims can be targeted based on such factors as gender, class, race, disability, etc. Nevertheless, sexual violence and harassment affect women disproportionately, and men tend to be the perpetrators (ILO, 2018).

Potential risk of SEA/SH could be associated with project types, such as rehabilitation of CSSVD-affected farms, establishment and operation of TCDCs as commercial nurseries and agricultural input supplies, construction of laboratory structures, and work in the tree crop farms/production and related value chain enterprises. The main potential sources/causes of SEA/SH could be:

- Employers soliciting for sexual favours from job seekers;
- Supervisors/workers sexually harassing/abusing colleagues;
- Male workers sexually harassing/abusing community folk; and
- Contractors/service providers sexually harassing/abusing farmers.

Employers Soliciting for Sexual Favours from Job Seekers

Women in male-dominated sectors and informal work are more at risk of SEA/SH. Where women are employed, they are usually few and often have to endure or capitulate to sexual abuse by colleague workers and superiors. Sexual favours may be solicited for employment and the rejection of could result in denial of employment opportunities. Hence, women who are in dire need of employment may succumb to such advances.

Supervisors and Contractors Sexually Harassing Colleagues

Employed women/men may be at risk of sexual exploitation from their colleagues/supervisors, especially where the workforce is likely to be male dominated such as the agricultural sector. Women could be sexually harassed in a context in which their non-compliance could have negative consequences for their ability to continue working, for their pay, or for the unpleasantness of the work assigned to them, which the supervisor may have power over.

Also, women/men are sexually harassed with the knowledge that if they do not capitulate to the wishes of their supervisors, or if they report the harassment case, they could be dismissed, or not be offered further work (where it is temporal work), etc. They could also be denied good appraisal report on their performance and suffer wrongful consequences. Contractors and service providers, for instance in the rehabilitation of the CSSVD-affected farms, TCDC, TCSC and extension officers could make advances on female workers. Offended victims who might want to report perpetrators could end up losing their jobs or being unfairly treated, such as with threats and victims, to stop them from reporting.

Male Workers Sexually Harassing Community Folk

The presence of migrant workers could also attract local women and girls who would want to cook, clean and provide other services which can place them at risk of SEA/SH. Close interactions between workers and local communities may result in cases where some workers could commit sexual abuse or have sexual intercourse with women/men and underage community girls/boys. This could result in pregnancies, single parenthood and economic hardship for the women and girls.

The likelihood of occurrence of SEA/SH would be **low** since records of SEA/SH within the project areas are minimal. Furthermore, the municipalities/districts describe the situation as not prevalent. Therefore, in spite of the serious effects of SEA/SH and the attendant physical and mental health problems suffered by victims coupled with under-reporting of cases, and the dire challenges of

institutions responsible to provide needed support to victims, the significance of SEA/SH is ranked **moderate**.

6.3.14 Increased Rate of Teenage Pregnancy

Teenage or adolescent pregnancy is quite prevalent in Ghana with several thousand cases recorded annually. Ghana recorded about 2,856 adolescent pregnancy cases in 2020 (GHS, 2020) while statistics also depicts that 2 out of 10 girls become pregnant or welcome their first child before the age of 18 years (Amoadu et al., 2022).

Adolescent mothers are at risk of pregnancy-related complications such as hypertensive pregnancy disorders, urinary tract infections (UTIs), unsafe abortions, premature rupture of the fetal membrane, STIs, poor nutrition, anaemia, and caesarean delivery (Amoadu et al., 2022). The girls often experience social consequences such as stigma and rejection from their parents, peers and community members (Yakubu, et al., 2019). Adolescent pregnancy also jeopardizes adolescent education and employment opportunities.

Also, about two-thirds of Ghana's population live in the rural areas where agriculture is the main occupation (Edusah, 2014). Many are poor and have limited access to markets and services. This has significant implications for their choices and their livelihoods. It also affects their choices on investing on themselves and their children – on how to attain social and human capital objectives, such as education and health (Food and Agricultural Organization of United Nation, 2015), making their children prone to teenage pregnancy. Engagement with the Social Welfare and Community Development Departments, Education Directorates and the Health Directorates of the project municipalities or districts (Appendix 5), however, revealed a reduction in the cases of teenage pregnancies recorded in recent years (2021 and 2022). This can be attributed to the sensitization program organised by these stakeholders.

The source of teenage pregnancy during the implementation of the project could be teenagers having sexual relationships with high earning workers and farmers.

The project aims to support SMEs in accessing finance and markets through technical and matching grant assistance. Additionally, it will enhance farmers' access to inputs and financial services, leading to the creation of highly rewarding jobs for migrant workers, inhabitants, and farmers. Ultimately, improving their income status and purchasing power.

Due to poverty and lack of gainful employment, some parents are unable to cater for their children, including adolescent and school-going girls. This could result in the female students dropping out of school, to work and cater for themselves. Parental neglect could easily lead to adolescent girls being influenced by their peers to form acquaintances with some workers or farmers with high income, who would in turn take advantage of their vulnerabilities and enter into sexual

relationships with them. Teenagers could also be sexually abused and exploited by such workers and farmers and due to their ignorance could result in pregnancies.

Teenage pregnancies could also lead to lower educational achievement among teenage mothers, when they fail to return to school after birth due to fear of being stigmatized by the society. There could also developmental problems in children from teenage mothers and poverty.

The likelihood of the risk occurring during the project implementation is low due to the sensitization program organized within the various project municipalities or districts. The significance is ranked **moderate**, as its occurrence could jeopardizes adolescents' education and reputable employment opportunities.

6.3.15 Spread of HIV and STIs

Apart from the Savannah Region, the estimated adult HIV prevalence in the project regions exceeds the national prevalence of 1.7% (Ghana HIV Fact Sheet, 2019). Table 4.5 above presents estimated PLHIV for the regions. Work and lifestyle factors that expose workers to the risk of HIV infection according to ILO Guidelines (and consistent also with the National Workplace HIV/AIDS Policy) include:

- High mobility, resulting in long periods spent away from home and family;
- Male-dominated profession and a predominantly masculine environment, with openness to occasional sexual relations;
- Stress due to working and living conditions; and
- Lack of information about HIV and AIDS.

Others may include:

- Attraction of commercial sex workers to high-earning project workers, including migrant workers;
- Young women lured into sexual relationships by workers due to poverty and unemployment; and
- Non-disclosure of HIV status due to stigmatization and possible discrimination or victimization, who continue to engage in multiple, unprotected sexual relations.

Migrant workers who travel without their families could engage in casual sex with temporary sexual partners to gratify their sexual desires. High earning workers could also lure young women, ladies and teenagers into sexual relationships in exchange for money as a result of unemployment and poverty in rural areas. The enticement of female community folks with money, some women turning to prostitution for livelihoods, and the attraction of sex workers to the community could potentially lead to an increased rate of infection and risk of spread of HIV and other sexually transmitted infections (STIs).

For fear of stigmatisation, workers who may be HIV positive may hide their status and could engage in unprotected sexual acts, contributing to the spread of infection. Any occurrence of HIV transmission could potentially spread regionally and nationally, with long term effects.

The likelihood of occurrence of the potential risk of spread of HIV and STIs is high. Taking into account the presence of migrant workers, promiscuity, and other contributing factors, the significance of the impact is ranked **high**.

6.3.16 Transmission of COVID-19

COVID-19 infection is highly contagious and could readily spread among value chain actors during the implementation of the program once an infected worker is present at the workplace. It is, however, known to be most contagious, spreading extremely fast in confined areas, and usually in cold conditions. An infected worker could readily transmit the virus to family. This has a potential of spreading to nearby communities.

The COVID-19 Restrictions, enacted under E.I. 64 was revised due to the low level of infections recorded. In Ghana, as of January 2023, all the project regions had zero active cases in the exception of Eastern, which had 9. The risk of transmission during the implementation of the project could be influenced by the following factors:

- Unhygienic personal habits and practices;
- Failure to allocate a budget for COVID-19 prevention measures;
- Misconceptions and persons reluctance to COVID-19 vaccination;
- Non-compliance with COVID-19 protocols;
- Workers concealing infection due to stigmatization; and
- Poor public health attitudes.

The consequence of the transmission of COVID-19 is that the entire workforce within a set up could go down with the infection and be hospitalized. This could severely disrupt the activities of projects activities and the operations of the value chain.

Construction and farming activities will, however, be conducted largely in the open, which is not favourable for fast transmission, and also under temperature conditions of 28°C and 36°C and abundant sunlight. Thus, the construction and farming activities are less likely to provide conditions for any significant transmission of the virus. However, the significance of the impact is ranked **high** considering the effect of COVID-19 and its rapid rate of infection.

6.3.17 Land Take

In the proposed project districts, agriculture is the predominant economic activity. Some farmers own their lands, others farm on family lands or another person's land and share proceeds with the

family or person depending on the arrangement they have (some share a third of proceeds with landowners while others share equally).

Research from many different African contexts has revealed that access to land depends on complex socio-cultural norms and practices that vary according to place (Meinzen-Dick et al., 1997; Joireman, 2008). In most parts of Ghana, women's control of land is limited by marital status, gendered division of labour and access to monetary capital. Although farms are owned by both the husband and the wife, it is only the details of the husband that is taken during records taking. Hence, women are seen to be aiding their husbands and only become owners when the man dies or when they inherit it from their families. In many customary land tenure systems, community-level governance bodies that have authority over land are composed of traditional leaders and family heads and virtually exclude women from participating.

The 1992 Constitution of Ghana makes provision for persons whose properties are acquired to be compensated. Section 20 (6) of the Constitution requires that persons whose properties are compulsorily acquired should be compensated with the value of the property at the time of acquisition. However, because land could be abundant in project communities, especially, in the rural areas, affected land users could be given alternative land, but will bear the cost of land preparation.

Some project activities under Component 2 of the program (i.e., sub-components 2.1 and 2.2) are likely to lead to a degree of land take or restriction of access to sources of livelihood if the grants are used for infrastructure development. The potential sources of land take related to the implementation of the GTCDP will include:

- Establishment and rehabilitation of facilities; and
- Conversion of other land use areas to crop fields.

Land acquisition for the development of laboratory structures and installations, commercial nurseries and agricultural input distribution centres could lead to the displacement of existing land users. The rehabilitation and improvements of CRIG, CSIR-OPRI and CSIR-CRI may also require additional land.

The availability and facilitation in acquiring planting materials and other agro inputs such as fertilizers, pesticides, and agrochemicals will lead to increased production and attract more people to tree crop farming. Increased expansion in the cultivation of cashew, rubber and coconut that is being promoted could occur at the expense of other land use types. The current use of potential affected areas could also include farming or other forms of agriculture, leading to livelihood disruption and economic loss of crops and possibly, property. Where such affected persons are women or belong to a vulnerable group, the severity of the impact could be disproportionately high since they may not have any other alternative livelihood source. As women mostly are not involved

in decision making especially with land, do not have rights to own land, they may be at a disadvantage when it comes to any compensation pertaining to land.

There could also be cases where compensation for livelihoods loss/disruption (especially crops) and structures on affected land will be paid through the Chiefs. This could invariably deny the affected farmers and other land users the right to negotiate for fair compensation.

The risk of land take impact is likely as proposed project activities will require land acquisition to be implemented. Whereas the risk of large land acquisition is low under this project, the significance of this impact should it occur is also **high** due to potential physical displacement and loss of sources of livelihood and economic activity.

6.3.18 Farm Loss

The project under Component 2 (sub-component 2.2) seeks to provide support to existing and new farmers in the acquisition of planting materials and agricultural inputs of superior quality. However, there is a potential risk of farm loss if appropriate mechanisms are not put in place to secure the investment of the farmer and TCDA. Farm loss is where the expenses of a farm for the year exceed its income. Farm loss can be associated/attribution with:

- Planting of unimproved seedlings;
- Non-compliance with good agricultural practices;
- Fire risk; and
- Inadequate extension services

Planting of Unimproved Seedlings

One of the most essential farm inputs are the seedlings and without a true-to-type one, the farm could be low yielding and susceptible to pest and diseases. Engagement with OPRI, Asamankese Agric Department and the Asamankese Coconut Farmers Association (Appendices 5.1 and 7.5) indicated the boost in coconut production within the area and its associated high demand of seedlings. However, there is insufficient supply leading to the use of unimproved seedlings by nursery operators and farmers to produce seedlings and planting respectively. Similarly, in cashew production, some farmers resort to the use of nuts from farms with hybrid cashew trees due to high cost of seedlings (predominantly transportation). Consequently, the next generation of hybrid plants may be less vigorous, less productive, and more susceptible to disease than the previous generation.

The effect of using unimproved seedling would be experienced mostly at the fruiting stage, where they turn out to be yielding lower than expected. Also, the farms being susceptible to pest and diseases could experience attacks which would affect the productivity levels of the farm and eventually leading to farm loss. The use of these seedlings defeats the PDO of increasing productivity as well as affect the income of the farmers. causes direct economic loss to farmers

which could cascade along the entire value chain and in extreme cases affect the growth of the sector. Hence, the significance of the use of unimproved seedling is ranked **high**.

Non-compliance with Good Agricultural Practices

Good agricultural practices (GAPs) result in safe and healthy food and non-food agricultural products, taking into account economic, social and environmental sustainability (FAO, 2016). According to research conducted on cooperative membership status and adoption of good agricultural practices, active members of cooperatives have high adoption rate of GAPs as compared to non-active. Also, the active members recorded higher yields and income as compared to the non-active. GAPs for the various tree crops are presented in Table 6.2.

Table 6.3 *Tree Crops and the Associated GAPs*

Tree Crop	Good Agricultural Practices
Cashew	• Pruning and thinning • Periodic weeding • Fertiliser application • Periodic spraying against pest and diseases
Coconut	• Periodic weeding • Fertiliser application • Periodic spraying against pest and diseases
Rubber	• Pruning • Fertiliser application • Periodic spraying against pest and diseases

Non-compliance with good agricultural practices could have diverse impacts on the farm, the farmer and the environment. For instance, pruning and thinning must be done periodically in cashew farming to allow for maximum fruit production. However, due to the insufficient number of pruning machines and the high demand, some farmers are unable to prune their farms within the expected timeframe.

According to the Wenchi Municipal Cashew Farmers and Marketing Union Ltd, training organised by the Agric Department is done for selected members while community level training is organised afterwards by the union. Farmers who do not belong to any cooperative or union may engage in bad agricultural practices due to the lack of information. Farms of these farmers could be susceptible to pests and diseases and eventually lead to low yields. The significance is therefore ranked **medium** since the impact is largely localised and could possibly be reversed by engaging in good agricultural practices.

Fire Risk

Bush burning in Ghana is quite common especially during the dry season, attributable to grazing, hunting, slash-and-burn land preparation by some farmers and cooking in farms. In 2021, Wenchi Municipality, well known for the cultivation of cashew had about 127.6ha of farms burnt as a result of bushfires. (Appendix 5.3). Despite the measures put in place by the GNFS to stamp-out bush fires and prohibition of bushfires by law under the Control and Prevention of Bushfire Act, 1990 (PNDC 229), bushfires still persist especially in the dry season.

Bush fires is one of the major of causes of farm loss, and potential sources include off-site and on-site sources. Off-site sources include bush fire from the activities of herdsmen, hunting, slash and burn land preparation and cooking on farms. On-site sources include cooking on farms, smoking by workers and burning of weeds.

The main sources of fire risks during project implementation would be the activities of herdsmen grazing their cattle on lands close to farms, especially, during the dry season, to regenerate grass to feed their cattle. Fire from off-site sources could spread to adjoining farms causing severe damage.

Tree crops are not adaptable to fire, hence, in the event of fire outbreak the impact will be massive as the trees cannot survive its ravages. Cocoa trees for instances do not regenerate after fire damage and will require replacement/replanting. Considering the susceptibility of tree crops to fire and its effect on farmers, VC actors and the nation at large, the significance of the impact is ranked **high**.

Inadequate Extension Services

Agricultural extension services have been one of the main conduits of addressing rural poverty and food insecurity through the transfer of technology, support rural adult learning, assist farmers in problem-solving and getting farmers actively involved in the agricultural knowledge and information system (G Danso et al, 2018). Component 2.1 of the project seeks to promote research work in developing true-to-type planting material with genetic advantage. However, without appropriate extension mechanism, farmers would not be able to access the true-to-type planting materials as well as production knowledge. In coconut farming, some farmers resort to the use of various chemicals in fighting beetle infestation despite OPRI's introduction of a specialised hook and old fishing net to control the pest. This can be attributed largely to the inadequate extension services.

Through extension services, farmers' problems are identified for further investigation and policy direction (G Danso et al, 2018). However, without appropriate extension services, farmers can engage in wrong agricultural practices which could eventually lead to farm loss. The lack of extension services for farmers supported by the project could also result in low quality produce, thereby affecting the general quality of produce from a particular area. The significance of the

impact is therefore ranked **moderate**, since the impact will largely be localised and experienced in areas with poor extension services.

6.3.19 Deforestation and Forest Degradation

Forests play an important role as carbon sinks, absorbing and storing atmospheric carbon thereby mitigating climate change effects, particularly global warming. Clearing or damaging forest ecosystems undermines this ability leaving large amounts of carbon that could have been absorbed still in the atmosphere, driving climate change. Deforestation disturbs local, regional, and global water cycles, and this can result in less clouds, lower humidity, and modified patterns of rainfall (Fountain and Huetz-Adams, 2022). Again, disturbing forest areas for development purposes could lead to biodiversity loss associated with habitat fragmentation or destruction, disruption of feeding ranges which could drive animals away from their habitat, reduction in fauna species due to noise generation associated with land preparation and interference with plant and animal physiological processes. Habitat destruction could lead to endangerment and extinction of many species of flora and fauna. The expansion of cash and other crop farms, and fallow lands has been the primary driver of the decline in degraded forest area (MOFA, 2019). Engagement with stakeholders (Appendix 3.6) revealed that, rubber, cashew and coconut cultivation require the complete clearing of trees and other vegetation, including removal of plant roots in the case of rubber.

Under sub-component 2.2, TCDA will support existing and new rubber, cashew and coconut farms by facilitating the acquisition of planting materials and other agricultural inputs. Even though TCDA will not establish new farms or expand existing farms of its own, this support could indirectly contribute to the clearing of forests. The establishment of new rubber, cashew and coconut farms requires the complete removal of vegetation including trees. In the case of rubber, remaining plant root systems are also removed. Forest areas outside of forest reserves and protected areas could be cleared to make way for new rubber, coconut and cashew plantations.

In addition, farmers who would want to expand their existing farms could clear more forest areas. Engagement with the Forestry Commission's Bono Regional Office (Appendix 3.6) revealed that cashew farms in the Tain Trib II, Nsemere and Sawsaw reserves that were in existence before the gazettement of those areas as reserves have further increased in size after the reserves were instituted. Disturbing forest areas inhibits their ability to provide crucial ecosystem services including carbon sequestration and habitat for plant and animal species. Although some tree cover would initially be lost, whether in the case of new farms or expansion of existing farms, this would be restored once the trees mature (7 years for rubber, 3 years for cashew, 3-7 years for coconut depending on the variety), making these plantations carbon sinks. The biodiversity composition would however be permanently altered since the area would be converted from a forest to monocrop rubber, cashew, or coconut plantations.

The Savannah Region which experiences water scarcity and extreme heat as well as the Bono and Bono East regions are vulnerable to extreme climatic events and may experience an accelerated effect of climate change especially in the event of total land clearing which could enhance the land vulnerability to climate extreme events. This would lead to increased drought, increased temperatures, severe storms and flooding and other associated health risks and property losses.

The likelihood of clearing forest areas for coconut, rubber and cashew farms is **low** since the project is designed to mitigate deforestation and forest degradation through value chain digitization. Although the tree cover loss would be temporary and reversible, the permanent alteration of biodiversity composition that is associated with deforestation and forest degradation makes the significance **moderate**.

6.3.20 Threat to Biodiversity

The project districts are home to a number of vulnerable, endangered and critically endangered species of plants and animals (Appendix 14). Clearing of vegetation for development purposes could lead to biodiversity loss associated with habitat fragmentation or destruction, disruption of feeding ranges which could drive animals away from their habitat, reduction in fauna species due to noise generation associated with land preparation and interference with plant and animal physiological processes. Habitat destruction could lead to endangerment and extinction of many species of flora and fauna. Again, clearing an area of trees undermines its capacity to act as a carbon sink. This means that carbon dioxide emissions that could have been absorbed by an area of trees would now remain in the atmosphere.

The implementation of the following activities under Component 2 could threaten biodiversity :

- Rehabilitation of CSSVD-affected farms; and
- Land clearing associated with establishment of plantations, nursery centres and agricultural input supply centres; and
- Human-wildlife conflict.

Rehabilitation of Cocoa Swollen Shoot Virus Affected Farms

The rehabilitation of CSSVD-affected farms would involve the removal of diseased trees which would then be replaced by replanting new trees. Cocoa trees can absorb carbon from the atmosphere, acting as carbon sinks. The removal of diseased trees would reduce tree cover thereby diminishing the overall capacity of cocoa farms to absorb atmospheric carbon. The reduced tree cover, however, would last a few years. Since the replanted trees will take about 5 years to mature, tree cover on rehabilitated farms is expected to return to its original state or improve due to the incorporation of agroforestry practices.

The trees also reach their maximum absorption potential once they reach maturity. The duration could, however, be longer than 5 years since some farmers have reported delays, of one season or

more, in replanting after diseased trees are removed. Although the rehabilitation will involve existing cocoa farms, it is possible that entire farms will be cleared if all trees are affected by the disease. Moribund trees which are also low yielding may be cut and replanted, contributing to further vegetation loss.

The significance of the impact associated with the rehabilitation of CSSVD-affected cocoa farms is ranked **low** given the reversible and temporary nature of the loss of tree cover/vegetation within rehabilitated farms.

Land Clearing Associated with Establishment of New Plantations, Nursery Centres and Agricultural Input Supply Centres

The establishment of new coconut, rubber and cashew plantations would require the complete clearing of vegetation, and in the case of rubber, the removal of plant roots as well. The clearing of vegetation would result in habitat fragmentation or destruction, leading to further endangerment of already vulnerable and endangered plant and animal species that may exist on the land area to be cleared.

Again, land clearing associated with the establishment of tree crop nurseries and agricultural input supply centres, with accompanying infrastructure, could result in the loss of vulnerable, endangered and critically endangered plant and animal species that may exist on the land during land preparation to make way for these developments.

Human-Wildlife Conflict

There are existing cashew and cocoa farms within reserves which were in existence before the reserves were gazetted (Appendix 3.6). However, the farms continue to expand and extend into the reserves. Such extension into or encroachment of the reserves could interfere with wildlife habitat. Elephants, who have acquired the taste of consuming cocoa beans being fermented on farms, are reported in some of such areas to migrate into the farms and help themselves with cocoa beans. Farmers may, in a bid to protect their farms and cocoa beans, wound or kill the elephants to deter them from wandering into their farms.

The likelihood of land clearing for the developments mentioned above is **low** since TCDA and COCOBOD will not support any farm within forest reserves. Support will mainly target existing farms, nurseries and agricultural input supply centres. The loss of biodiversity loss has serious implications for the conservation of plant and animal species, particularly the ones that are considered vulnerable or endangered. The significance is therefore ranked **moderate**.

6.3.21 Socio-Cultural Conflict

Ghana has over 100 ethnic groups whose common values and institutions represent a collective national heritage. Each of these ethnic groups has unique cultural features and traditions that give

identity, self-respect, and pride to the people. The socio-cultural features/resources include language, sacred groves and shrines, totems, taboos, archaeological/heritage sites, religious artefacts and places of worship, cemeteries, etc. which people tend to have emotional attachments and sensibility towards.

Farmlands, nurseries, tree crop centres, agric input distribution centres, etc could be close to locations of sacred groves and archaeological resources, which could lead to their destruction. The establishment of tree crop plantations would involve land clearing that could lead to damage to potential archaeological and historical resources and cultural heritage.

Possible avoidance or relocation of sacred groves like shrines, graveyards and other historical landmarks during the establishment of new plantations, nurseries, agric input centres, etc could offend the community folk and traditional authorities, leading to potential conflict and disruption of works, sabotage, or delay.

Workers from outside the project communities may not be aware of some customs and traditions of local communities and may inadvertently break them. This could offend the sensibilities of the local inhabitants and could lead to a potential conflict between residents and workers. The situation could result in community agitations and further result in the delay of the project implementation schedule. The significance of this impact is ranked **high** due to sensitivity of communities and the effects it could have on the project.

7.0 ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES

The assessment revealed some significant potential impacts and risks for which mitigation measures will be required to ensure environmental soundness, social acceptability, health and safety as well as sustainability of the project. While some of the measures would be built into the project design, others would be implemented during implementation. Other measures will also aim at enhancing potential project opportunities. The relevant mitigation measures include the following:

- 1) E&S capacity building and system requirements.
- 2) Occupational health and safety measures;
- 3) Labour rights safeguard measures;
- 4) Child Labour prevention and remediation measures;
- 5) Water resources protection measures;
- 6) Waste segregation and disposal measures;
- 7) Crop pest and disease control measures;
- 8) Safe handling, use and disposal of agrochemicals;
- 9) Resource efficiency enhancement measures
- 10) Control of pollution from SMEs
- 11) Community/public health and safety measures;
- 12) Safeguarding measures for cocoa farmlands;
- 13) Gender based violence and disparity protection measure;
- 14) Teenage pregnancy prevention measures;
- 15) HIV/AIDS prevention measures;
- 16) COVID-19 containment and prevention measures;
- 17) Resettlement and livelihood restoration measures;
- 18) Farm loss prevention measures;
- 19) Forest protection measures
- 20) Biodiversity protection measures; and
- 21) Safeguarding socio-cultural values.

7.1 E&S Capacity Building and System Requirements

The analysis of the E&S risk management capacities, policies and systems of TCDA and COCOBOD (Appendix 6.0) with the view to addressing the identified E&S gaps to facilitate effective implementation of the ESMF, among others is presented in Appendix 6.1 and 6.2.

One common mitigation measure that runs through both institutions is the clear need for capacity building and training tours to help resolve the identified E&S risks management capacity gaps. The potential capture of the capacity building opportunities, especially training tours by highly placed senior management personnel rather than the deserving E&S technical officers was, however, identified as a consequent residual impact. The remedial measure provided to prevent

such elite capture is to clearly identify and determine specific training tour beneficiaries, in terms of departments and positions, intended purpose as well as the expected corresponding deliverables after the training. TCDA and COCOBOD will be required to prepare their training programs and submit to the Project Coordinating Unit and Project Implementation Unit respectively at the early stage of implementation of the ESMF.

7.2 Occupational Health and Safety Measures

The measures to protect workers from health and safety risks at the workplace or farms include:

- Control of farm accidents;
- Prevention measures from injuries at the nursery centres;
- Workplace accident minimisation measures;
- Noise and vibration reduction measures;
- Dust and other emissions control measures;
- Safety measures to apply at the agricultural input supply centres; and
- Control of exposure to laboratory reagents.

Control of Farm Accidents

- Refresher training on the proper posture, use and handling of chainsaw;
 - Training on work ethics - regular rotation of workers to reduce the risk of repetitive strains injuries, and servicing of machines;
 - Use right equipment for the job;
 - Only trained personnel in good health will be permitted to use farm tools, equipment and machinery;
 - Training workers to practice handwashing after spraying pesticides/chemicals, change working clothes, etc.;
 - Provision and usage of PPEs such as helmets, wellington boots, earplugs, protective clothing, respirators, etc.;
 - Regular clearing of weeds and collection of tree logs to remove areas of shelter for snakes;
- In an event of an incident occurring the following measures will be implemented:
- Victims of snakebites will be sent to the nearest health facility for anti-venom treatment; and
 - The contractor undertaking the rehabilitation of the CSSVD-affected farms will be required to procure workmen's compensation insurance to cover all workers in cases of accidents, in accordance with the Workmen's Compensation Act, 1987 (PNDCL 187).

Control Measures against Injuries at Nursery Centres

- Train workers on the requisite skills to undertake grafting for rubber and cashew; and
- Provision of a fully equipped First Aid Box in all workplaces with trained nurses.

Workplace Accident Minimisation Measures

- All drivers/operators will be trained on defensive driving;
- Trucks will be equipped with reverse alarms to alert workers when trucks are backing up;
- Use of banksmen at the entry/exit to the sites to supervise the movement of trucks; and
- All accidents/injuries/near misses and training will be reported, recorded and documented.

Noise and Vibration Reduction Measures

- Operators of machinery will be required to switch off idling engines;
- Machinery will undergo scheduled servicing for efficient output and reduction in potential frictional noise from moving parts;
- Operators of handheld power tools will be given and required to use vibration-reduction gloves; and
- Padded seats will be fitted in mobile equipment and worn-out pads promptly replaced to limit the effect of vibration transmission to operators.

Dust and Other Emissions Control Measures

- Dousing construction site with water at least twice daily;
- Haulage trucks will be covered with tarpaulin to prevent dust fly off;
- Institute and enforce a 20km/hr speed limit for the movement of haulage trucks onsite; and
- Weekly toolbox meetings will be organised to provide safety orientation for all workers (e.g. construction workers, painters, etc.) to raise awareness on dangers of exposure to chemicals and solvents.

Safety Measures to Apply at Agricultural Input Supply Centres

- Conduct routine inspections for the purpose of detecting any spillage and immediately clean up any spillage found on any surfaces; and
- Ensure proper housekeeping at storage areas.

Control of Exposure to Laboratory Reagents

- Education and sensitisation of laboratory personnel on safety protocols eg; practicing handwashing after handling any hazardous chemical, proper handling of chemicals, safe storage, etc.; and
- Provision and enforcement of the use of safety apparel eg; lab coats, goggles, gloves, etc.

7.3 Labour Rights Safeguard Measures

Labour Management Procedures (LMP) have been developed which requires contractors to prevent infringement on labour rights through the following measures:

- Issuance of employment contracts to workers;
- Give fair compensation to workers; and

- Promote the formation of unions in their work places.

Issuance of Employment Contract to all Workers

Contractors/ beneficiaries will be required to issue employment contracts to all workers. The Labour Act also makes provisions for the furnishing of the worker with a copy of the worker's contract of employment without prejudice.

Fair Compensation for Workers

To ensure that the workers are fairly compensated for work done, the contractor/ beneficiaries will be required to fulfil the following obligations as set out clearly in the employment contract with workers:

- Pay all workers compensation that is equal to or above the national minimum wage;
- Prohibit unsanctioned overtime work and pay workers full compensation for any sanctioned overtime work; and
- Pay male and female employees on the same work schedule equal compensation.

Promote the formation of Union among Workers

Workers would be given the opportunity to form or join any workers' union of their choice and participate in collective bargaining. The Labour Act, Section III also advocates for the right of the worker to join and form trade unions of his/her choice without any restrictive conditions of employment.

Empowerment of Women and PWD

To promote the empowerment of women and PWD, the following measures will be implemented:

- The contractor will employ women and PWDs where feasible;
- The contractor will provide –
 - Adequate and suitable PPEs for any PWD workers;
 - Adequate access aids for any PWD workers; and
 - Adequate and separate sanitary facilities for women and PWDs.

7.4 Child Labour Prevention and Remediation Measures

The LMP includes child labour prevention measures that cover the following areas:

- Age for socializing or light work for a child which is 14 years of age;
- General children working conditions for 15 years and under 18 years;;
- Formalization of labour practices in the tree crop (agricultural) sector, including employment conditions by contractors;
- Continuous farmer and contractor education and accountability on farm workers and children of the farmer family;

- Reporting of child labour offences (by farmers/contractors) immediately to DOVVSU and SWCDD for investigation and prosecution; and
- Provision of support by COCOBOD and TCDA to relevant NGOs in districts/regions to take custody and care for the victims as appropriate.

General Children Working Conditions

Children above the minimum age for employment (15 years in Ghana, and 14 years according to the World Bank's ESS2) can work full time, provided they are not engaged in "Worst Form of Child Labour" as defined by Article 3 of ILO Convention No. 182. To prevent children engaged in the cocoa, coconut, cashew and rubber sector (value chain activities) from "Worst Form of Child Labour" any child engaged must:

- Not be a trafficked child (i.e. who hails from a different place);
- Not procured as a slave or for debt bondage (i.e. whose parents are not owners of the farm or value chain activity);
- Not consigned in forced labour (i.e. without any power to insist on their rights).

On the other hand, the required working conditions (14 for light work and 15 and above for contract work) are as follows:

- Can undertake normal/non-hazardous tasks and be employed (have a labour contract);
- Under condition that a medical practitioner has certified that the young person is in good health and is medically fit for work;
- Employers in an industrial undertaking shall keep a register of young persons employed and their dates of birth or their apparent ages;
- Age can be verified through different methods (birth registration or ID-card, or at least two different sources, e.g., school records, interviews with a caretaker and or the child);
- That weekly rest periods and right to holidays are respected (same as for 18+);
- The work does not exceed 8 hours per day and 43 hours per week if the work is light;
- If the work takes place in heavy manual work occupations, e.g., agriculture, the work should not exceed 4 hours per day and 25 hours per week; and
- The work should not take place night-time (the Child Act defines "night-time work" (prohibited for below 18) as before 6:00 am. and after 8:00pm.

Progress in Child Labour Prevention Interventions

Noted interventions such as investments in education (e.g., Free SHS, Free Compulsory Universal Basic Education, School Feeding Program, and My First Day at School) and child labour-free certification through the Child Protection Committees of Community Cooperatives and the establishment of Child Labour Desk (at COCOBOD) are yielding dividends in helping to combat child labour. The 2018/19 NORC survey for instance found that children's school attendance increased between survey periods (from 89% to 96%).

Formalization of Labour Practices and Accountability

To reinforce and complement the existing practices and interventions towards combating child labour, would require a system of accountability at all levels, and also stewardship on the part of farmers and contractors. Appropriate and simple reporting formats would be introduced requiring simple ticks for adherence to specified good practices with required recognition and periodic certification. Contractors will also be required to make complete disclosure about the ages of their employees and to follow the stipulated children working conditions for their employees. Besides all contractors will sign an undertaking in the contract award documents denouncing the use of child labour.

Investigation and Prosecution of Child Labour Offences

Child labour offences (and other wrongful engagement of working children of all age brackets) will be immediately reported to DOVVSU (Ghana Police Service) and SWCDD for investigation and prosecution, in line with the Children's Act. The SWCDD will arrange with relevant NGO in the district or region (supported by COCOBOD and TCDA) to take custody and care for the victims as appropriate.

The areas listed above will be monitored for child labour compliance for recognition of farmers and accordingly award child labour-free certification on individual basis. This will entitle farmers to the defined benefits (such as farm inputs) from COCOBOD and TCDA, along similar lines as currently exists through the Child Protection Committees of Community Cooperatives. The performance results will feed into the digitally traceable farm and household mappings assessing the prevalence of child labour and effectiveness of corrective measures.

A framework to guide child labour prevention and mitigation as well as other measures for effective response to child labour is presented in Appendix 12.2.

7.5 Water Resources Protection Measures

The measures to promote water resources protection include:

- Buffer zone reservation for adjoining waterbodies. The recommended buffer widths include:
 - Municipal reservoir shoreline protective buffer, 60 to 90 meters;
 - Major perennial rivers/streams, 10 to 60 meters;
 - Minor perennial streams, 10 to 20 meters;
 - Important seasonal streams, 10 to 15 meters;
 - Streams within forest reserves, 10 to 50 meters; and
 - Wetlands, 30 meters around the perimeter as defined from the high-water elevation.

- Training of farmers on agrochemical storage, handling and spraying. This includes following manufacturer's instructions on application, avoiding application near waterbodies, and properly disposing of unused chemicals and containers.
- Farmer and contractor education on importance of water resource protection;
- Overland rainwater harvesting in artificially constructed depressions will be applied to trap runoff and pumped into storage water tanks. This will complement groundwater extraction through boreholes.
- Designated concrete surface/area for fuelling and servicing of machinery and equipment; and
- Water quality monitoring to detect contamination.

7.6 Waste Segregation and Disposal Measures

In compliance with the objectives and the specific guidelines for environmental sanitation services of the Environmental Sanitation Policy (2010), measures will be put in place to prevent the impact of waste on human health and the environment. The waste management measures are grouped into:

- Vegetative waste;
- Segregated waste;
- Oily waste;
- Agrochemical waste; and
- Chemical hazardous waste

Vegetative Waste / Crop Residue

Trees and shrubs felled from land clearing activities will be made available to the surrounding communities and other interested parties for use as fuelwood and fencing materials. The leaves and twigs will be spread and ploughed into the soil or allowed to decompose to enrich the soil.

The cut trees (stems and branches) from the rehabilitation of CSSVD-affected farms will be treated with arboricides and allow them to decompose on the farm. The leaves and twigs will be subjected to control burning to help destroy any residual swollen shoot virus in the farms.

Segregated Waste

At the construction and operation of the laboratories, tree crop centres, installation of digitization equipment, waste will be segregated into color-coded bins positioned at vantage points. The bins will be clearly labelled for ease of identification and usage. The description of the bins will be as follows:

General bins

- Blue bin - plastics, glass and bottles;
- Yellow Bin – metal cans and containers

- Brown Bin – pieces of iron rods and scrap metals;
- Black Bin – paper, cardboard, empty cement bags; and
- Green Bin – organic, wood, and other miscellaneous waste.

Special bin

- Specialised container – digitization gadgets, fluorescent bulbs/tubes, batteries, old computers and accessories, printers, toners, etc.

Oily Waste

The following mitigation measures will be adopted to handle oily wastes and rags, etc.:

- Development and designation of impervious platform and bunded with waste oil holding area for maintenance works;
- Activities involving the use of oils and lubricants will be performed at such designated maintenance areas; and
- Separation of oil rag from other solid waste and disposed of in the special waste bin.

Agrochemical Waste

The handling and disposal measures for agrochemical waste has been treated under Section 7.6.

Chemical Hazardous Waste

Special bins will be provided in the laboratories for collection of all solid waste including broken glass, used cotton wools, empty reagent containers, filter papers, etc. The collected waste will be incinerated.

Effluent treatment systems, such as sedimentation tanks, filtration systems, or activated carbon adsorption, will be installed at the laboratories to treat effluent before it is discharged into the environment. Effluent quality will be regularly monitored using appropriate analytical instruments to ensure that it meets the required standards, such as GS 1212:2019, before being discharged into the environment.

7.7 Pest and Disease Control Measures

A comprehensive Integrated Pest Management Plan (IPMP) has been prepared as a standalone document for the management of pest. Additional measures to mitigate the pest and disease situation, and the adverse impact on productivity and produce quality include:

- Development of disease-tolerant and climate resilient plant varieties by Research Institutions to enhance productivity and quality of produce;
- Training of farmers on Climate Smart Agricultural Practices;
- Establishment of nursery centres for multiplication of resistant plant variety supplies to farmers;

- Strengthening of extension services to cover all tree crops and to enhance farmer-education on:
 - Need to use improved planting materials; and
 - Pests and diseases and their prompt control measures
- Improved planting materials and other agrochemical inputs will be subsidized to encourage their purchase by farmers;
- Overaged trees will be systematically replanted with high yielding and disease-resistant varieties to increase income; and
- CSSVD-affected farms will be rehabilitated with resistant varieties and payment of fair and equitable compensation on the basis of a prepared RAP.

7.8 Safe Handling, Use and Disposal of Agrochemicals

A comprehensive Integrated Pest Management Plan (IPMP) has been prepared as a standalone document to guide farmers and other stakeholders on the safe use of agrochemicals and management of pest. Other measures for safe handling, use and disposal of agrochemicals are covered under:

- Appropriate storage, handling and use of agrochemicals;
- Use of Approved agrochemicals; and
- Appropriate disposal of agrochemical containers.

Appropriate Storage, Handling and Use of Agrochemicals

- Provide training for farmers on:
 - safe storage and handling of agrochemicals;
 - appropriate spraying techniques to minimise impact on non-targeted organisms;
 - the material safety data sheet (Appendix Volume 2) for the various agrochemicals used for each tree crop. The sheets should also be made available to farmers and farmer associations.
- Provide and promote the use of PPEs amongst farmers during spraying through farmer associations and cooperatives; and
- Provide support to the District/Municipal Health Directorate to sensitise farmers on the health effects associated with the inappropriate use of agrochemicals.

Use of Approved Agrochemicals

- Tree Crops Service Centres will be established within farming communities to allow for easy accessibility of approved agrochemicals;
- Provide authorised distributors/dealers list to farmer associations and farmers;
- Run a subsidy scheme to encourage farmers to buy from authorised distributors/dealers. In doing this, farmers can access subsidised agricultural inputs from only registered dealers, i.e., TCSC.

Appropriate Disposal of Agrochemical Containers

- Collaborate with the Health Directorate to sensitise farmers and farming communities on the harmful effects of using agrochemical containers and the safe disposal of such containers;
- TCSC will be required to implement a take-back system where farmers who return used chemical containers get a subsidy on their next purchase. The distributors/dealers will take responsibility of the collected containers. The containers will be transferred/collected by a recycling company or an accredited waste management company.

7.9 Resource Efficiency Enhancement Measures

To ensure resource efficiency, the construction of laboratories, nurseries and agricultural input supply centres as well as the technical and financial support to be provided to SMEs would be geared towards the adoption of efficient production practices. These practices include:

- Turning off idling machines, equipment and vehicles;
- Not using overaged machinery, equipment and vehicles;
- Regular servicing of machinery, equipment and vehicles;
- Installing light fixtures with sensors;
- Regular energy use monitoring;
- Installing dispensers and faucets with regulating sensors;
- Regular water use monitoring; and
- Rainwater harvesting.

7.10 Control of Pollution from SMEs

To control pollution from SMEs, the technical and financial support to be provided would be geared towards the adoption of sustainable production practices. These practices may include:

- Adopting green manufacturing practices that use eco-friendly and non-toxic chemicals for processing;
- Implementing waste reduction and management strategies to reduce the amount of waste generated during processing;
- Using energy-efficient machinery to reduce energy consumption and greenhouse gas emissions;
- Adopting renewable energy sources, such as solar or wind power, for production to reduce reliance on fossil fuels and lower emissions; and

- By adopting these sustainable practices, SMEs can minimize their environmental impact and contribute to a cleaner and healthier environment for all.

7.11 Community/Public Health and Safety Measures

The following measures will be implemented to safeguard communities/public health and safety from project and related adverse impacts and risks:

- Noise reduction measures;
- Prevention measures against knockdowns;
- Appropriate handling and application of pesticides; and
- Dust and emissions control measures.

Noise Reduction Measures

- Use of machines will be restricted to daylight hours;
- Operators of the machines will be required to switch off idling engines; and
- Machinery will undergo scheduled servicing for efficient output and reduction in potential frictional noise from moving parts.

Prevention Measures against Knockdowns

- All drivers/operators will be trained on defensive driving; and
- All accidents/injuries/near misses and training will be reported, recorded, and documented.
- Institute and enforce speed limits for construction and project vehicles e.g., 20km/hr at construction site and 30km/hr at project communities.

Appropriate Handling and Application of Pesticides

- Farmers will be trained to apply/spray pesticides during calm weather conditions and to spray against the wind direction; and
- Ensure that farmers have the requisite training and necessary certification to apply pesticides.

Dust and Emissions Control Measures

- Haulage trucks conveying construction materials will be covered with tarpaulins to prevent fly-offs and blow-ups of fine aggregates;
- Dousing of the untarred access roads twice daily especially during the dry periods using a tanker fitted with a spray bar;
- Education and sensitisation of truck drivers on dust pollution and management; and
- Haulage trucks would be required to comply with a strict maintenance regime and recording, in order to reduce exhaust emissions.

7.12 Safeguarding Measures for Cocoa Farmlands

The following measures will be provided to prevent the practice of farmers/landowners giving out cocoa farmlands for galamsey activities:

- RAP-informed competitive and attractive compensation package in rehabilitating CSSVD-affected farms with consideration for the elderly and PWDs dependents, etc.;
- Instalment compensation payment (annually) over the 5-year rehabilitation period;
- Farmers who voluntarily opt for rehabilitation of their moribund cocoa trees/farms will be treated similar to the CSSVD-affected farms; and
- Signed contract between COCOBOD and the landowner/farmer committing to the rehabilitation and accountability for performance of the respective roles until trees begin to fruit.

Rehabilitation of CSSVD-affected farms with competitive, and attractive compensation package to farmers and landowners based on responsive individual farm. Resettlement Action Plan (RAP) with agreeable payment instalments process that caters for household size, the elderly and PWDs dependents. Compensations will be paid annually until the replanted seedlings begin to fruit. (i.e., the fifth year).

To secure accountability and commitment on the parts of the farmer/landowner and COCOBOD to the rehabilitation process, a contract will be signed between COCOBOD and the landowner/farmer prior to the process, which will be binding to all parties with legal consequences. Also, farmers who voluntarily opt for rehabilitation of their moribund cocoa trees/farms will be treated similar to the CSSVD-affected farms.

7.13 Gender Based Violence and Disparity Prevention Measure

The measures to prevent gender-based violence and disparity are covered under:

- Gender protection measures; and
- Sexual exploitation and harassment prevention measures.

Gender Protection Measures

Research has shown that a participatory approach is essential to reducing gender disparities (Apam, 2023). Therefore, extension trainings will be organized for FBOs and other beneficiaries, with a particular emphasis on women's groups, in various communities. These trainings will be designed to be participatory, allowing for active involvement and input from all participants.

Other measures to be implemented are:

- The RPF will require that site-specific RAPs establish the rightful owners of the land or farm, be it family or stool land. After the owners are identified, all affected parties, including women, will be fairly compensated; and
- A grievance redress mechanism to report grievances on compensation payments and extension service delivery will be provided and implemented.

Sexual Exploitation and Harassment Prevention Measures

The measures to be implemented to prevent and respond to SEA/SH by contractors, employers, supervisors, workers and clients/service providers include:

- Workers will be provided with extensive education on human rights, while ensuring each worker signs a code of conduct developed by the contractor that incorporate human right clauses;
- A grievance redress mechanism to report sexual harassment and abuse, and other human rights violations will be provided and implemented;
- The contractor will develop and institute a SEA/SH policy in line with the Sexual Exploitation and Abuse and Sexual Harassment Prevention and Response Action Plan. This policy will ensure the following:
 - The contractor will suspend all perpetrators pending investigations and court proceedings. Reported workers will only be dismissed after proven guilty;
 - Victims are aided in receiving support; and
 - Public education campaigns and sensitization programs on SEA/SH will be organized.

A framework to guide gender assessments and the gender-based violence (GBV)/sexual exploitation and abuse (SEA) action plan is presented in Appendix 12.1.

7.14 Teenage Pregnancy Prevention Measures

The Adolescent Reproductive Health Policy, 2000 calls for effective implementation of adolescent sexual and reproductive health programs as a collective responsibility of government ministries, departments and agencies, non-governmental organizations, private sector, religious bodies, communities, families and individuals. All these agencies and bodies perform complementary roles.

A workplace policy would be prepared and implemented for the project based on the principles set out below.

- Awareness creation among workers, farmers and the girl child of the project areas on teenage pregnancy through prevention programs will be conducted with support to –
 - The Health Directorate on teenage pregnancy campaigns;
 - Print and distribute awareness leaflets;

- Workers/farmers who have sexual relation with underage persons in the project area will be immediately suspended from the workplace or the FBO and reported to the Police for due process of the law;
- A worker or farmer who impregnates a teenager will be dismissed and reported to public authorities (the Police) for due process of the law, besides arrangement for adequate compensation to the victim;
- Teenage pregnancy prevention clauses incorporation in workers' contracts; and
- Workers signing a code of conduct with contractors.

7.15 HIV/AIDS Prevention Measures

Workplace HIV Policy will be developed, and prevention clauses incorporated into the employment contract of workers in accordance with the National HIV and AIDS Policy as well as National Workplace HIV/AIDS Policy. The aim is to contribute towards Ghana's 95-95-95 goal of eliminating AIDS epidemic by 2030. The following measures will also be instituted to help attain the goal.

- Awareness creation among workers on HIV and AIDS risks and dangers through preventive programs including -
 - Facilitation of voluntary testing;
 - Safe sex practices, condom use, abstinence, etc.;
 - Peer counselling;
- Provision of condoms at accessible and convenient locations for workers;
- Incorporation of the HIV Workplace Policy into working conditions to prevent discrimination or stigmatization of workers based on their perceived or real HIV/AIDS status; and
- Information on HIV status of workers will be handled with due care and confidentiality.

Support and prevention measures will include:

- Support to the Health Directorate to organize education campaign on HIV/AIDS; and
- Support to print and distribute awareness leaflets.

7.16 COVID-19 Containment and Prevention Measures

The COVID-19 Restrictions enacted under E.I. 64, was revised to make the wearing of nose masks optional while encouraging the public to continue the practice of handwashing and social distancing. In-person activities such as those that take place in mosque, churches, private parties and events have been resumed in full capacity requiring all persons present to be fully vaccinated.

The project implementation will comply appropriately with the Government directives on COVID-19 to contain and prevent transmission of the virus with a required budgetary allocation for implementing the protocols (Appendix 13). The following requirements would be put in place:

- Requiring workers to –
 - Be to be fully vaccinated;
 - Practice handwashing with soap and water;
 - Avoid coughing or sneezing in public;
 - Stay at home if sick (and report accordingly);
 - Avoid crowds and contact with others, if sick; and
- Provision of welfare relief package for infected workers who discloses COVID 19 status.

The budgetary allocation for implementing the protocols will specifically make the following provisions:

- Vaccination of workers;
- Routine disinfection of workplace;
- Entry logbook for workers and visitors;
- Water storage tank for constant supply of water;
- Standard COVID-19 response/containment requirements;
- Poster/signage on COVID-19 protocols;
- Disposal of used tissues and hand-washed water; and
- Dust bins and wastewater containers.

7.17 Resettlement and Livelihood Restoration Measures

The resultant loss of property, farmlands and livelihoods arising from land acquisition for the project implementation will be compensated fully to restore the displaced livelihoods. Other additional measures where appropriate will also apply to mitigate the land take impacts through preparation of a standalone Resettlement Policy Framework (RPF) to guide the implementation of the program.

The ESS5 of the World Bank ESF and the EA Regulations of Ghana provide the general framework and procedures for the preparation of RPF when the nature or magnitude of land acquisition or restrictions on land use related to a project with potential to cause physical and/or economic displacement is unknown during project preparation. This is done to establish the general principles and procedures to guide the preparation of site-specific Resettlement Action Plans (RAPs) during implementation.

The RPF will provide required criteria to screen all projects for their potential resettlement impacts and streamline all the necessary procedures to follow in mitigating resettlement impacts/issues.

The following measures will be followed during program implementation:

- As much as possible, project activities will avoid areas with potential displacement/involuntary resettlement issues;
- Screening will be done at the onset of each project activity to determine potential areas where displacement/involuntary resettlement may occur;
- A Resettlement Action Plan (RAP) will be prepared and implemented where there is a likelihood of displacement/involuntary resettlement; and
- Commensurate compensation will be paid to PAPs.

If a site is acquired, all PAPs will be provided with livelihood assistance based on their current income levels or the project will assist such persons obtain new jobs immediately without any loss of income. It should be done in accordance with the RPF or RAPs; whichever is applicable.

The RPF guidelines apply to all eligible sub-projects/projects of the GTCDP, whether or not they are directly funded in whole or in part by the Project. The RPF applies to projects (or sub-components) whose implementation will physically displace or lead to losing some or all access to resources. This is regardless of the total number affected, the severity of impact, and their legal status (including those with ill-defined or no title to the affected land).

For a project site to be used, irrespective of the land compensation, appropriate compensation should be paid to the owner for any structures/properties which are permanent structures at the site. Depreciation will not be factored during valuation of these properties. The compensation process should satisfy the RPF or RAP developed for the project. Appropriate compensation will be paid for any damaged or destroyed property that belongs to affected persons. PAPs will also be given the opportunity to negotiate for fair compensation.

The RPF will also pay particular attention to gender aspects and the needs of vulnerable groups among the PAPs, especially households with income below the national poverty line, the landless, elderly and disabled, women and children, and other historically disadvantaged persons.

7.18 Farm Loss Prevention Measures

The measures for preventing farm loss are captured under the following measures:

- Planting of improved seedlings;
- Farmers engaging in good agricultural practices; and
- Fire prevention and control measures.

Planting of Improved Seedlings

- Siting of Tree Crop Development Centres in farming communities for easy accessibility of true-to-type planting materials;

- Provide training for nursery operators on production of high-quality seedlings and affective nursery management practices;
- Research institutes to certify commercial nurseries they supply with nursery materials and inputs; and
- Strengthen and improve extension services to cover all 8 TCDA's project districts within the country.

Farmers Engaging in Good Agricultural Practices

- Strengthen and improve extension services to cover all 8 TCDA's project districts within the country;
- Provide technical and technological support to farmers in engaging in farm maintenance activities through their unions and associations. This will include the provision of machines such chainsaw, spraying machine, etc. to encourage non-members to join and benefit from the support; and
- Sensitise farmers on the benefits of good agricultural practices through their associations and unions.

Fire Prevention and Control Measures

The following measures would be instituted to prevent and control fire outbreaks:

- Create awareness and educate in the project's farming communities on causes/sources of bush fires, dangers associated with it and prevention;
- Provide support to the GNFS to train fire volunteers in the project's farming communities to help fight fires;
- Provide fire volunteers with firefighting equipment such as fire beaters, wellington boots, touch lights and cutlass;
- Provide farm location and maps to GNFS for easy accessing and manoeuvring to site during fires;
- Sensitise farmers ahead of each dry season to create fire belts around their farms.

7.19 Forest Protection Measures

Measures to protect forests from degradation as a result of the GTCDP are listed below:

- The establishment of new coconut, cashew and rubber plantation, as well as the expansion of same, will not be allowed in or near forest reserves, protected areas, national parks and all other areas protect by legislation;
- Biodiversity offset - offsetting is the final step in the mitigation hierarchy, required only when impacts cannot first be avoided, reduced and/or restored. TCDA in collaboration with the Forest Services Division (FSD) of the Forestry Commission will establish an enduring,

enforceable, and auditable biodiversity offset system for degraded sections of some forest reserves in the country. This relates to rubber, coconut and cashew plantations; and

- Training of farmers and SMEs and nursery and supply centres operators as part of the resilience strengthen mechanisms in climate change adaptation.

7.20 Biodiversity Protection Measures

Measures to protect biodiversity resources are listed below:

- The CSSVD rehabilitation process will be streamlined with the preparation and implementation of a RAP (incorporating contract agreement binding COCOBOD and farmers/landowners) to avoid delays in replanting and the successful execution of the rehabilitation;
- As part of the rehabilitation process, early maturing and fruiting varieties of seedlings will be procured in advance to avoid delays in replanting of the cocoa trees;
- The project design includes agroforestry practices which would improve biodiversity;
- The project includes soil improvement activities resulting in soil carbon sequestration, soil health improvement and biodiversity conservation;
- Greening of laboratory, nurseries and agricultural input supply centres by planting trees on site;
- Strong awareness program for farmers to understand the need to avoid encroaching the reserves as any interference with the wildlife habitat would attract the animals to their farms to cause destruction of farm produce. The farmer awareness would include the set of sanctions that would be imposed for non-compliance;
- COCOBOD and TCDA to collaborate with FSD to digitize the location coordinates and maintain plotted farm sizes of all farms within or near /bordering reserves. Farm sizes will be maintained and enforced; and
- Farmers will sign an undertaking or MoU not to encroach the reserve. Sanctions include reporting to the police for prosecution and withdrawal of project benefits. FSD will report any case of farm size changes or extension into reserves.

7.21 Safeguarding Socio-Cultural Values

Before the commencement of any project activities, traditional authorities of the host community will be engaged through courtesy calls arranged by the contractor to achieve the following:

- Establish cordial relationships as neighbours, in order to fulfil relevant cultural obligations;
- To agree on relevant socio-cultural protocols and for providing orientation to migrant employees who may settle in the community;
- To sensitize workers on the taboos, cultural norms and values of the local communities; and
- To discuss possible support to the traditional authority during festival celebrations.

Surveys would be conducted to identify cultural heritage resources and existing ecologically sensitive areas that the program would avoid (as indicated in the sub-project/project PER or EIS). The project will implement chance find procedures and a reporting system that will be used by FBOs and beneficiaries in the event that a cultural heritage feature or ecologically sensitive item/issue is encountered. This will ensure that any unexpected discoveries or issues are reported promptly and handled appropriately to minimize any potential negative impacts on the environment or cultural heritage.

Regular engagement with the communities will be carried out. A stakeholder engagement plan, which includes a Grievance Redress Mechanism, has been developed (provided under Section 5.5) and will be communicated to all project communities. This mechanism will allow community members to seek redress if they have any concerns or complaints.

8.0 ESMF IMPLEMENTATION PLAN

The successful implementation of the environmental and social risk measures will depend on the commitment of COCOBOD and TCDA as well as the various stakeholder including the EPA, Water Resources Commission (WRC) and other key stakeholders playing their expected roles. This section addresses the following key areas of the ESMF implementation:

- Institutional roles and responsibility;
- Capacity building;
- Environmental and social monitoring and reporting;
- Sub-project screening and approval; and
- ESMF estimated budget.

8.1 Institutional Roles and Responsibility

The ESMF provides the institutional arrangements for environmental and social risk management. Successful implementation will depend largely on the support of key stakeholder agencies. This will ensure that the sub-components are undertaken with due regard for the integrity of the resources to be affected by the project development activities.

The PCU at the TCDA is responsible for coordinating the monitoring and evaluation of the project while the PIU at COCOBOD will implement the components and sub-components that fall under their jurisdiction. Under this arrangement, the project will work closely with the relevant CHED and TCDA district offices for implementation along with other stakeholders such as SPD, CSIR, EPA, and WRC.

The EPA is responsible for ensuring compliance with ESIA procedures in Ghana in accordance with the EPA Act 1994 (Act 490) and its related Environmental Assessment Regulations. The EPA oversees compliance with environmental and social assessment requirements in Ghana and facilitates public participation and disclosure. EPA's roles in the implementation of the ESMF would be to:

- Review/approve screening guide for projects;
- Categorise projects' environmental and social risks and impacts;
- Review and approve terms of reference for the preparation of ESIA's for projects
- Review and approve ESIA's for projects;
- Issue Environmental Approval (permit) for projects;
- Facilitate E&S risk management training;
- Monitor and enforce environmental compliance; and
- Receive and review Annual Environmental Reports (AER), ESMPs for the renewal of Environmental Permit.

The Water Resources Commission (WRC) is responsible for granting licenses for any water use activity and the procedures as laid down in the WRC Act 1998 (Act 526) will be followed. All water abstraction for nursery development will receive assistance from the WRC and the Commission will provide adequate guidance to ensure that the proper procedures are followed.

The Land Valuation Division (LVD) of the Lands Commission is the statutory body with the mandate of ensuring that land required for projects are properly acquired following transparent procedures; and also, fair and adequate compensation is paid. Though private firms may be invited to participate in the process, in case of disputes, the LVD would assist to ensure prompt settlement. The Lands Commission will advise on issues relating to land acquisition and compensation.

8.2 Capacity Building

The responsibility for ensuring environmental soundness and social acceptability of the GTCDP and its project activities would primarily lie with the Environmental and Social Safeguards Unit (ESSU) of the PCU and PIU of TCDA and COCOBOD respectively. Competence of key stakeholders to carry out their respective design, planning, approval, permitting, monitoring and implementation roles will, to a large extent, determine the success and sustainability or otherwise of the Project.

The objectives and provisions of this ESMF therefore cannot be achieved in the absence of relevant competencies in environmental and social risk within TCDA, COCOBOD and other stakeholders, as well as the proposed project. The following sections provide recommendations on capacity building to support the program's environmental and social management objectives based on a needs assessment conducted for TCDA and COCOBOD (Appendix 8).

8.2.1 Identification of Capacity Building Needs

Tree Crop Development Authority

TCDA would require assistance to develop an in-house E&S risk management policy and management system, as well as E&S risk management capacity to handle relevant E&S issue associated with its activities. Also, a unit for E&S risk management would be created with personnel of the requisite capacity to assume full responsibility and accountability for E&S issues at the Head Office under the Operations Division and the project regions (4) and districts (8).

A Social Development Specialist would be hired to join the Environmental Specialist at the Head Office to man the Environment and Social, Health and Safety (ESHS) Unit of TCDA under the Operations Division. As part of their responsibilities, the Specialists would train other two recruited E&S officers to form a formidable ESHS team at the Head Office. The recruited E&S officers would also receive custom-made training at the EPA-Institute of Environmental Studies

(IES)¹ as well as opportunity to attend international training and conferences (the International Association for Impact Assessment (IAIA) Annual Conferences and pre-conference training courses) to ensure professionalism, boost confidence and promote professional networking. The Environmental and Social Development Specialists will also benefit from the conferences.

Similar ESHS Units would also be established in all beneficiary Regional and District Offices of TCDA and manned by an officer each. These officers will also go through similar training programs to build their capacity to represent the company and perform all E&S safeguards tasks, reporting and liaising effectively with the Head Office ESHS Unit. The function of the officers will include oversight on child labour, deforestation, forest degradation, pesticides handling, empty pesticide container management, nursery centres and input supply centres, etc. at the regional and district level.

The Ministries of Employment & Labour Relations, and Gender, Children & Social Protection will be involved to support training on labour and gender issues respectively for the officers at the local, district and regional levels.

A special high-level sensitisation program on E&S risk management would also be organized for top-level management of TCDA (including the Head of the Operations Division) to elicit required commitment and support to the ESMF implementation.

Ghana Cocoa Board

The Social and Gender Specialist at the Head Office would take courses in social and gender (including child labour) risk and impact identification, management and performance monitoring for capacity enhancement in performing the social safeguard role.

The E&S safeguards capacities at various operational areas, specifically the beneficiary regions (2) and districts (3) would be built for effective representation and implementation of the ESMF and its functioning which will include oversight on child labour, pesticides handling, empty pesticide container management, etc.

The identified personnel for training to perform required E&S functions include the District CHED Officers (3) responsible for E&S issues and Regional Managers (2). The officers and managers would receive a full-scale E&S safeguard capacity building at the EPA-IES as well as international training and conferences (the IAIA Annual Conferences and pre-conference training courses) to ensure professionalism, boost confidence and promote professional networking. The Environmental and Social and Gender Specialist will also benefit from the conferences. The

¹ An institution established by the EPA to develop environmental management capacity for all categories of people of the nation, the sub region and beyond in environmental assessment, management, monitoring, etc.

Ministry of Employment and Labour Relations, and Gender, Children and Social Protections will be involved to support training on labour and gender issues respectively.

A special high-level sensitisation program on E&S safeguards should also be organized for top-level management of COCOBOD to elicit required commitment and support to the ESMF implementation.

8.3 Sub-Project Level Screening and Approval

This section outlines the screening, review and approval process to facilitate the project assessment process, while meeting World Bank ESSs and the Ghana EA requirements. To facilitate the sub-project assessment processes, a project-specific Screening Checklist and Exclusion List (Appendix 9) has been developed to serves the purpose.

All sub-projects under this project have been screened to determine the level of assessment required. The screening covered project activities with potential adverse environmental and social impacts and risks and those requiring resettlement/compensation.

Project activities that could pose some level of environmental, social and health risk were screened and placed at the appropriate levels of E&S assessment including:

- Initial Assessment (IA);
- Preliminary Environmental and Social Assessment (PEA);
- Environmental and Social Impact Assessment (ESIA);
- Environmental and Social Management Plan (ESMP)

Sub-projects requiring Resettlement Action Plan (RAP) will include projects where the following are applicable:

- Land acquisition involving relocation or loss of shelter, assets or access; and
- Loss of livelihood (in the case of rehabilitation of CSSVD-affected).

The assessment process would be undertaken/facilitated by the PCU/PIU for the sub-projects to be directly operated or undertaken by TCDA/COCOBOD. The assessment for sub-projects requiring initial assessment will be undertaken by the PCU/PIU, whereas, PEA, ESIA, ESMP and RAP will be outsourced to E&S consultants.

8.3.1 Environmental and Social Assessment Procedure

The World Bank ESS 1 provides guidance on the environmental assessment procedures for World Bank funded projects. The Ghana EIA procedures (EPA, 1995) have also established a process to screen and evaluate all developments, undertakings, projects and programmes which have the potential to give rise to significant environmental impacts. The two processes are largely similar,

and the Ghanaian procedures are therefore given in the following sections. The PCU/PIU will ensure that project activities apply the provisions under the relevant World Bank ESSs while ensuring that the Ghana EPA regulations and guidelines relevant for the project activity are complied with.

Sub-projects which require licensing will only be developed after securing an Environmental Permit from the EPA. The steps to be followed in obtaining an environmental permit for the various levels of E&S assessments are presented below.

Initial Assessment Procedure

The Environmental Specialist and Social and Gender Specialist of COCOBOD, as well as the Environmental, and Social Development Specialists of TCDA, will be directly responsible for conducting the all E&S assessment for TCDA/COCOBOD sub-projects requiring initial assessment. The Environmental Assessment Registration Form (Form EA1, Appendix 10.3) will be completed and submitted to the EPA in accordance with the Environmental Assessment Regulations, 1999 (LI 1652). The EPA will register the sub-project and issue an environmental permit within 25 days from the date of receipt of application.

Other Environmental and Social Assessment

For sub-project requiring PEA/ESIA/ESMP/RAP, the study will be contracted to qualified and experienced consultants to undertake the assignment. The Environmental and Social Safeguard Specialists² of TCDA and COCOBOD will prepare the Terms of Reference (ToR), consult with stakeholders, and seek the World Bank's No Objection on the ToR. The impact mitigation measures provided in this ESMF may provide some basis for the design of the ToR.

After the Bank clears the ToR, the Specialists will work with the project's procurement unit to recruit a suitable consultant(s) for the studies following the procurement rules. The consultant(s) will then conduct the studies and submit the necessary reports in line with the World Bank Environmental and Social Framework and Environmental Assessment Regulations (LI 1652). The procedure to be followed by the consultant(s) from registration of the sub-project to acceptance and approval by the EPA is provided in Appendix 10.1. The consultant(s) will work closely with the Specialists to meet all national requirements in obtaining and environmental permit as well as get approval/clearance from the World Bank.

For assignment requiring PEA and initial assessment, a standalone Environmental and Social Management Plan (ESMP) will be prepared as requirement of the World Bank. A generic ESMP is provided in Appendix 10.3.

² A collective name referring to the Environmental Specialist and Social Development Specialist of TCDA and Environmental Specialist and Social and Gender Specialist of COCOBOD.

8.3.2 Responsibilities for the Implementation of the Screening Process

The ESMF will be implemented by PCU/PIU, specifically the Environmental and Social Safeguard Specialists of TCDA and COCOBOD. The Specialists will collaborate with the EPA and the World Bank E&S team to ensure effective execution. Table 8.1 provides a summary of the stages and institutional responsibilities for the screening, preparation, assessment, approval, and implementation of the project activities.

Table 8.1 Summary of Environmental and Social Screening Processes and Responsibility

No.	Stage	Institutional Responsibility	Implementation Responsibility
1.	Screening of projects to assist in determining level of environmental and social assessment required	Consultant	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA
2.	Statutory Registration of projects with EPA	COCOBOD/TCDA	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA
3.	Determination of appropriate environmental and social assessment level/ category	EPA/COCOBOD/TCDA	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA
4.	E&S Risk categorization and validation	World Bank	Environmental and Social Specialists of World Bank
5.	If PEA/ESIA/ESMP/RAP is necessary		
5.1	Preparation of Terms of Reference (TOR)	COCOBOD/TCDA	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA
5.2	Selection of Consultant Review and Clearance of TOR by the World Bank	COCOBOD/TCDA/ Procurement Unit World Bank	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA Procurement Specialist
5.3	Realisation of the E&S assessment, public consultation and participation, Integration of environmental and social issues and mitigations into project designs, and in tendering/bidding documents	Consultancy firm/ Contractor	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Procurement Specialists
6.	Review and Approval	EPA/ World Bank	-
7.	Participatory public consultation and disclosure	COCOBOD/TCDA/ EPA	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD

No.	Stage	Institutional Responsibility	Implementation Responsibility
			Environmental Specialist of TCDA ESIA Consultant
8.	Implementation of environmental and social assessment and management plan	Project beneficiaries	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA Environmental and Social Specialists
9.	Development of participatory monitoring indicators	COCOBOD/TCDA	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA ESIA Consultant
10.	Surveillance and participatory monitoring	COCOBOD/TCDA/ EPA/ World Bank	Environmental Specialist of COCOBOD Social and Gender Specialist of COCOBOD Environmental Specialist of TCDA Social Development Specialist of TCDA

Other Relevant World Bank Provisions

It is expected that the ESS 5 and the Land Act 1036 will be applied if any of the projects triggers resettlement or displacement. In this case, a Resettlement Action Plan (RAP) will be prepared as a standalone report in compliance with the RPF developed for the program to guide the management and implementation of resettlement/displacement issues.

A standalone Labour Management Plan has been prepared as part of the environmental and social instruments for the GTCDP to guide the implementation of labour-related issues associated with the project activities. The Community health and safety issues in project selected areas will be incorporated in all contracts. The ESS3 is also relevant to the project, hence, an Integrated Pest Management Plan (IMP) has been prepared as a standalone report.

ESS8, relevant to this program requires the PCU, PIU, contractors and all partners involved in project implementation to follow standard chance find procedures as described below:

Chance Find Procedures for Tangible Cultural Resources

Should the projects encounter a cultural, historic or archaeological property or cultural resources in the form of historic and archaeological relics or if any cultural resources are found, the following principles and procedures will be followed:

- Execution of work will stop as soon as cultural sites are found;
- Important cultural sites will be marked and fenced during construction period;
- COCOBOD/TCDA will collaborate with the Museums and Monuments Board in determining and avoiding damage to cultural sites and resources and also determine appropriate place to relocate as well as means of relocation;

- Cultural resources uncovered during the project construction works will be handed over to the National Museums and Monuments Board for preservation or preservation of the site;
- Salvage excavation and relocation of artifacts or ruins from a cultural site will be undertaken in consultation with Museums and Monuments Board; and
- The Program will also ensure that intangible cultural heritage will be protected.

Notwithstanding the above; the following clauses are proposed to be added in contractors' contracts:

Protection of archaeological and historical sites

- Upon discovery of ancient heritage, relics or anything that might be or is believed to be of archaeological or historical importance during the execution of works, immediately suspend activity and report such findings to the Site Engineer so that the National Museums and Monuments Board may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources;
- The contractors shall take the necessary measures to prevent any person or equipment that may damage the article or things and shall provide barricades, fences, and signals and, if necessary, protect against atmospheric agents, as directed by the engineer, also guard service may be required by the engineer;
- The supervising engineer shall take the following measures to:
 - Notify the National Museums and Monuments Board;
 - Request that a representative make a site inspection; and
 - Cessation of work in the vicinity of the find until the visit of the representative.

The decision by the National Museums and Monuments Board on possible salvage or excavation shall be undertaken within 48 - 72 hours of notification.

ESS6 is also relevant to this project. Should there be potential risks and impact on forestry and/or critical habitat, MoFA will write to the Wildlife Division of the Forestry Commission with a map of the project to ascertain that the area in question is not a protected area or an area of Global Significant Biodiversity Area. These issues will be captured in the ESIAs to be prepared for sub-projects.

8.3.3 Technical Specifications and Standards

Technical specifications

TCDA and COCOBOD with technical support from its divisions, will be responsible for the development and presentation of clear guidelines for the design and provision of technical specifications and standards to assist the private sector to plan for projects. These will ensure the streamlining of approaches and activities for sound implementation of the projects. These will include adequate reference to sector norms and prescribed national codes of practice. The private

sector will be well aware of applicable technical provisions and fit their projects into these accordingly.

8.3.4 Environmental Standards

The EPA with the Ghana Standards Authority is responsible for setting environmental standards and has in place both general and sector specific guideline values. These standards and in some cases, guidelines are provided for the management of pollutant emissions. In situations where standards have legal backing then these must be followed. Otherwise, national guidelines or the World Bank guidelines could be used. In most cases, these are practically similar.

8.4 Environmental and Social Monitoring and Reporting

Monitoring would be a key component of the ESMF during project implementation. Monitoring would be undertaken at the project implementation phase to verify the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. Monitoring would involve three areas namely:

- Impact monitoring; and
- Compliance monitoring.

The aim of monitoring of a project during the implementation phase would be to:

- Improve environmental and social management practices;
- Check the efficiency and quality of the EA processes;
- Establish the scientific reliability and credibility of the EA for the project; and
- Provide the opportunity to report the results on safeguards and impacts and proposed mitigation measures implementation.

8.4.1 Impact Monitoring

Monitoring of impacts of projects and mitigation measures would be the duty of the Environmental Specialist and Social and Gender Specialist of COCOBOD, and Environmental Specialist and Social Development Specialist of TCDA. Table 8.2 presents summary of the monitoring parameters as well as the method, frequency and the specialist responsible for monitoring the impacts. The E&S safeguards given to the contractor in the contract specifications would be monitored to ensure that works are conducted in accordance with the laid down mitigation measures. COCOBOD/TCDA through its PCU/PIU would ensure contractors submits reports on work progress and challenges in observing the E&S safeguards. The monitoring results would form a major part of the reports to be submitted to the EPA, COCOBOD/TCDA and World Bank.

Table 8. 2 Environmental and Social Impact Monitoring Plan

No.	Environmental / Social Component	Monitoring Parameters/ Means of Verification	Monitoring Site	Method	Frequency	Responsibility
1.	Inefficient ESMF implementation	- Availability of E&S risk management policy and system for TCDA - Availability qualified and experienced E&S officers and specialist - Certificates of training programmes/courses undertaken by officers	TCDA and COCOBOD offices (Head Office, Regional and District)	Review reports Review employment records	Yearly	Environmental Specialist and Social Development Specialist of TCDA Environmental Specialist and Social and Gender Specialist of COCOBOD
2.	Occupational health and safety	- Farmers/Workers' awareness of Contractor' health and safety policy - Noise level - Availability and proper use of PPEs - Availability of a fully equipped First Aid Box - Adherence to health and safety procedures - Servicing of machinery - Records of training of workers and awareness creation on health and safety - Records on frequency, type and source of accident/injury	- Farms - Construction site	Health & Safety records, audit and review Observation/Inspection	Quarterly Daily	Environmental Specialist and Social Development Specialist of TCDA Environmental Specialist and Social and Gender Specialist of COCOBOD
3.	Infringement of labour rights	- Contract for workers - Existence of workers union - Existence of grievance redress mechanism	- Farms - Construction sites	Records review	Quarterly	Social Development Specialist of TCDA Social and Gender Specialist of COCOBOD
4.	Child labour	- Labour contracts and payroll - Records on reported cases - Records of action taken on reported cases - Records of sensitization and education in project communities	- Farms - Project / Stakeholder meetings	Record keeping and analysis	Quarterly	Social and Gender Specialist of COCOBOD Social Development Specialist of TCDA
5.	Impact on water resources	- Buffer zone reservation near waterbodies - Training and education of farmers	- Construction site - Operation site	Check availability of buffer zone Records keeping and analysis	One-time Quarterly	Environmental Specialist of TCDA

No.	Environmental / Social Component	Monitoring Parameters/ Means of Verification	Monitoring Site	Method	Frequency	Responsibility
		Water quality monitoring				Environmental Specialist of COCOBOD
6.	Improper waste handling and disposal	- Trees and shrubs felled and given out to project communities - Availability of bins and adherence to waste segregation - Adherence of machinery and vehicle servicing at approved vehicle servicing facilities - Special bins provided in the laboratories for collection of all solid waste	- Construction site - Project communities - Operation site	Impromptu checks and record keeping	Quarterly Impromptu Monthly	Environmental Specialist of TCDA Environmental Specialist of COCOBOD
7.	Pest infestation and diseases	- Availability of disease-tolerant and climate resilient plant varieties - Number of trainings conducted for farmers on climate Smart Agricultural Practices - Availability of extension services to all tree crops farmers - Records of overaged trees replanted	- Research Institutions - Nursery centres - Farmlands	Check availability of disease-tolerant and climate resilient plant varieties Review records of trainings held Check availability of extension services Review records of overaged trees replanted	Annual	Environmental Specialist of TCDA Environmental Specialist of COCOBOD
8.	Inappropriate handling, usage, and disposal of agrochemicals	- Records of training and sensitisation programmes held - Review effectiveness of agrochemical container take-back system, i.e., quantities supplied against quantities returned	- Farming/project communities - TCSC	Review of records Audit	Bi-annual	Environmental Specialist of TCDA Environmental Specialist of COCOBOD
9.	Resource efficiency and GHGs	- Records of energy use monitoring - Records of water use monitoring	- Construction site - Processing factory	Record keeping and analysis	Quarterly	Environmental Specialist of TCDA Environmental Specialist of COCOBOD
10.	Pollution from SMEs	- Waste reduction measures (re-use, recycling) - Use of renewable energy sources - Use of eco-friendly chemicals	SMEs processing factories	Records on waste generated, energy usage, chemicals use	Quarterly	Environmental Specialist TCDA
11.	Community health and safety	- Idling engines switched off - Scheduled servicing of machinery	- Construction site - Communities in the project areas	Checks, record keeping and analysis	Daily Monthly	Environmental Specialist TCDA

No.	Environmental / Social Component	Monitoring Parameters/ Means of Verification	Monitoring Site	Method	Frequency	Responsibility
		- Observance of 30km/hr speed limits in communities - Haulage trucks covered with tarpaulins - Dousing of untarred access roads - Training of farmers	Operation site			Environmental Specialist of COCOBOD
12.	Loss of cocoa farmlands to illegal mining	- Instalment compensation payment over the 5-year period - Availability of signed contract between COCOBOD and the landowner/farmer	- Project office - Farming community	Instalment compensation payment Review records of signed contract between	Annual	Environmental Specialist and Social and Gender Specialist of COCOBOD
13.	Gender based violence and disparity Gender-based discrimination/dispairity SEA/SH	- Records of extension training organized for women's group - Cases of grievances reported on compensation payment and extension service delivery - Education on human rights - Implementation of SEA/SH policy - Cases of GRM reported	- Project operation areas - FBO/A - Construction Site - Operation Site - Communities in the project area	Records keeping and analysis Record keeping and analysis	Quarterly Quarterly Monthly	Social and Gender Specialist of COCOBOD Social Development Specialist of TCDA
14.	Increased rate of teenage pregnancy	- Record of awareness creation programmes organised - Records of teenage pregnancy cases and guilty workers/farmers - Teenage pregnancy clauses incorporated into workers' contracts - Records of signed code of conduct	Community in project areas	Records keeping and analysis	Quarterly	Social and Gender Specialist of COCOBOD Social Development Specialist of TCDA
15.	Spread of HIV/AIDS	- HIV/AIDS awareness creation seminars and educational programmes for all workers and the surrounding - Availability of condoms at accessible locations - Implementation of HIV/AIDS workplace policy	- Construction site - Project communities - Operation site	Record keeping and Inspection	Quarterly Monthly Monthly	Social and Gender Specialist of COCOBOD Social Development Specialist of TCDA

No.	Environmental / Social Component	Monitoring Parameters/ Means of Verification	Monitoring Site	Method	Frequency	Responsibility
16.	Transmission of COVID-19	- Availability and use of bins for collection of plastic and polythene material - Availability and use of separate labelled bins for agrochemical containers. - Records on disposal of plastic and polythene material (frequency and location of disposal site) - Records on agrochemical containers returned to suppliers (quantity, frequency, name of supplier) - Toilet facilities provided in the field for farmers	Farms, offices and premises	Record keeping and analysis		Environmental Specialist of TCDA Environmental Specialist of COCOBOD
17.	Land take	- Timely execution of compensation payment - Records on compensation payments /resettlement measures - Records on complaints of disturbance/loss	Project / Stakeholder meetings	Record keeping and analysis	Monthly	Social Development Specialist of TCDA Social and Gender Specialist of COCOBOD
18.	Farm loss	- TCDC sited within farming communities - Records of technical and technological support to farmers in carrying out farm maintenance - Records of sensitization programmes held - Records of support to GNFS in training fire volunteers - Number of farm fires recorded	- Farming communities - Farms - Project district offices	Site inspection Visits to farms Review of records	Yearly	Environmental Specialist of TCDA
19.	Biodiversity loss	- Provision for elimination of delays in replanting - Records of plantations implementing agroforestry and soil improvement practices - Trees planted on laboratory sites, nurseries and agricultural input supply centres	- Office - Plantation sites, office - Laboratory sites, nurseries and agricultural input supply centres	- Check of provision made in RAP - Record-keeping - Record-keeping	One-time Quarterly Half-yearly	Environmental Specialist of TCDA

No.	Environmental / Social Component	Monitoring Parameters/ Means of Verification	Monitoring Site	Method	Frequency	Responsibility
20.	Deforestation and forest degradation	• Geolocations of new and expanded coconut rubber and cashew plantations • Geolocations of targeted biodiversity offset areas • Acreage of offsetting established	• Plantations • Target offset sites • Offices	• Record-keeping	One-time One-time Quarterly	Environmental Specialist of TCDA
21.	Socio-cultural conflict	• Community stakeholder engagement • Implementation of chance find procedures	• Construction site • Project communities • Operation site	• Record keeping	Quarterly One-time	Social Development Specialist of TCDA

8.4.1 Compliance Monitoring

This is to verify that the required mitigation measures, which are the environmental and social commitments agreed in the ESMF and project EAs are implemented. Compliance monitoring would include inspections during construction phase of projects to verify the extent to which permit conditions are adhered to. The operational/decommissioning activities of the sites will also be monitored. Compliance monitoring will be done by the EPA, though the PCU/PIU will also carry out its limited compliance monitoring on contractors' E&S risk management obligations.

8.5 ESMF Implementation Budget

The estimated budget for the ESMF implementation covers the cost of implementing the ESMF and institutional E&S risks management capacity building for COCOBOD and TCDA for effective implementation of the ESMF as well as cost for implementation other E&S instruments such as the IPMP and SEP. The estimated budget for undertaking these activities is USD 1,131,400. The cost for the Environmental and Social Assessment for individual sub-projects will be determined through a national competitive bidding process where an approved World Bank selections method is used in selecting a qualified and experienced consult to undertake the assignment. The breakdown of the budget is presented in Table 8.3.

Table 8.3 ESMF Implementation Budget (Year 1 and 2)

No	Organization	Activity	Rate (\$)	Estimated Cost (\$)
1.	TCDA & COCOBOD	Training on ESMF implementation for regional and district officers and other relevant institutions	50 participants at 100 per participant	50,000
2.	TCDA	Hiring a consultant for the development of and in-house E&S risk management policy and system	15,000	15,000
		Hiring of • Social Development Specialist • 14 E&S Officers (2-Head Office, 4-regional, 8-district)	2,500 per month 1,000 per person/month (Head Office) 800 per person/month (regional) 450 per person/month (district)	271,200
		Training on: • Sub-project screening and registration • World Bank ESS • Nation environmental assessment regulations • E&S risk management, monitoring and reporting • Labour and gender issues	1 training at 20,000 1 refresher training at 10,000	30,000

3.	COCOBOD	Training for CHED regional and district officers on: • Sub-project screening and registration • World Bank ESS • Nation environmental assessment regulations • E&S risk management, monitoring and reporting • Preliminary assessment of compensation issues • Labour and gender issues	1 training at 10,000 1 refresher training at 10,000	180,000
		Capacity building for Social and Gender Specialist at the Head Office on: • Social risk identification, management and performance monitoring • World Bank ESSs	1 training at 3,000 1 refresher training at 1,200	4,200
4.	TCDA & COCOBOD	High-level sensitisation program on E&S risk management for top-level management	1 training at 40,000	40,000
5.	TCDA & COCOBOD	Monitoring of E&S safeguard measure implementation	150,000	150,000
6.	TCDA & COCOBOD	Implementation of IPMP		211,000
7.	TCDA & COCOBOD	Implementation of SEP	180,000	180,000
Total				1,131,400

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APPENDICES

- 1.0 Stakeholder Identification Matrix**
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 - 3.2 TCDA
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 - 8.1 COCOBOD
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 - 9.1 E&S Screening Checklist
 - 9.2 E&S Exclusion List
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- 11.0 Citizen Engagement Plan**
- 12.0 Framework to Guide Supplementary Plans**
 - 12.1 Gender-Based Violence/Sexual Exploitation and Abuse Action Plan
 - 12.2 Child Labour Action Plan
- 13.0 COVID-19 Control Protocols**

- 14.0 IUCN Status of Flora and Fauna in the Guinea Savannah Zone**
- 15.0 Grievance Redress Form**
- 16.0 Generic Guidance on Preventing and Mitigating Child Labour Risk in Ghana Projects**

Appendix 1: Stakeholder Identification Matrix

No.	Stakeholder Categories Project Component/ Impact and Activities	Government Ministries	Other Value Chain Actors	Trade Unions, Cooperatives and Associations & NGOs/CSOs	Disadvantaged or Vulnerable Group	Regulatory Institutions & Enforcement, Safety and Protection Agencies	Research Institutions	Implementing Agencies	Municipal and District Assemblies & Community-level stakeholders
1)	Pest and disease infection	MoFA	VCA	FBO/A			OPRI WAS CRI	CHED	DoA
2)	Pesticide and agrochemical use	MoFA	VCA	FBO/A CLG		EPA	OPRI WAS CRI	CHED SPD	DoA
3)	Fertilizer use	MoFA	VCA	FBO/A		EPA	OPRI WAS CRI	CHED SPD	DoA
4)	Bush fires			FBO/A		FC GNFS		CHED	NADMO
5)	Low yield	MoFA	VCA	FBO/A			OPRI WAS CRI	CHED	DoA
6)	Farm loss		VCA	FBO/A				CHED	
7)	Food security and impoverishment risks	MoFA	VCA			EPA		CHED	DoA
8)	Capacity building and elite capture							CHED	
9)	Seed production	MoFA	VCA	FBO/A			OPRI WAS CRI	CHED	DoA
10)	Nursery production	MoFA	NO	FBO/A CLG			OPRI WAS CRI	SPD	DoA
11)	Water-use and irrigation		VCA			WRC	OPRI	SPD	

No.	Stakeholder Categories Project Component/ Impact and Activities	Government Ministries	Other Value Chain Actors	Trade Unions, Cooperatives and Associations & NGOs/CSOs	Disadvantaged or Vulnerable Group	Regulatory Institutions & Enforcement, Safety and Protection Agencies	Research Institutions	Implementing Agencies	Municipal and District Assemblies & Community-level stakeholders
							WAS CRI		
12)	Labour issues (potential risks and impacts)	MoGCSP	VCA	FBO/A ICI CBWA GAWU	WF WL PWD	EPA		SPD	
13)	Child labour	MoGCSP	VCA	FBO/A CCPC ACE GMACL		EPA DOVSSU		CHED	DoA ED SWCDD TA
14)	Screening criteria					EPA			
15)	Risk of Deforestation	MoFA		FBO/A		EPA			
16)	Waste management impacts		VCA	CLG		EPA	WAS		EHSD
17)	Storage of farm produce		VCA			EPA			
18)	Buffer zone creation and protection					WRC FC			
19)	Climate change management	MoFA				FC EPA			
20)	Compensation management	MELR		FBO/A	PWD	FC		COCOBOD	
21)	Gender-Based Violence, Sexual Exploitation and Abuse and Sexual Harassment	MELR	VCA	FBO/A GAWU	WF WL WoF	DOVVSU			SWCDD HD TA
22)	Teenage pregnancy	MoGCSP	VCA	FBO/A GAWU		DOVVSU			ED HD
23)	Vulnerable / disadvantaged groups	MoGCSP	VCA	FBO/A GAWU	PWD WF WL	DOVVSU		CHED	DoA SWCDD TA

No.	Stakeholder Categories Project Component/ Impact and Activities	Government Ministries	Other Value Chain Actors	Trade Unions, Cooperatives and Associations & NGOs/CSOs	Disadvantaged or Vulnerable Group	Regulatory Institutions & Enforcement, Safety and Protection Agencies	Research Institutions	Implementing Agencies	Municipal and District Assemblies & Community-level stakeholders
					WoF				
24)	Risks of spread of HIV/AIDS and COVID								HD
25)	Land tenure			FBO/A					TA
26)	Health and safety risks and management			FBO/A	PWD	EPA			HD EHSD
27)	Post-harvest losses			FBO/A			OPRI WAS CRI		

Appendix 2: Stakeholder Engagement Schedule

Date	Stakeholder	Engagement Method	Main Contact Person	Position	Contact Details
3/02/2023	Crop Life Ghana	Virtual interview	Kadiri Rashad,	Programme Manager	0249689725
09/02/2023	EPA, Accra	Face-to-face interview	Andriana Nelson	Head of EAA Unit	0244250575 qandriana@yahoo.com
16/02/2023	SPD	Face-to-face interview	Shine Enyonam Kubuafor	Agric Extension Officer	0246505344 enyonamshine12@gmail.com
16/02/2023	GNFS, Asamankese	Face-to-face interview	Agyz A. DAVID	Assistant Divisional Officer Grade Two	0543648302
16/02/2023	WAMA, EHSD	Face-to-face interview	Nelvin Enam Potakey,	Municipal Environmental Health officer	0246090606
16/02/2023	WAMA, ED	Face-to-face interview	Loretta Akua Ayisi	Director	0243817164 naanaarich@gmail.com
16/02/2023	WAMA, SWCDD	Face-to-face interview	Francis Opoku Nsiah	Municipal Head	0244483099 opoku.nsiah33@gmail.com
16/02/2023	WAMA, NADMO	Face-to-face interview	Omani Awuah Kingsley	President	0543949872
16/02/2023	KMA, DoA	Face-to-face interview	Joyce Kyeraa	Director	0243078815
16/02/2023	KMA, SWCDD	Face-to-face interview	Daniel Obeng Asabere	Director	0246603187
16/02/2023	KMA, PPD	Face-to-face interview	Henry Daniels	Planner	0241939393
16/02/2023	ROGA	Face-to-face interview	Frederick Agyapong Koranteng	Chairman, ROGA	0243321952
16/02/2023	Rubber Farmers	Focus Group Discussion	Evans Aboagye	Member	055349374
16/02/2023			Larbi Emmanuel	President, Kwakusae Cocoa	0543262250

	Cocoa Farmers	Focus Group Discussion	Akumaa Adjatery	Treasurer, Brekumanso Cocoa Cooperative	0207673050
			David Nartey	Member, Anuado Cocoa Cooperative	0504690129
			Paulina Tetteh	Member, Asafoatse Cocoa Cooperative	0208348508
			J.Y. Mante	Member, Amaforo Cocoa Cooperative	0553380978
16/02/2023	Female Cocoa Farmers	Focus Group Discussion	Faustina Kwapong	Women Rep-Kwakusa Cocoa (Cocoalife)	0201385913
17/02/2023	CHED	Face-to-face interview	David Okyere Awuku	District Extension Coordinator	0242480469 callokyere2016@gmail.com
17/02/2023	WRC, Accra	Face-to-face interview	Dr. Bob Alfa	Director, Planning	0243216645
17/02/2023	DOVVSU, Asamankese	Face-to-face interview	Beatrice Danso	Office-In-Charge	0246818901
17/02/2023	GNFS, Kade	Face-to-face interview	David Ohene,	Assistant Divisional Officer	0299340900
17/02/2023	WAMA, HD	Face-to-face interview	Torkornoo Love	District Health Information Officer	0240560260
17/02/2023	WAMA, PPD	Face-to-face interview	Prince Kusi Bosempem	Deputy Planning Director	0547153628
17/02/2023	KMA, HD	Face-to-face interview	Dr. Bernard Ayisi Asare	Director	0240230036
17/02/2023	KMA, NADMO	Face-to-face interview	Raymond Frimpong	Deputy Director	0242929418
17/02/2023	CFA	Face-to-face interview	Omani Awuah Kingsley	President	0543949872
17/02/2023	OPRI	Face-to-face interview	Dr. Emmanuel Andoh-Mensah	Director	0244056473
17/02/2023	WAMA, DoA	Face-to-face interview	Owiresu -Gyamera K	MDO-Extension	0243907468
23/02/2023	MoGCSP	Virtual interview	Abena Anobea Asare	Ag. Director, Human Trafficking Secretariat and Social Protection	abena.asare@mogcsp.gov.gh

27/02/2023	EPA, Bono Region	Face-to-face interview	Jonas Kpierekoh	Ag Regional Director	0501301736 jkpierekoh@yahoo.com
27/02/2023	WRC, Tano Basin Station	Face-to-face interview	Solomon Danso-Ankamah	Principal Basin Officer	0208371995
27/02/2023	FC, Bono Region	Face-to-face interview	Augustine Kofi Gyedu	Regional Manager	0208170822
27/02/2023	FSD, Accra	Face-to-face interview	Hugh Brown	Executive Director	0244798004
27/02/2023	WAS	Face-to-face interview	Bright S A Sarpong	Assistant Agric Officer	0208265963
28/02/2023	WMA, DoA	Face-to-face interview	Emmanuel K Afful	Director	0508397797
28/02/2023	WMA, EHSD	Face-to-face interview	Lenseni Gertrude	Municipal Environmental Health Analyst	0209726412
28/02/2023	WMA, ED	Face-to-face interview	Mary Nyarko-Adutum	Municipal Director of Education	0244959775
28/02/2023	WMA, SWCDD	Face-to-face interview	Abdulai Jimba Ibrahim	Head of Department	0200860600
28/02/2023	WMA, PPD	Face-to-face interview	Akanzinye Nsomah Honoratta	Physical Planning Officer	0242553375
28/02/2023	Henry 86 Enterprise	Face-to-face interview	Henry Osabutey	Director	0502209292
28/02/2023	Individual Agent	Face-to-face interview	Henry Osabutey	Director	0502209292
28/02/2023	WMCCFMU	Face-to-face interview	Nsiah Robert	Chairman	0541497878
01/03/2023	DOVVSU, Wenchi	Face-to-face interview	Leticia Obeng	Chief Inspector	0243804569
01/03/2023	GNFS, Wenchi	Face-to-face interview	Divisional Officer Eric Boateng	Municipal Fire Commissioner	0241312338

01/03/2023	CBA	Face-to-face interview	Osei Eric	Vice Chairman	0203621552
03/03/2023	CRI	Virtual interview	Dr. Erasmus Narteh Tetteh	Tree Crops Agronomist	0244826485
16/03/2023	FC, Wildlife Division	Virtual interview	Benard Asamoah Boateng	Executive Director	0541691895
17/03/2023	WMA, HD	Questionnaire	Obed Adu Amankwa	District Health Information Officer	0544964363

Appendix 3.0: Institutions - Engagement Outcomes

3.1 COCOBOD Divisions

Cocoa Health and Extension Division

Engagement Tools/locations: Interview/ CHED, Asamankese	Date: 17/03/2023	Time: 1:30 – 2:30pm
Discussants: David Okyere Awuku, District Extension Coordinator – 0242480469/ callokyere2016@gmail.com Shine Enyonam Kubuafor, Gender, Child Labour & Environmental Issues Coordinator – 0246505344/ enyonamshine12@gmail.com Consultant: Kwabena Kwakye Mamphey – 0558341865 Barikisu Nasiru Zawi – 0548925327		
Discussions:		
1. Cocoa Production Cycle Cocoa production begins with the production of hybrid clones by (CRIG) which is then transferred to the Seed Production Division (SPD) to multiply and distribute high quality cocoa seedling in adequate quantities to farmers. The cocoa plant takes 4 to 5 years before it starts fruiting and during this period the farm has to undergo periodic maintenance. The maintenance activities are carried out by the farmers with support from extension officers from CEHD. The maintenance activities include pruning, spraying (against pests and insects), weeding and fertiliser application. After harvesting, the maintenance activities continue for every season till the tree reaches its low bearing state (i.e., after 35-40 years after planting) where the tree is cut down and replanted.		
2. Responsibility of CHED The Cocoa Health and Extension Division (CHED) is responsible for the rehabilitation of farms affected with the (CSSVD), cocoa management system and provision of extension services (agronomic practices and farm inputs) to farmers. The cocoa management system involves digital capturing and mapping of all cocoa farms within the country as well as the ones affected with CSSVD. The trees that are fell during the rehabilitation process are used for firewood by the farmers while the tree stumps are treated with arboricides to prevent the rejuvenation of the disease.		
3. Pest and Disease Infestation The most common disease that affect cocoa within the area is the CSSVD. There is also the black pod disease and mirids (Akate) which affect the cocoa pod.		
4. Pesticide and Agrochemical Use • The 3 types of fertilisers used in cocoa farming are ammonia, NPK and urea. • Spraying of the farm is done 4 times per season, where CHED does 2 and the farmer also does the other 2. The farmers usually do not use PPEs when spraying even though some farmers have been provided with PPEs and have been trained on the use of PPEs when spraying, • There has been education on how to store agrochemical but some farmers store them in their rooms (mostly under their beds) and kitchen. • For the containers of pesticides, some farmers bury them in their farms, others burn them, and the rest are disposed of at dump sites. Some communities have collection cages where empty chemical containers are placed and collected periodically for recycling.		
5. Bush Fires Bush fires are not common within the municipality. Farmers have been trained and educated on bush fires. Farmers are advised not burn within their farms and to have fire belts to prevent spread of fire in case of an outbreak.		
6. Low Yield Cocoa is an alternate bearing crop where yield varies per season. On the average, where a farmer follows the right agronomic practices, an acre of cocoa farm fruits about 10-12 bags of cocoa beans per season.		

Low yields are usually caused by noncompliance to agronomic practices (ie. Spraying and wedding at the right time, applying the right chemicals and fertiliser), farm being attacked by the CSSVD and poor soil quality.

7. Farm Loss

- The most predominant cause of farm loss is attack of the CSSVD on the farms. The virus can affect the entire farm which would require the cutting down of all trees and replant healthy ones.
- Following the instructions of extension offices and the agronomic practices can reduce the risk of a farm getting the virus.

8. Child Labour

- Child labour is when children are used for works beyond their strength level, works that are hazardous or harmful to their health and works that will deprive them from going to school.
- Most farmers have been trained on child labour
- Some children end up at the farm due to:
 - Long trekking distance to school
 - Inappropriate/worn-out uniforms deterring children from going to school.
 - Parents unable to provide pocket money for children
- CHED undertake period monitoring and education on child labour within the communities.

9. Women in Farming

Out of the 24,000 cocoa farmers within the municipality, 6,000 are female. Also out of the 19,000ha of cocoa farms within the municipality 8,400ha is owned by female farmers.

10. Seedling Production

CHED determines the number of seedlings to be produced by SPD for distribution. The seedling produced last year (2022) were about 1 million and for this (2023) the number will reduce since most of the seedlings will be used for replacing failed planted seedlings.

11. Land Take and Food Security Issues

Currently farmlands for cocoa are being lost to rubber plantations. This is due to the land tenure system where the landowner different from the farmer and will sell the land with the cocoa farm on it to rubber growers. Compensation is paid to the affected farmer and the valuation of the farm is done by CHED.

The implementation of this project (promoting of cocoa farming) may not cause food security issues within the municipality or country. This is because most farmers are encouraged to engage in alternative livelihoods such as snail farming, rearing of animals, food crop farm, etc. Training programmes are also held to promote the alternative livelihood programme.

12. Capacity Building

The division at the district level will require capacity building on gender-based violence and sexual exploitation and abuse. Also, for effective data capturing, the division can be furnished with tablets for easy collection of data.

There is also a risk of elite capture where the elite at the national level will capture the proposed training programmes while the implementing persons are side-lined.

13. Recommendation

- There should be a project implementation unit at the district level to handle project related issues and easy implementation of project activities.
- The project should ensure that the targeted/implementing personnel take part in the recommended training activities

Seed Production Division

Engagement Tools/locations: Interview/SPD, Asamankese Estate

Date: 16/02/2023

Time: 4:00 – 4:30pm

Discussants: Shine Enyonam Kubuafor, Agric Extension Officer – 0246505344/enyonamshine12@gmail.com David Okyere Awuku, District Extension Coordinator - 0242480469 Consultant: Kwabena Kwakye Mamphey – 0558341865 Barikisu Nasiru Zawi – 0548925327	
Discussions: 1. Nursery Production The nursery multiplies the clone provided by CREG and supply them to the farmers based on the quantities requested. The seedlings usually take about 6 months to mature before they are transported to the farms for planting by farmers. Every district/municipality where cocoa is grown has an SPD station with satellite nurseries close to farming communities which is responsible for the multiplication of seedlings. 2. Water Supply Streams close to nurseries are relied upon for water supply. During the dry season, getting water is a challenge and the nursery operator will have to go in search of water to sustain the nursery. Poly tanks and pumping machines have been provided to the division to help store water for the nursery/pump water from a nearby stream/water body. 3. Work force • SPD has permanent staff who are covered under a workmen's compensation insurance. • Workers are provided with appropriate PPEs 4. Land Use The satellite nurseries are usually developed on leased lands. 5. Use of Pesticides and Agrochemicals • Pesticides are used on the nursery to prevent pest infestation. • Workers who engage in the spraying activities mostly do not use PPEs • Pesticide containers are collected and disposed of at the dumpsite 6. Treats to the Nurseries The nurseries are usually affected by the: • Quality of soils • Nomadic farming, where livestock eat the fresh leaves of the seedlings and destroying them. 7. Challenges • One of the major challenges faced by the nursery is unavailability of water. Since the land used by the SPD for their satellite nurseries are leased, boreholes cannot be drilled on the land. • Getting workforce for the nursery is a challenge since the workers prefer to work at galamsey sites where they earn GHS 150-200 per day. 8. Recommendation • The pay for nursery workers should be increased to prevent them from being attracted to galamsey works.	

Research Monitoring & Evaluation Department

Engagement Tools/locations: Questionnaire	Date: 01/03/2023	Time: 1:01pm
Discussant: Eric Dickson Amengor, Research Manager, Research Monitoring & Evaluation Department, Ghana Cocoa Board – 0243212214	Consultant: Yaw Amoyaw-Osei – 0243223864	
Discussions:		

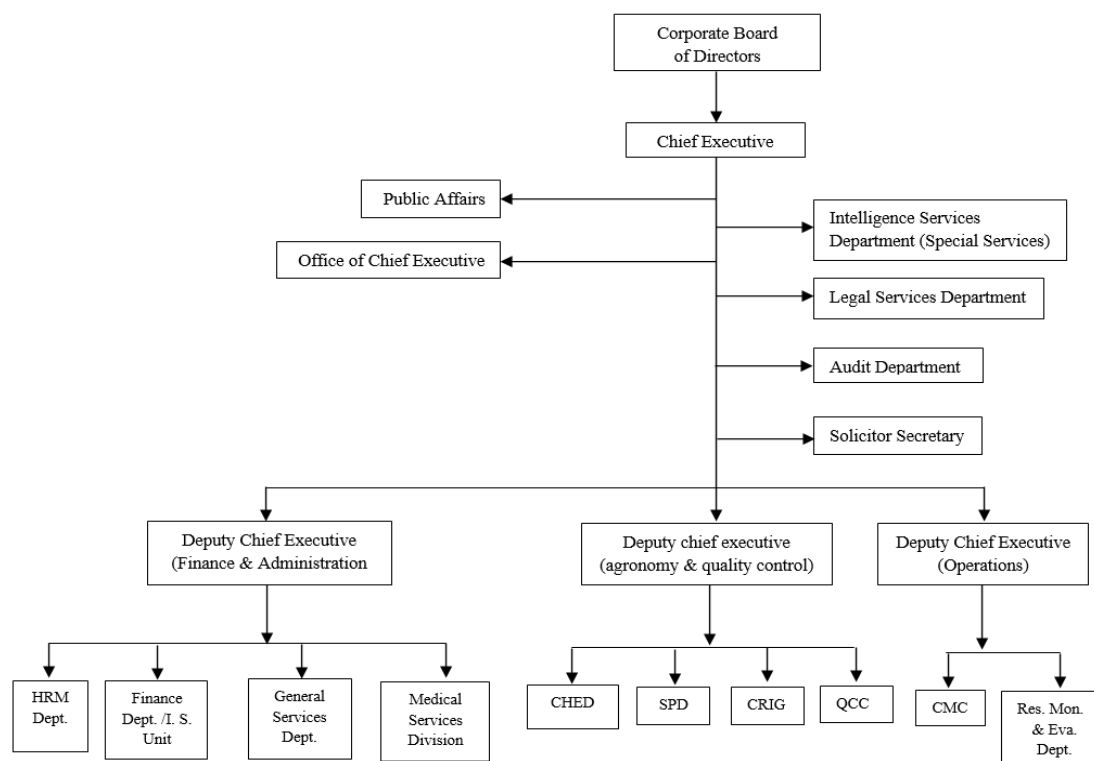
Ghana Cocoa Board (COCOBOD) is a statutory public institution established in 1947 with the mandated to regulate the cocoa industry. COCOBOD's function overall is to encourage and facilitate the production, research, expansion, marketing and quality control of cocoa (including coffee). In addition, it guides the administrative powers in Ghana to develop appropriate policies towards performance of the above functions. The functions are divided into Pre-harvest and Post-harvest - the former is performed by the Cocoa Research Institute of Ghana (CRIG), the Seed Production Division (SPD) and the Cocoa Health and Extension Division (CHED), and the latter of which is handled by the Quality Control Company Limited (QCC) and the Cocoa Marketing Company (CMC) Limited.

The vision of COCOBOD is 'to create a modernized, resilient and competitive cocoa environment where all stakeholders strive towards a sustainable cocoa economy in which cocoa farmers and their communities thrive'.

COCOBOD has an Environmental and Social Management System (ESMS) in place which outlines the E&S risks along the cocoa value chain. The ESMS is guided by the Cocoa Sector Development Strategy II (CSDS II) that emphasizes on productivity enhancement through the empowerment of smallholder cocoa farmers to adopt modern technologies, and Occupational Health, Safety and Environment Policy aimed at protecting the health, safety and welfare of staff and stakeholders, as well as, protecting the environment and local communities. Other relevant plans and procedure manuals in place include:

- Human Resource Policy Manual;
- Stakeholder Engagement Plan;
- Grievance and Redress Mechanism;
- Emergency Preparedness and Response Plan;
- E&S Risk Management Procedures;
- E&S Risk Appraisal procedures; and
- E&S Risk Control and Monitoring Procedures.

The COCOBOD organisational structure is provided in Figure below.

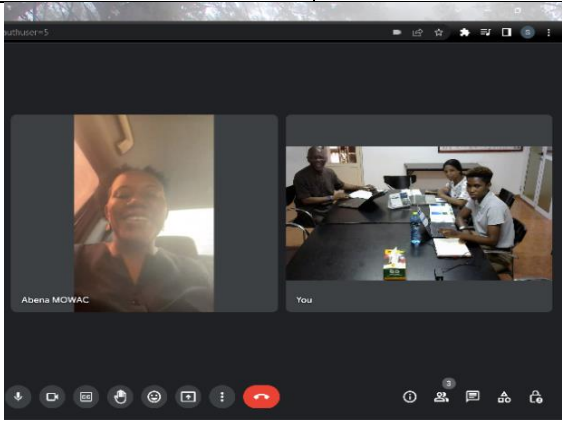


COCOBOD's Organizational Structure

3.2 TCDA

Engagement Tools/locations: Questionnaire	Date: 02/03/2023	Time: 1:00pm
Discussant: Kingsley Agyeman, E&S Specialist – 0243695775; Email: kingsleykagyeman@gmail.com Foster Boateng, Ag Deputy CEO, Operations – 0540116738, Email: orleansboateng@gmail.com	Consultant: Yaw Amoyaw-Osei – 0243223864	
Discussions: The Tree Crop Development Authority (TCDA) develops and regulates the sustainable production, processing and trading of tree crops in Ghana; namely, cashew, coconut, rubber (including shea, mango, and oil palm). The functions of TCDA surround the production, commercialisation and marketing, regulation, and research of tree crops, and the capacity building of tree crop farmers (Tree Crop Development Authority Act, 2019 (Act 1010)). TCDA is governed by a board made up of various stakeholders, including representatives from the Ministries of Food and Agriculture, Trade and Industry, and Finance. The TCDA organisational structure is provided in Figure below.		
Board of Directors Minister, MOFA Chief executive officer (CEO) Chief Director, MOFA Audit Manager Public Relations Manager Deputy Manager Administrative Officer Directorate of Crop Services, MOFA: E&S Support PPRSD-MOFA Deputy CEO, F&A Deputy CEO, Operations Accounts Manager - Finance Human Resource Manager IT-Manager Procurement Manager Manager- Mango vc. Manager - Cashew vc. Manager- Coconut vc. Manager- Rubber vc. Manager – Oil Palm vc. Manager – Shea vc. Manager - Policy, Research, M&E Zonal Officer Zonal Officer Zonal Officer Zonal Officer Zonal Officer Zonal Officer		
TCDA's Organisational Structure		

3.3 Ministry of Gender, Children and Social Protection

Engagement Tool/Location: Virtual Interview/Consultant’s Office	Date: 23/02/2023	Time: 9:50am
Discussant: Mad. Abena Anobea Asare, Ag. Director, Human Trafficking Secretariat and Social Protection – abena.asare@mogcsp.gov.gh		
Consultant Team: Yaw Amoyaw Osei – 0243223864 Ewurama Kakraba-Ampeh – 0266018989 Mavis Tetteh – 0545065083		
Discussions		
1. Solid Waste Management • The municipality as a whole generated about 6.6tonnes of waste daily. • Waste management within the municipality has been contracted to ZoomLion Ghana Limited to collect waste and transport to final disposal site. • Wastes are usually dumped into waste skips while others are collected using a door to door service (compactor truck). • Other zones of the municipality aside the capital have dump sites where waste generated within the communities are taken to for disposal • Segregation of waste is not a usual practice within the municipality		
2. Child Labour • Child labour prevalence in cocoa production is not as is portrayed in international media. Extensive work has been done to curb this. There are various units within the Ghana Police Service, Immigration Service, Ministry of Employment and Labour Relations and Economic and Organised Crime Office as well as NGOs working to fight child labour. Farmer cooperatives are periodically educated on child labour. • The critical challenge regarding child labour now is in the mining sector, particularly with illegal mining. There have been instances of children working on illegal mines close to cocoa farms which is then misconstrued as them working on cocoa farms. • Parents, guardians and other people have been prosecuted for engaging in child labour. Rescued children are placed in foster care. • Children can accompany their parents to farms when they are on vacation but whatever work they do should be within their limits and not be hazardous to their health. • Existing structures on child labour prevention and control should be strengthened.		
3. Casual Labour • Mechanisms to incentivise casual workers abandoning work on cocoa farms in favour of illegal mining will be useful, however, the dynamics regarding casual work must be considered when designing such incentives and it is important to note that majority of casual workers tend to be foreign migrants.		

3.4 Environmental Protection Agency (EPA)

EPA - Head Office, Accra

Engagement Tool/location: Interview/Head Office, Accra	Date: 9/02/2023	Time: 2:00pm																		
Discussants: Andriana Nelson, Head of EAA Unit – 0244250575/ gandriana@yahoo.com Kwabena Badu Y,eboah, Director of Environmental Management Systems – 0501301399/kwabena.badu-yeboah@epa.gov.gh John Doghla, Deputy Director – 0501301449 /john.doghla@epa.gov.gh Consultant Team: Yaw Amoyaw-Osei -0243223864 Kwakye Kwabena Mamphey - 0558341865 Zawi Nasiru Barikisu – 0548925327																				
Discussions/Suggestions and Comments:																				
1. Screening Guide The level of assessment for an agricultural development project is dependent on the size of land (hectares). The size of land and its corresponding impact scale is presented below. <table><tr><th>Land Size</th><th>Impact</th><th>Level of Assessment</th></tr><tr><td>>1000ha</td><td>Large “Impact Scale”</td><td>EIA</td></tr><tr><td>>500-1000ha</td><td>Medium “Impact Scale”</td><td>PER</td></tr><tr><td>>100-500ha</td><td>Small “Impact Scale”</td><td>Initial Assessment</td></tr><tr><td>>40-100ha</td><td>Minor “Impact Scale”</td><td>Initial Assessment</td></tr><tr><td><40ha</td><td>Micro “Impact Scale”</td><td>Initial Assessment</td></tr></table> Another category to be considered is the integrated farming which comprises of nursery, farming, processing, and storage.			Land Size	Impact	Level of Assessment	>1000ha	Large “Impact Scale”	EIA	>500-1000ha	Medium “Impact Scale”	PER	>100-500ha	Small “Impact Scale”	Initial Assessment	>40-100ha	Minor “Impact Scale”	Initial Assessment	<40ha	Micro “Impact Scale”	Initial Assessment
Land Size	Impact	Level of Assessment																		
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>100-500ha	Small “Impact Scale”	Initial Assessment																		
>40-100ha	Minor “Impact Scale”	Initial Assessment																		
<40ha	Micro “Impact Scale”	Initial Assessment																		
2. Food Security Risk - Food security would be an impact due to the large size of lands required for the tree cropping. - There have been instances where most farmers convert their food crop farms to tree crops farms. Sefwi, for instance used to be a major food crop zone, but recently most of these farmers have diverted to tree crop farming and as result most of the food crops sold in the area are now bought from other places to the area.																				
3. Child Labour - There are instances where farmers use children on their farms. But this is only considered as child labour when the child is made to work on the farms during school hours. - Artisanal training should be provided for children who are not interested in going to schools. This is because some of the children engage in labour work themselves due to their lack of interest in schooling. - Child Right International is an NGO that fight for the right of children in Ghana																				
4. Deforestation - In a typical cocoa farm, there are lot of trees because they provide shade which serves as carbon sink. - Control burning could be practiced during farming activities in cases where the ashes serve as manure to improve soil quality.																				
5. Handling of Agrochemical Containers - The agrochemical containers can be subjected to the triple rinsing method after usage ie rinsing the containers three times before disposal. - The take back system is also a means of handling the agrochemical containers. This is where the containers are sent back to the producing companies after usage.																				
6. Warehouses Some of the warehouses of COCOBOD are not registered with the Agency. Therefore, effort needs to be made to register all existing warehouses.																				

- Existing warehouses to be rehabilitated could be subjected to EMP, if there are not much changes in the design of the warehouse.

7. Recommendation

- The research should focus on high yielding farming on small pieces of land.
- The farmers should be encouraged to practice inter-cropping to avoid farmers converting the food crop farms to tree crop farms e.g farming cashew with yam.
- The private sector can be incentivized to recycle the agrochemical containers.
- The project can rely on existing laboratories owned by COCOBOD

EPA - Bono Region

Engagement Tool/location: Interview/EPA, Sunyani	Date: 27/02/2023	Time: 9:10am
Discussants: Jonas Kpierekoh, Ag Regional Director – 0501301736/jkpierekoh@yahoo.com		
Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Pesticides and Agrochemical Use - EPA provides permit to the producers of agrochemical but training the applicants on the usage of the chemicals is the responsibility of the Plant and Regulatory Directorate Services of MoFA. - Some retailers taste the chemicals to ascertain the potency of the chemicals. - Some banned agrochemicals are still in use due because of the bordering situation in the area. - Both the farmers and the sprayers do not use PPEs during the application of the chemicals. Their usual complain is about the comfortability of the PPEs. Another major challenge is with the maintenance of the PPE		
2. Agrochemical Containers EPA is pioneering a mechanism to retrieve all chemical containers from the users but the challenged faced here is the media through which the containers would be retrieved. EPA is however intalks with the agrochemical producing companies to provide incentives for the farmers who will return their containers to have the farmers buy in into the idea.		
3. Waste Lots of waste is generated from the cashew fruit because of the high interest in the nuts. The fruits are left on the farms to rot when the nuts are taken out. People are not enticed to take in the fruit because of the perception of not taking in milk after the fruit.		
4. Food Security Farmers are likely to stop farming other food crops when they realise the economic gains that comes with farming the cashew and readily market it has as well.		
5. Deforestation - Some farmers cut down trees to establish their cashew farms. This poses a risk of biodiversity loss. - All trees serve as carbon sink. The amount of carbon to be absorbed from an area is dependent on the quantity of tress available and amount of carbon dioxide produced in that area.		
6. Recommendation - Planting of the cashew is done in line and pegs, so tree encountered can be skipped to plant in the next line. The only challenge is the pest and disease infestation that could occur i.e the diseases and pests of the tree affecting the cashew tree and vice versa. - The farmers should be made to own the project so they can effectively contribute to the success of the project. - The project should design monitoring systems to ensure each player in the value chain for any of the tree crops is executing their mandate as required by them.		

- Extension and input services should not be provided to farmers who clear forest areas for cashew plantation.

3.5 Water Resource Commission (WRC)

WRC - Accra

Engagement Tools/locations: Interview/WRC, Accra	Date: 17/02/2023	Time: 11:25am
Discussant: Dr. Bob Alfa, Director-Planning – 0243216645		
Consultant: Kojo Amoyaw-Osei – 0547917870 Mavis Tetteh – 0545065083		
Discussions:		
1. Buffer Zone A buffer of 100m is reserved at both ends of major rivers and about 60m for tributaries, depending on the type of tributary. Activities of all sorts are not permitted within the buffer including pesticides application. The buffer helps to prevent erosion.		
2. Irrigation Irrigation is required for tree crop nurseries and also during the first year of planting, especially when there is minimal rainfall.		
3. Acquisition of Water Use Permit - Permit is required for water abstraction and all water uses Abstraction could be from rivers, lake, groundwater, rainwater and every other water source. Permit fee is dependent on volume of wate abstracted. - The permit is needed to protect and regulate both up and downstream water users. - Water abstraction process will be monitored.		
4. Required Reports - Water Demand Management Plan - Quarterly Reports		

WRC – Tano Basin Station

Engagement Tool/location: Interview/WRC, Sunyani	Date: 27/02/2023	Time: 10:26am
Discussants: Solomon Danso-Ankamah, Principal Basin Officer – 0208371995 Berlinda Prah Ogbonnaya, Basin Officer - 0245502342 Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Mandate The WRC offices are established based on the basins in Ghana. The Station at Bono Region in Sunyani is responsible for the Tano and Bia Basins.		
2. Farming Closer to Water Bodies		

- The farmers do not observe the minimum buffer required of them when creating their farms. Hence their activities (i.e usage of chemicals and the chemical containers) ends up polluting the water resources, particularly affecting the turbidity of the water. - Erosion from farms affect the water bodies when the vegetation within the buffer zone is taken off. Hence runoff from the farms causes siltation of the water bodies.
3. Monitoring the Quality of the Water Resources The station carries out water quality analysis on the water resources/bodies twice annually. There are three monitoring stations for the whole of the Tano Basin. In terms of quality, the Bia Basin is qualitative lower than the Tano Basin.
4. Water User Mandate - It is the mandate of any water user to monitor the quality of the water and submit quarterly report to the Commission. - For groundwater abstraction, a notice of intension would have to be submitted and approved before the borehole is drilled. But after the drilling a report of the volume of water abstracted and the water quality test is submitted to the Commission quarterly.
5. Parameter to Consider The main parameter to observe is turbidity but for a full list to be provided. An official letter would have to be written to the Commission detailing what the water to be abstracted will be used for.
6. Awareness Programme The Commission only get to meet and sensitize water users including farmers, when they are invited to a programme organised by other institutions.
7. Recommendations - The farmers should be encouraged to use biodegradable chemicals and fertilizers. - A project implement unit should be set up including all stakeholders, particularly the Commission. This would enable all stakeholders to effectively implement their defined roles with respect to the project.

3.6 Forestry Commission (FC)

FC - Accra

Engagement Tools/locations: Interview/FSD-FC, Accra	Date: 27/02/2023	Time: 2:25pm
Discussants: Hugh Brown, Executive Director– 0244798004 Joseph Boagye, Operations Director – 0244858604 Yaw Kwakye, Operations Manager – 0244769874 Consultants: Yaw Amoyaw-Osei – 0243223864 Mavis Tetteh – 0545065083		
Discussions: 1. Deforestation • Though deforestation is of concern in tree crop plantation, it is considered as forest giving way to agriculture if it occurs off-reserves. • Cocoa is a number one deforester. • Rubber requires the complete clearing of vegetation and even removal of plants roots to avoid possible root rotting that might engender fungal infections. • Biodiversity is lost when forests are cleared to make room for cultivation of tree crops. 2. Forest Reserves		

Tree crop plantations are not encouraged around forest reserves, the reason being that the farmer can gradually encroach and take over the reserve. Tree crops planted close to reserves are cut down.
3. Afforestation - Tree crops must meet the following minimum requirement to be considered a forest: - Minimum height of 5m - Minimum plant cover of 15% - Minimum land area of 1 hectare
4. Carbon Credit Trading According to the Climate Change Unit of the Commission, carbon-credit trading of tree crops cannot be embarked by TCDA or COCOBOD. The reason being that the capacity to engage in carbon-credit trading lies with the Commission and not TCDA or COCOBOD.
5. Tree Compensation - A salvage permit is required to cut down trees either on or off-reserve. the district responsible will perform an assessment to mark out the trees involved. - Tree compensation is required and is much higher unless trees are located within timber concession areas. Amount paid is also dependant on the number of trees involved.
6. Forest Fires - Most trees within the forest are not adapted to fire. Hence, in the event of fire outbreak the impact will be massive as only few trees are able to survive its ravages. - More emphasis is placed on forest fire prevention as any occurrence of fire outbreak even if remedied, is not likely to leave the forest the same. - During the harmattan seasons, farmers are cautioned to not cook on their farms, as this could potentially cause bush fires.

FC – Bono Region

Engagement Tool/location: Interview/FC, Sunyani	Date: 27/02/2023	Time: 12:08pm
Discussants: Augustine Kofi Gyedu, Regional Manager - 0208170822		
Consultants: Kwaky Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Forest Reserves The forest reserves located within the Sunyani Forest District are Tain Trib I, Tain Trib II, Nsemere, Yaya, Sawsaw, Asukese, and Amama Shelterbelt. However, the reserves that are likely to be affected during the implementation of the project in Wenchi Municipality are Nsemere, Yaya and Sawsaw. For Tain District, the Tain Trib II reserve is also likely to be affected during the project implementation.		
2. Deforestation - Deforestation is major source of concern within forest reserve areas. There are instances where people cut down trees for cashew and cocoa plantation within the Tain Trib II, Nsemere and Sawsaw reserves. There were farms located in some of the forest before they were gazetted as reserves, for instance the Yaya Forest Reserve had about 8 farm before it was gazetted but the farmers have expanded their farm sizes. - It is permissible to cut down trees that are outside reserve areas. But cutting down trees in reserve areas require permit from the Forestry Commission (FC).		
3. Buffer Zone A minimum of 10-20m buffer is required between a farm and the boundary of a forest reserve.		
4. Bush Fire		

Bush fires are more rampant during the dry season and the major cause of the fire could be attributed to hunting activities and grazing. The herdsmen intentional set fire into dry grasses to allow for fresh grasses to grow for their cattle.

5. Carbon Sink

The carbon sink of the area will improve considering the number of cashew trees to be planted during the project execution.

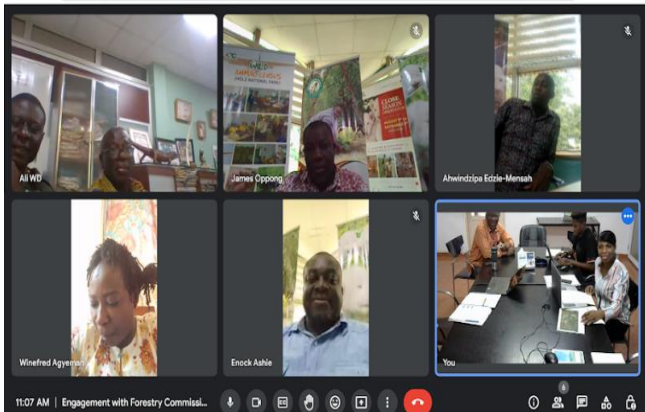
6. Endangered Species

Mahogany, Odum, and Rosewood has been listed as endangered species in the yet to be update IUCN Red List.

7. Recommendation

- All institutions should be given clearly defined roles and should be resourced to be able executive their roles.
- The project should design a simple form for the farmers to fill and tender them to the Forestry Commission for approval. The data to be captured on the form include GPS, types of trees and pictures of the intended farm area.

FC – Wildlife Division

Engagement Tool/location: Interview/Virtual	Date: 15/03/2023	Time: 12:05pm
Discussants: Bernard Asamoah Boateng, Executive Director – 0541691895 James Oppong, Business Planning Manager– 0243181977 Ahwindzipa Edzie-Mensah Nicholas, Deputy Finance Manager– 0542051007 Ali Mahama, Mole Park Manager- 0240835899 Enoch Ashie- 0243413742 Consultants: Yaw Amoyaw Osei – 0243223864 Kojo Amoyaw-Osei – 0547917870 Ewurama Kakraba-Ampeh – 0266018989 Mavis Tetteh – 0545065083		
Discussions:		
1. Biodiversity Monocropping does not promote biodiversity conservation, hence, the advocacy to practice mix cropping on cocoa farms.		
2. Buffer The Law on Reserves do not clearly spell out the minimum space for buffer.		
3. Human-Wildlife Conflict At Ankasa, Bole and protected areas in the Western and Central Regions, human-wildlife conflicts are experienced. For instance, elephants had developed the taste for fermented cocoa beans. Hence, they ransack the beans during the fermentation process. In the Northern Region, elephants pull down shea trees to eat the shea.		
4. Recommendation Farms should not be sited close to protected areas.		

Appendix 4.0: Security Institutions - Engagement Outcomes

4.1 Ghana Police Service

DOVVSU – Asamankese

Engagement Tool/location: Interview/DOVVSU, Asamankse	Date: 17/02/2023	Time: 4:00pm
Discussants: Beatrice Danso, In charge of DOVVSU Unit – 0246818901	Consultants: Kwakye Mamphey – 0558341865 Zawi N Barikisu – 0548925327	
Discussions		
1. Child Labour Child labour does not occur within the municipality, and there are no records in that regards.		
2. Gender-Based Violence and Sexual Harassment Most of the Gender-Based Violence cases recorded are domestic cases. Victims of sexual harassment are sometimes supported by the DOVVSU Unit to pick police forms. They are however, referred to the hospital for psychological and medical supports		

DOVVSU - Wenchi

Engagement Tool/location: Interview/DOVVSU, Wenchi	Date: 01/03/2023	Time: 2:30pm
Discussants: Leticia Obeng, Chief Inspector – 0243804569 Ibrahim Abdulai, Inspector – 0248453918	Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327	
Discussions/Suggestions and Comments:		
1. Types of Abuse Physical, emotional, psychological and sexual abuse are the types that members of the area face. About 96% of abuse cases recorded are physical abuses and 80-90% of these victims are women. Trigger for most of these abuses are claim to ownership of properties (i.e preventing women from going to the farms or not giving the women their share of profits from the sale of cashew nuts) and economical constraints. Also, most of the physical abuses happens in the farm.		
2. Teenage Pregnancy Economic hardship and lack of parental control are the main causes of teenage pregnancy within the area. The farmers and laborers could however get other teenage girls pregnant should they earn high income.		
3. Child Labour Most of the farmers engage the services of their child on the farms. Children are physically abused by their own relatives (i.e parents and aunties). Child labour is however considered a norm within the municipality and can be attributed to poverty. There are however no official records of child labour.		
4. Child Marriage Child marriage is very common among the Muslim Community and can be associated with their religious practices but not to necessarily increase the labour hands of the family.		
5. Recommendation The project should liaise with DOVVSU to sensitize members on child labour and how to have their grievance addressed by the unit.		

4.2 Ghana National Fire Service (GNFS)

GNFS - Asamankese

Engagement Tool/location: Interview/ GNFS, Asamankese Estate	Date: 16/02/2023	Time: 3:00pm
Discussants: Assistant Divisional Officer Grade Two Agyz A. DAVID, Admin/2IC – 0543648302 Assistant Divisional Officer Grade Two Evans Sabla, Safety Officer – 0244133548 Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
		
Discussions/Suggestions and Comments:		
1. Fire Outbreaks Most of the fire outbreaks are domestic cases. The occurrence of bushfires is rare.		
2. Community Fire Squad The Service conduct house to house and anti-bushfires education to reduce the occurrences of fire outbreaks in the municipality. There are firefighting squad in all the four electoral areas of the municipality. They are trained to respond to fire emergencies.		
3. Bush Fires Bush fires hardly occur but its occurrence is caused by the negligence of farmers who mostly do not create fire belts around their farms. Some of the farmers also intentionally use fires to prepare their farms.		
4. Recommendation The GNFS should be engaged two weeks before the commencement of the project. This is to enable them train and equip the farmers and other beneficiaries of the project to respond to fire emergencies cases. The engagement with the farmers would also help the GNFS to easily locate the farms in cases of emergency. Aside the initial engagement with the farmers, GNFS can also meet them quarterly to retrain and equip them in firefighting. Incentives should be provided for the fire volunteer that would be trained.		

GNFS - Kade

Engagement Tool/Location: Interview/GNFS, Kade Fire Station, Kade	Date: 17/02/2023	Time: 9:30 am
Discussant: David Ohene, Assistant Divisional Officer 2 – 0299340900/0245036323	Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh – 0266018989	
Discussions/Suggestions and Comments:		
1. Bush Fire There has been no reported incidence of fire on tree crop farms but rather from maize farms and domestic fires. Fires on farms are usually caused by natural causes such as lightning strikes.		
2. Education and Training Officers provide education to farmers on how to prevent fires and what to do whenever there is an incidence of fire. These trainings are conducted whenever funds are available.		

- A number of people in communities, known as Fire Volunteers, are trained as first responders to be able to combat fire incidences before Fire Service personnel arrive.
- The Fire Service also provides training to organisations.

3. Other Concerns

- There is no cooperation between the Assembly and the Service on providing training to farmers.
- The TCDA should cooperate with the Fire Service to provide training to farmers.

GNFS - Wenchi

Engagement Tool/location: Interview/GNFS, Wenchi	Date: 01/03/2023	Time: 12:30pm
Discussants: Divisional Officer Eric Boateng, Municipal Fire Commissioner – 0241312338 Assistant Divisional Officer Grade Two Francis Addai, Rural Bushfire Officer - 0242119141 Assistant Divisional Officer Grade One Kumi Kyeremeh Prince, Administrator – 0202251394		
Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Bush Fires Bush fires are common within the municipality. They are mostly caused by the hunters followed by the Fulani herdsmen and cooking and weeds burning activities on the farm.		
2. Extent of Disruption/Damage Bush fires usually affect farms such as cashew since it is the most grown commodity within the area. This year (2023) there have been 4 incidences of bush fires within the municipality.		

Appendix 5.0: Municipal Assemblies – Engagement Outcomes

5.1 West Akim Municipal Assembly

Department of Agriculture

Engagement Tool/location: Interview/ Agric Dept. Asamankese Estate	Date: 17/02/2023	Time: 9:10am
Discussants: Owiresu -Gyamera K, MDO-Extension – 0243907468 John Odoi Yemoson, MAO-Crops – 0208156512@joyemoson@yahoo.com Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Tree Crop • The tree crops grown in the municipality are cocoa (50%), rubber (20%), oil palm (20%), citrus (3%) and coconut (7%) • The smallest farm size in the municipality is one acre. The largest farm size for cocoa is 30-acre, palm oil is 35-acre and coconut is 10-acre. • The farm size for tree crop cultivation is more than that of food crops. • There is ready market for rubber plantation, oil palm, and citrus, i.e the farmers cultivate and sells the produce of these crops to the companies.		
2. Food Crop • The types of food crops cultivated within the municipality include maize, plantain, cassava and vegetables (garden eggs, pepper, cabbage, etc). Most the food crop farmers are also into tree crop farming. • Most of the food crops are cultivated on rented lands. The lands are rented annually		
3. Farm Size and Labour The municipality has enough arable lands for agricultural production. Most of the workforce employed by the farmers are casual workers (by day workers).		
4. PWDs in Farming There are PWD farmers in the municipality. Some are into cocoa, palm oil, etc. The department awards the Best PWD Farmer in the municipality every year.		
5. Food Security Risk Food security could be an issue during the implementation of the project. But the impact would however be minimal due to the availability of enough arable lands.		
6. Child Labour • Children are usually not involved in farming activities. Hence, there are no records of child labour. Considering how labour intensive the tree crop sector is children can not employed during the implementation of the project. • However, some of the children are not motivated to go to school because they lack shoes, school uniform, sanitary pads.		
7. Women in Farming • Most of the women in the rural areas either have their own farm or assist their spouse on their farms. Majority of the women are into the cultivation of food crops. • There is no disparity in terms of land acquisition for farming activities. • Women have equal access to input and extension services as the men in the municipality		
8. Pest and Disease Infestations		

- Pest infestation is very difficult to control and affects the yield of the crops. some of the diseases that affects the cocoa tree include black pod. The black pod is treated by spraying the cocoa tree every tree weeks with approved chemicals by EPA. - The major challenge with coconut farming is the infestation caused by beetle. Treating of the infestation is however, very difficult and the most appropriate way to prevent the infestations is to use net around the coconut tree.
9. Pesticides and Agrochemical Use - Some of the farmers uses banned agrochemicals. While others also taste the chemicals before usage. The chemicals that are mostly tasted by the farmers are the ones for de-greening (i.e to fasten the ripening of fruits) - The agrochemical containers are mostly left behind on the farms after usage.
10. Low Yield Some of the causes of low yield include poor soil management, pest and diseases and source of seedlings.
11. Challenges The main challenge in the tree crop sector is with how to get the correct hybrid coconut seedlings. This is because most of the seedlings sold in the market are mostly not of quality. The main disadvantage of not using a quality/hybrid coconut seedling is that the farmer would not know until the fourth or fifth when the coconut fruits are not forth coming (i.e the expected time for the coconut to bear fruit).
12. Recommendation The nurseries for the tree crop sector should adopt similar system set up by COCOBOD, where the production of nurseries is the sole responsibility of the COCOBOD Seed Production Division. The grant for the nursery should be given to CSIR to produce the seedlings due to their ability to produce the hybrid seedlings needed.

Environmental Health and Sanitation Department

Engagement Tools/locations: Interview/WMA, Asamankese		Date: 16/02/2023	Time: 3:30pm
Discussant: Nelvin Enam Potakey, Municipal Environmental Health officer – 0246090606			
Consultant: Kwabena Kwakye Mamphey – 0558341865			
Discussions/Suggestions and Comments:			
1. Solid Waste Management • The municipality as a whole generated about 6.6tonnes of waste daily. • Waste management within the municipality has been contracted to ZoomLion Ghana Limited to collect waste and transport to final disposal site. • Waste are usually dumped into waste skips while others are collected using a door to door service (compactor truck). • Other zones of the municipality aside the capital have dump sites where waste generated within the communities are taken to for disposal • Segregation of waste is not a usual practice within the municipality			
2. Liquid Waste • There are both public toilets and personal toilets within the municipality. • Community members are also encouraged to have their personal toilets to improve personal hygiene.			
3. Construction Waste • Construction waste generated are sometimes disposed of in open spaces or plots closer to the project site • Person who engage in such act when identified, the Assembly impose fine on them to deter others			

- Contactors who engage in improper disposal of construction debris will be sanctioned by the assembly

4. Agriculture Related Waste

- Some of the post-harvest losses are collected by animal farms to use as feed
- Others are also left on the farms to decay and provide nutrients from the soil
- Some plastics containers buried on the field while others are mixed with domestic solid waste

5. Post-harvest Losses

- Waste from post-harvest are mostly left on the farms to decay

Education Directorate

Engagement Tool/location: Interview/Director's Office, Asamankese Estate

Date: 16/02/2023

Time: 2:00pm

Discussants:

Loretta Akua Ayisi, Director – 0243817164/naanaarich@gmail.com
 Edward Konadu, Public Relation Officer – 0242767670 Michael Asuako,
 Human Resource – 0243285729/huloveafari10@gmail.com
 Fredrick Nartey, Planning – 0242336636/fredricknartey99@gmail.com

Consultants:

Kwakye Kwabena Mamphey – 0558341865
 Zawi Nasiru Barikisu – 0548925327



Discussions/Suggestions and Comments:

1. School Enrolment Levels

Boys have higher enrolment levels across all the stages of education in the municipality. The enrolment levels of the students are shown below.

Stages of Education	Enrolment Levels	
	Boys	Girls
Kindergarten	2035	2017
Primary	6847	6501
Junior High School	2919	2945

Attendance level of students in the municipality is about 90%

2. Teenage Pregnancy

- Only 4 cases of teenage pregnancy were recorded among the registered female BECE candidates in the year 2022.
- Most of the girls are impregnated by the peers. Hence, the implementation of the project is not likely to cause an increase in teenage pregnancy in the municipality.
- The municipality has a designated staff, Girl Child Coordinator, who sees to the well-being of the female students. Every school has a Girl Child Club where the female students are all members of the club. As members they are educated on prevention measures for teenage pregnancy and reproductive health.
- The GES system encourages victims of teenage pregnancy to continue schooling both before and after delivery. However, just a few of the teenage mothers (1 in 1000 girls) returns to school after birth.

3. Child Labour

Children are asked to follow their parents to the farms only on weekends. They are mostly not involved in any hazardous works and this does not in any way interfere with their education. Child labour occurrence in the municipality is negligible as it does not occur within the municipality

4. Sexual Harassment

There have not been any records of sexual harassment among students in the municipality.

Health Directorate

Engagement Tool/location: Interview/Health Directorate, Asamankese		Date: 17/02/2023	Time: 4:00pm
Discussants: Torkornoo Love, District Health Information Officer - 0240560260		Consultants: Kwakyee Mamphey – 0558341865 Zawi N Barikisu – 0548925327	
Discussions			
1. Top Ten Diseases			
Top Ten Causes of OPD Attendance			
Diseases	Year (2022)	Percentage (%)	
Malaria	40,058	28.6	
Upper respiratory tract infection	14,099	10.1	
Rheumatism/other joint pain/arthritis	12,263	8.7	
Intestinal worms	6,237	4.4	
Skin diseases	5,950	4.2	
Diarrhoea diseases	5,215	3.7	
Anaemia	4,507	3.2	
Acute urinary tract infection	4,067	2.9	
Typhoid fever	3,214	2.3	
Acute eye infection	2,278	1.6	
All other diseases	42,371	30.2	
Total	14,0259	100	

Social Welfare and Community Development Department

Engagement Tool/location: Interview/ WMA, Asamankese		Date: 16/02/2023	Time: 1:30pm
Discussants: Francis Opoku Nsiah, Municipal Head – 0244483099/opoku.nsiah33@gmail.com			
Consultants: Kwakyee Mamphey – 0558341865 Zawi N Barikisu – 0548925327			
Discussions			
1. Child Labour The department does not have any records on child labour. The parent mostly sends the children to the farms just for security reasons but does not engage them in any farm work. There are cases where parents leave their children behind, and they get defiled by other neighbours.			
2. Gender-Based Violence and Sexual Harassment Cases of children being defiled or harassed are handled by the department, however cases involving adults are handled by the DOVVSU Unit. Victims of defilement are referred to the hospital for medical and psychological support.			
3. Child Marriage There has been no incidence of child marriage in the municipality.			

NADMO

Engagement Tools/locations: Interview/ NADMO, Asamankse	Date: 16/02/2023	Time: 3:00pm
Discussant: Omani Awuah Kingsley, President – 0543949872 Consultant: Kwabena Kwakye Mamphey – 0558341865 Barikisu Nasiru Zawi – 0548925327		
Discussions: 1. Flooding There are recorded flooding incidents within 6 flood prone areas within the municipality. These areas are located within the mining areas of the municipality. There has been no incident of flooding on farms within the municipality. 2. Bush Fires Bush fires is not common occurrence within the municipality, however over the past years, the have been two incidents which led to the destruction of cocoa farms. About 1-3 acres of cocoa was destroyed.		

Physical Planning Department

Engagement Tool/location: Interview/WMA, Asamankese	Date: 17/02/2023	Time: 4:1pm
Discussants: Prince Kusi Bosempem, Deputy Planning Director – 0547153628	Consultants: Kwaky Mamphey – 0558341865 Zawi N Barikisu – 0548925327	
Discussions		
1. Demarcation and Other Land Uses The municipality has no specific demarcation for agricultural lands and other land uses		

5.2 Kwaebibrim Municipal Assembly

Department of Agriculture

Engagement Tool/Location: Interview/Directorate Office, Kade	Date: 16/02/2023	Time: 1:00 pm
Discussants: Joyce Kyeraa, Director – 0243078815 Felix Abedi Ansah, Extension Officer - 0541144824 Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh – 0266018989		
Discussions		
1. Child Labour Children do not work on rubber farms. There is a certain level of skill required, for example, in tapping, which children cannot do.		
2. Land Use There are no lands specifically earmarked for rubber farms. The area used for rubber is not very larger		

3. Production and Value Chain
- GODPC and Fohcrec (University of Ghana, Legon) have commercial rubber plantations. - The Directorate started giving cuttings to farmers only two years ago. - The Directorate is not involved in the marketing aspect, only gives farmers technical knowledge regarding land preparation. - Cost of production of rubber farms is low compared to other cash crops such as cocoa and the financial rewards are good. - Sand wining is a potential threat to rubber farms. - Rubber farms can be intercropped with plantain, maize, cocoyam, etc., for up to 4 to 5 years.
4. Women in Rubber
Women do light weeding
5. Pests and Diseases
Leaf spot, a fungal infection, is a major disease. Leaves turn yellow and drop. Treatment is by applying a recommended fungicide.
6. Fertiliser Use
Farmers are informed when subsidised fertilisers are available and those that are interested come to buy them.
7. Bush Fire
- There has not been any recorded fire incident on rubber farms. - Complaints have been received from other crop farmers where one farmer sets fire to a part of their farm and this spreads to other farms.
8. Grievance Redress
- Chiefs and opinion leaders are usually the first point of call. Some farmers go to the Police directly and then write to the Directorate. - When crops are destroyed the Directorate conducts a valuation exercise.
9. Yield
Proper agricultural practices such as use of proper tapping technique can increase yields.
10. Deforestation and Forest Degradation
It is possible that this could happen since in preparing land for rubber, all vegetation is cleared; not trees are left on the land.
11. Food Security Risk
- It is possible that people can convert their food crop farms to rubber only farms due to the financial gain rubber presents. - Food crop farmers should be provided with alternative livelihoods to incentivise them to stay in food crop farming rather than diverting to solely rubber farming.
12. Threat of Illegal Mining
This is not a problem for rubber. Farmers are hardly willing to sell their lands to illegal miners due to the immense financial gains rubber has.
13. Other Concerns
- There is a lack of knowledge within the Directorate on rubber farming. Capacity building of extension officers is needed. - RPGL does not collaborate with the Directorate on rubber issues.

Health Directorate

Engagement Tool/Location: Interview/Kade Fire Station	Date: 17/02/2023	Time: 12:15 pm
Discussant: Dr. Bernard Ayisi Asare, Director – 0240230036	Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh - 0266018989	
Discussions		
1. Smell from Rubber Lumps It is difficult to establish if the smell if linked to specific illnesses since this has not been researched on.		
2. HIV		

- Prevalence in the municipality is currently 2% and the prevalence among pregnant women is slightly higher than municipality prevalence.
- Since Kade is a highly commercial area, prevalence is higher than in less commercialised areas in the municipality.
- The Directorate is scaling up screening and testing to ensure that people know their status.
- Mass screening campaigns are conducted on occasion, for example, as part of Independence Day celebrations.
- Treatment is given to people with HIV.
- Education campaigns are also conducted periodically.

3. COVID-19

- Testing has reduced and access to diagnostic facilities remains a challenge.
- About 40 confirmed cases have been recorded since the pandemic began.
- Education campaigns on prevention (handwashing, physical distancing) are periodically conducted however most people do not adhere to this compared to the early stages of the pandemic.

4. Teenage Pregnancy

- Between 2017-2019 teenage mothers accounted for about 17% of total pregnant mothers who received care. This dropped to 10% last year. Intensive education campaigns on health and social risks associated with teenage pregnancy that were conducted could have contributed to this reduction.
- School going teenagers who get pregnant usually drop out.

Social Welfare and Community Development Department

Engagement Tool/Location: Interview/Kwaebibirm Municipal Assembly, Kade	Date: 16/02/2023	Time: 2:34 pm
Discussant: Daniel Obeng Asabere, Director – 0246603187		
Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh - 0266018989		
Discussions		
1. Child Labour • There are no children involved in rubber farming. • In the case of cocoa and illegal mining, education campaigns and the formation of community committees were instrumental in reducing the incidence of child labour on farms. Farms that were reported to have children working on them were blacklisted. • The Assembly does not have any sanctions on parents who have their children work on farms but continue to educate them against it.		
2. Labour • No complaints have been received between farmers and their workers		

NADMO

Engagement Tool/Location: Interview/Kade Fire Station	Date: 17/02/2023	Time: 10:05 am

Attendance: Raymond Frimpong, Deputy Director – 0242929418 Nana Braimah Alidu, Head, Relief Assessment and Logistics – 0246877889 Ebenezer Ampomah, Zonal Director – 0246992685 Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh – 0266018989	
Discussions Bush Fire - There has been no recorded incidence of fire on tree crop farms Flooding - There are some flood prone areas in the municipality which record some flooding when there are rainstorms during the rainy season. There was a flooding incident in 2011 in which the bridge was submerged. - The flooding is also linked to illegal mining activities. Education - People in the flood prone areas are periodically educated on how what to do during flooding events whenever funds are available.	

Physical Planning Department

Engagement Tool/Location: Interview/Kwaebibirm Municipal Assembly, Kade	Date: 16/02/2023	Time: 2:00 pm
Discussant: Mr. Henry Daniels, Planner – 0241939393	Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh – 0266018989	
Discussions		
1. Municipal Layout - There is no municipality-wide layout in terms of agricultural lands. There are layouts for a few areas. - Farmers visit the Department to check whether their farm falls under the cadastral plan		
2. Permits Commercial rubber companies have permits from the Department.		
3. Other Concerns There is no coordination between TCDA and the Department.		

5.3 Wenchi Municipal Assembly

Department of Agriculture

Engagement Tool/location: Focused Group Discussion/Agric Dept, Wenchi	Date: 28/02/2023	Time: 9:00am

Discussants:

Emmanuel K Afful, Director, 0508397797

Bernard Adiku, Agricultural Extension Agent – 0559345506

Bernard Nantuo, Management Information Systems Officer - 0247281581

Consultants:

Kwakye Kwabena Mamphey – 0558341865

Zawi Nasiru Barikisu – 0548925327

**Discussions/Suggestions and Comments:****1. Land Tenure**

- The municipality has about 409,109 hectares (ha) of arable land. Out of which 107,880ha is used for cashew farming and the remaining is used for farming crops such as maize, cocoa, etc.
- The least farm size for cashew farming is within the range of 2.5-5ha. For commercial farms, the sizes range from 60-150ha of land.
- The farmers either own land through family inheritance, crop sharing (“Door ma y3n ky3”) and lease. But most of the lands are owned are through family inheritance.

2. Labour

- Majority of the farmers rely on casual workers (i.e the by day workers). The working period of a casual worker is from 8:00am to 12:30pm, at a rate of GHS40.00. The other form of labour is the Contract Arrangement, where the farmers employ the services of a laborer and pays an agreed amount of money after the task is executed.
- For an acre of land, about 3 laborers are needed for land preparation activities, 3 for lining and pegging, 3 for digging out the holes and 3 for transplanting the nurseries.

3. Child Labour

Children are only sent to the farms during weekends or after school periods. They are mostly engaged during the harvesting period to either detach the fruits from the nuts or pick the nuts. The farmers use their own children and does not employ the services of other people’s children. Nonetheless, the Directorate does not have a sensitization programme for educating the farmers or children on child labour neither do they have any monitoring system in place.

4. Women in Farming

Per the cultural system, the farms are owned by both the husband and the wife. But it is only the details of the husband that is taken during records taking by the Directorate. Hence, the women are seen to be offering assistance to the husbands and only becomes the owner when the husband is dead or when they inherit it from their families. The women are however not denied access to farmlands provided they have the means to purchase the land.

5. Pest and Diseases

The major pests and diseases that infest the cashew tree are caterpillars and tea mosquito bug (cashew mosquito) and die back.

6. Agrochemicals

The chemical containers are either burnt, disposed of their farms or in the bins. They do not rinse it before disposal.

7. Theft Cases

Stealing of cashew is very common within the municipality, particularly at dawn and in the evening when the farmers have left for their homes.

8. Bushfires

Bushfires are very common in the area. In 2021 about 127.6ha of farms got burnt as a result of bushfires and affected about 47 farmers. This reduced to about 50.6ha in 2022 with about 41 farmers affected. The causes of bushfires are attributed to the activities of the hunters, smoking by herdsmen and cooking on farms. The farmers have been educated on the creation of fire belts particularly during the dry season.

9. Sanitation Issues

The cattle mostly swallow the nuts when grazing on cashew farms and when they defecate the herdsmen picks the nuts from the cow dung. These nuts are then washed and sold to the agents for profit.

10. Market Price

The minimum price for buying cashew nuts is GHS 8.50/kg. The enforcement of this is however a challenge because the Agents are more prone to buying wet nuts from the farmers at a reduced price.

11. Capacity Building

The Directorate is well resourced with adequate staff who has all the needed skills to execute any role or task assigned to them during the project implementation

12. Recommendation

- An area should be demarcated solely for grazing.
- The project should support the Directorate with incentives and logistics such as GPS devices, motors or cars and fuel
- To solve the stealing of nuts from farms, a database of all farmers and Agents should be developed to ensure the agents are buying from only cashew farmers and to also help in reporting Agents that are involved in buying wet nuts from farmers.

Environmental Health and Sanitation Department

Engagement Tools/locations: Interview, EHSD Office Wenchi	Date: 28/02/2023	Time: 11:30am
Discussant: Lensen Gertrude, Municipal Environmental Health Analyst - 0209726412		
Consultant: Kwabena Kwakye Mamphye – 0558341865		
Discussions:		
1. Solid Waste Management • Waste management within the municipality has been contracted to ZoomLion Ghana Limited to collect waste and transport to final disposal site at Akrobi. • Waste are usually dumped into waste skips while others are collected using a door to door service (compactor truck) and disposed off at dumpsites. • Segregation of waste is not a usual practice within the municipality, however scavengers visit the dumpsites to collect plastics and metals to sell to recyclers.		
2. Liquid Waste • There are both public toilets and personal toilets within the municipality. • Open defecation and urination is very common in some areas of the community. • Some community members use public and household toilets while others engage in dig and bury and open defecation. • About 68% use household/public toilets, dig and bury 3% and the rest engage in open defecation.		
3. Construction Waste • Construction waste such as broken concrete are mostly used in filling potholes or used as filling material at a construction site. • The cement paper bags are collected by fish mongers and used in rapping their fish when selling.		
4. Agriculture Related Waste • The Department does not monitor the waste generation and management within the farms including the handling of chemical containers.		
5. Recommendations • Farmers should be incentivised to separate their used chemical containers. • In every farming community, there can be points where farmers go to drop their used chemical containers.		

Education Directorate

Engagement Tool/location: Interview/Education Directorate, Wenchi	Date: 28/02/2023	Time: 12:38pm																						
Discussants: Mary Nyarko-Adutum, Municipal Director of Education – 0244959775 David Baffoe, Public Relation Officer - 0247709393 Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327																								
Discussions/Suggestions and Comments:																								
1. Educational Institutions The total number of basic schools in the municipality is 307. The categorisation is presented below:																								
<table border="1"> <thead> <tr> <th>School</th> <th>Public</th> <th>Private</th> </tr> </thead> <tbody> <tr> <td>Kindergarten (KG)</td> <td>71</td> <td>29</td> </tr> <tr> <td>Primary</td> <td>82</td> <td>28</td> </tr> <tr> <td>Junior High School (JHS)</td> <td>72</td> <td>18</td> </tr> </tbody> </table>	School	Public	Private	Kindergarten (KG)	71	29	Primary	82	28	Junior High School (JHS)	72	18												
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Primary	15,992	82.7	85.1	1.1																				
JHS	5,961	86.1	87.3	1.0																				
The major causes of the deflection in the transition rates from KG to primary is migration. People migrate from the Northern and Savannah Regions to the municipality to work, particularly during the harvesting periods of cashew and move back to their place of origin after the work.																								
3. Absenteeism Absenteeism among the students is high during the harvesting period for cashew.																								
4. Teenage Pregnancy - About 40 cases of teenage pregnancies were recorded in 2021 among the BECE candidates but through the efforts of the Guidance and Counselling Unit and Girl Child Coordinator, the cases were reduced to 2 in 2022 - About 40 teenage mothers have been supported to get back to school. - The educational system allows for nursing mothers to still attend school and with that the municipality, had about 11 nursing mothers as candidates for the 2021 BECE.																								
5. Sensitization The Directorate runs a lot of sensitization programmes, including the Right Age Enrolment Programme. Most of their programmes are either done in schools or through radio stations.																								

Health Directorate

Engagement Tool/location: Questionnaire/Health Directorate, Wenchi	Date: 17/03/2023	Time: 1:00pm
Discussants: Obed Adu Amankwa, District Health Information Officer - 0544964363	Consultants: Kwakye Mamphey – 0558341865 Zawi N Barikisu – 0548925327	
Discussions/Suggestions and Comments:		
1. Top Ten Diseases in 2022 Top Ten Causes of OPD Attendance		

Diseases	Cases
Malaria	28590
Upper Respiratory Tract Infections	16628
Diarrhea Diseases	8822
Hypertension	8789
Anaemia	8272
Rheumatism / Other Joint Pains / Arthritis	6859
Skin Diseases	6047
Intestinal Worms	5523
Acute Urinary Tract Infection	5478
Acute Eye Infection	3685

2. Teenage Pregnancy

- Yes, teenage pregnancy is a problem in the municipality.
- Causes or circumstances leading to teenage pregnancy include peer pressure/bad friends/ negative peer influence, inadequate parental supervision/care, divorce/broken homes, inadequate access to reproductive health information at health facilities, schools, early initiation of sexual activities, socio-economic hardship, early marriage, alcohol/substance abuse.
- Awareness creation programs on teenage pregnancy includes weekly radio talk shows, stakeholder’s engagement at service delivery points, churches, schools, home visits.

Cases of Teenage Pregnancy

Indicator	2018	2019	2020	2021
Teenage pregnancies	580	584	615	565

3. COVID-19

Indicator	2020	2021	2022
People suspected with COVID-19 disease	917	891	180
Number confirmed having COVID-19 disease	189	165	32

- Yes, the current state of covid-19 is still a concern especially with a project involving migrant workers.
- The implementation of the project would have a neutral effect on COVID-19 cases.
- On average 1 person is infected with COVID-19 every week
- Majority of the populace are not conscious about the disease, as such, most do not adhere to the prevention protocols

4. HIV/AIDS

- HIV/AIDS prevalence in Wenchi is 3.24%, the 3rd highest in the region.
- HIV stigma is high in the Municipality.
- Most people with the disease keeps it to themselves because of stigma, hence the populace are not aware of the high prevalence, and as such are not much conscious of about the threat of the disease.

Social Welfare and Community Development Department

Engagement Tool/location: Interview/SWCDD, Wenchi	Date: 28/02/2023	Time: 10:30am

Discussants: Abdulai Jimba Ibrahim, Head of Department - 0200860600 Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327	
Discussions/Suggestions and Comments: 1. Child Labour About 12 cases (7 boys and 5 girls) of child labour were reported to Department in 2021. The victims were employed in washing bays or made to carry heavy loads. The main cause of child labour is poverty and ignorance on the parts of the parents. The records of child labour within the municipality are however very low. This is because the Department is not well resourced to carry out its mandate within areas (i.e farming and rural areas) of the municipality where child labour is likely to be prevalent. Aside this, the Department has also not established any committee that could monitor and protect children against child labour. 2. Teenage Pregnancy Teenage pregnancy cases are only reported to the Department when the culprit refuses to take responsibility of the pregnancy, this is known as maintenance cases. The Department recorded about 15 maintenance cases in 2022. The causes of teenage pregnancy could be attributed to poverty and lack of control. 3. PWD There are about 1,250 PWDs in the municipality. The PWDs consist of the visually impaired, physical, mental and the hearing impaired. Most of the PWDs are self-employed and engage in economic activities such carpentry, farming and sewing. About 20% of PWDs are cashew farmers. 4. Early Child Marriage There were 3 cases of early child marriage in 2022, and the main reason for this is poverty. 5. Recommendation • The project should support the PWDs with laborers to facilitate their activities • The nurseries and other input services should be transported to the PWDs farms • Sensitization programmes on child labour should be organised to educate both the parents and children. • The Department should be supported with logistics such as vehicles	

Physical Planning Department

Engagement Tool/location: Interview/PPD, Wenchi	Date: 28/02/2023	Time: 11:57am
Discussants: Akanzinye Nsomah Honoratta, Physical Planning Officer – 0242553375	Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327	
Discussions/Suggestions and Comments:		
1. Demarcation and Other Land Uses There is no specific area demarcated for farmlands. The schemes developed are rather for residential and other land uses. The Agric Directorate could however measure the sizes of the farmlands and provide the Department with data for incorporation into their scheme.		
2. Compensation Before a farmland is converted to other land use, the farmer is duly compensated based on the crops value on the farm.		
3. Recommendation The Department should be informed on the sizes of lands used for farming purposes, so it can be captured into the scheme of development.		

Appendix 6.0: Farmer Groups and Associations – Engagement Outcomes

6.1 Rubber Out Growers Association

Engagement Tool/Location: Interview/Rubber Out growers Association Office, Kade	Date: 16/02/2023	Time: 9:25 am
Discussants: Mr. Fredrick Agyapong Koranteng, Chairman, Rubber Out growers Association – 0243321952 Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh – 0266018989		
Discussions		
1. Child Labour Children do not work on rubber farms. There is a certain level of skill required, for example, in tapping, which children cannot do. The only activity they can be involved in is collecting cup lumps but even this does not happen.		
2. Land Tenure Some farmers own their lands, others farm on family lands or another person’s land and share proceeds with the family or person depending on the arrangement they have.		
3. Farm Size Some farmers have about 5 acres, other have 15 and some have 30 acres and even 50 acres, however, the largest continuous farm size is 30 acres. Those who have more than 30 acres have maybe 30 acres in one location, 10 acres at another location and another 5 acres at a different location.		
4. Production and Value Chain - Rubber trees mature at about 6-7 years, when tapping can begin. The first year is the most critical as the tree requires enough water to take root; once trees survive the first year, there is not a lot of caring work to be done. Farms are weeded only two to three times a year. - Rubber farms are rain-fed, so it is important to time planting well in time for the rains. Some farmers irrigate their farms if they have access to water. - Aside the farmers, there are tappers (those who are skilled in tapping the trees) and collectors (those whose job is collecting cup lumps after tapping). - Collectors gather the cup lumps to a dumping station on the farm after which cup lumps are transported using aboboyaa to a centre in town where Rubber Plantations Ghana Limited (RPGL) (private company) buys them. The lumps are weighed and farmers are issued invoices based on weight. Payments are made monthly. - Farmers sell only to RPGL. There was a project involving RGPL, National Investment Bank and KfW, which started in 2013, where KfW made funding available to NIB for farmers to be able to establish their farms. RPGL provides cuttings and extension services to farmers and farmers sell to RPGL. The first phase of the project has ended and the second phase is yet to begin. - Rubber trees produce latex their entire lifespan but it gets to a point where the productivity is very low, usually after 40 years. They are also very good timber trees and can be used for plywood, veneer, etc. - A lot of farmers want to expand their farms but do not have the means (financial capital and land) to do so. - It is possible to intercrop plantain, yam, ginger, etc with rubber before the canopy closes, usually within the first 5 years. - Rubber doesn’t do well in swampy areas.		
5. Women in Rubber There are a few women farmers, some own their farms. Majority of the women are collectors and a few are tappers.		
6. Pests and Diseases		

• This is not a big issue on farms. There have been instances where root disease, a fungal infection, has killed some trees but not on a devastating scale. This disease affects trees around 5 years old. When a tree is infected, it is promptly treated to avoid spreading to other trees. • At the initial stage, termites are a bit of a problem so termiticides are used to ward them off. • Pesticide containers were formerly used as additional fuel to burn rubbish but now they are just collected.
7. Fertiliser Use • NPK is applied on 2-3 year-old trees. Application depends on ability to buy. The nature of the soil and the rubber tree itself is such that there is no real need to apply fertiliser as rubber is an efficient nutrient recycler.
8. Labour • Every farmer has their own payment arrangement with anyone they hire. Some farmers hire by-day laborers, other pay their workers a monthly salary and some pay their workers an agreed percentage of total proceeds (for tappers and collectors). • Some farmers have permanent workers for tapping but not for weeding.
9. Health and Safety • The cup lumps, when collected, give off a very unpleasant smell. There has not been an incidence where someone fell ill from the smell. It is just unpleasant. • The only PPE used among farmers, tappers and collectors are wellington boots.
10. Post-harvest Losses • There is nothing like that in rubber. The cup lumps can be stored for up to 4 months and will not go bad.
11. Bush Fire • There was an incident a few weeks ago where a 2.5 acre farm got burnt. Someone was burning their farm nearby and it spread onto this farm. Aside this, bush fires are not really a problem.
12. Yield • Some individual trees in themselves do not produce much latex compared to others. • Seasonality also determines latex flow • Tapping technique also determines latex flow. If tapping is not done well, flow is low.
13. Deforestation and Forest Degradation • Rubber cannot be planted under forests, whether primary or secondary. Land has to be cleared completely before planting. It is possible that deforestation and forest degradation can occur in the quest to expand farms. • Rubber is also an easy species for afforestation as it easily takes shape and has a thick canopy when it closes, usually after 5 years.
14. Food Security Risk • It is possible that people can convert their food crop farms to rubber only farms due to the financial gain rubber presents. • Specialisation can be a good thing. If Kade becomes a hub for rubber, people can be able to buy foodstuff from other places that have specialised in food crop farming.
15. Threat of Illegal Mining • This is not a problem for rubber. Farmers are hardly willing to sell their lands to illegal miners due to the immense financial gains rubber has. This is a problem for cocoa farmers though.
16. Other Concerns • The Agriculture Directorate is not able to assist farmers because they do not have the requisite knowledge about rubber farming.

6.2 Rubber Farmers

Engagement Tool/Location: Focus Group Discussion/Kade		Date: 16/02/2023	Time: 10:48 am
Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh - 0266018989 List of Participants			
Name	Contact Number	Name	Contact Number
Evans Aboagye	055349374	Yaw Tsivanyo	0240657574
Francis Arhin	0249772089	Kpego Mawuli	0556822116
Emmanuel Afari	0507976225	Sylvester Kpeglo	0543673799
Kwadwo Mensah	0246428037	Amponsah Dacosta	0240303022
Kwesi Appiah	0557444752	Isaac Sintim Owusu	0242153810
Edward Adu-Poku	0244851928	Dzivor James	0257565500
Michael Asare Amponsah		Nkrumah Emmanuel	0554833114
Stephen Denkyi	0595110586	Antwi George	0246873477/0548349391
Kingsley K. Gyasi	0249413215	Kwadwo Essel	0554813868
Awuku Ernest Dzior	0247298968	Justice Amoako Atta	0242533108
Addo Maclean	0241256168	Boadu David	0247090659
Evans Nyamekye Amihere	0248547915	Ani Kwadwo	0549016657
Daba Marter Jobil	0248837572/0501885619	George Nkansah	0249808982
Tetteh Abu	0249137390	Atta Kwasi	0592404242
Andrews Gano	0249137390	Frederick Yeboah	0244684695/0208185082
Kwasi Kaba	0247952642	Addo Maclean	0248836496/0241646196
Solomon Gyemaga	0541566386	Kofi Sikepe	0242333168
Jacob Alorkpa	0553154828	Maxwell Abbey	0241738239
Benjamin Alorkpa	0553154828	Isaac Teye	0243673961
Kofi Tsivanyo	0540777623	Richard Owusu	0248137768
Discussions			
1. Child Labour Children do not work on rubber farms. There is a certain level of skill required, for example, in tapping, which children cannot do. Extension officers have also made them understand that any person under 18 years is not allowed to work on farms.			
2. Land Tenure Some farmers own their lands, others farm on family lands or another person's land and share proceeds with the family or person depending on the arrangement they have (some share a third of proceeds with land owners)			
3. Production and Value Chain - Rubber trees mature at about 6-7 years, when tapping can begin. The first year is the most critical as the tree requires enough water to take root; once trees survive the first year, there is not a lot of caring work to be done. Farms are weeded only two to three times a year. - Rubber farms are rain-fed, so it is important to time planting well in time for the rains. Some farmers irrigate their farms in the dry season if they have access to water.			

• Collectors gather the cup lumps to a dumping station on the farm after which cup lumps are transported using aboboyaa to a centre in town where RPGL buys them. The lumps are weighed and farmers are issued invoices based on weight. Payments are made monthly. • RPGL trains extension officers who then train farmers and tappers. The company absolves all training costs. • A lot of farmers want to expand their farms but do not have the means (financial capital and land) to do so. • It is possible to intercrop plantain, yam, ginger, etc with rubber before the canopy closes, usually within the first 5 years. Cassava is however problematic because it interferes with the rooting system of the rubber trees. • Rubber doesn't do well in swampy or waterlogged areas. • Cup lumps must be removed from cups daily and new latex must not be collected onto old ones in the cups. Lumps should be kept in the open air and not in hot places.
4. Women in Rubber • There are a few women farmers, some own their farms. Majority of the women are collectors and a few are tappers.
5. Pests and Diseases • There have been instances where root disease, a fungal infection, has killed some trees but not on a devastating scale. When a tree is infected, it is promptly treated to avoid spreading to other trees. Treatment is by digging around the tree and applying SUM-8 (fungicide). Ash can also be applied as a first aid. Some trees do not survive even after treatment. • SUM-8 is packaged in sacks and these are usually burnt.
6. Fertiliser Use • Urea can be applied at the tapping stage.
7. Labour • Every farmer has their own payment arrangement with anyone they hire. Some farmers hire by-day laborers, other pay their workers a monthly salary and some pay their workers an agreed percentage of total proceeds (for tappers and collectors). • Workers do not have contracts.
8. Health and Safety • The cup lumps, when collected, give off a very unpleasant smell. The health effect of the smell is unknown. One way to reduce the smell is to keep cup lumps on pallets to allow some water to drain from them. This however reduces the weight of the lumps and so farmers opt to keep them together in containers or in bunches on the ground. • Farmers and tappers usually suffer waist and knee aches when the lower end of the tree is being tapped. To alleviate this, there are automated tapping machines but those are not used here. Tapping requires movement and cannot be done sitting. • Farmers usually get cuts during tapping as the knife used is very sharp. • If the farm is overgrown, there may be snakes. Weak tree branches could also fall and hit someone. • The only PPE used among farmers, tappers and collectors are wellington boots.
9. Theft • There haven't been any recorded cases, mainly because there are no side-buyers or other middle men. All farmers sell to RPGL. Theft could occur if there are side-buyers or other middle men.
10. Post-harvest Losses • There is nothing like that in rubber. Only the part of the bark that is chipped during tapping is discarded.
11. Bush Fire • There was an incident a few weeks ago where a 2.5 acre farm got burnt. Someone was burning their farm nearby and it spread onto this farm. Aside this, bush fires are not really a problem. Fire belts are used as a preventive measure, usually in the dry season.
12. Yield • Tapping technique determines latex flow; if tapping is not done well, flow is low. Farmers have begun advocating for tappers to be certified/licensed to deter people who are not trained tappers from providing tapping services and causing losses to farmers since they do not do it well. • Timing of tapping also affects latex flow. The ideal time to tap is between 4am – 9am. Tapping can also be done from 4pm to the next day provided it does not rain as rain destroys cup lumps still in the cups.

- There is still latex in trees that are more than 40 years old, but it could happen that due to tapping over the years, trees could have injuries or wounds that inhibit latex flow.
- Trees with lower latex yields are cut down and new ones planted in their place.
- During the rainy season, cup lumps still in the cups can be destroyed when it rains as acid build up in it.
- Latex flow is low in the dry season, especially when trees have lost their leaves.

13. Food Security Risk

- It is possible that people can convert their food crop farms to rubber only farms due to the financial gain rubber presents. It is already happening that people can easily get land for rubber farming but difficult to get land for food crop farming. In the Western Region, food crop farms are being converted to coconut and other cash crop plantations.
- Specialisation can be a good thing. If Kade becomes a hub for rubber, people can be able to buy foodstuff from other places that have specialised in food crop farming.

14. Threat of Illegal Mining

- This is not a problem for rubber. Farmers are hardly willing to sell their lands to illegal miners due to the immense financial gains rubber has. This is a problem for cocoa farmers though.

15. Other Concerns

- The Agriculture Directorate is not able to assist farmers because they do not have the requisite knowledge about rubber farming.

6.3 Cocoa Farmers

Engagement Tool/location: Focus Group/CHED's Yard, Asamankese	Date: 16/02/2023	Time: 9:30pm
Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Participants		
Name	Institution	Position
Larbi Emmanuel	Kwakusae Cocoa (Cocoalife)	President
Ntow Apenteng	Kwakusae Cocoa (Cocoalife)	Secretary
Faustina Kwapong	Kwakusa Cocoa (Cocoalife)	Women Rep.
Akumaa Adjatery	Brekumanso Cocoa Cooperative	Treasurer
Ebenezer Atieuro	Brekumanso Cocoa Cooperative	Member
J.Y. Mante	Amaforo Cocoa Cooperative	Member
Otopa Johnson	Amaforo Cocoa Cooperative	Member
Owusu Ansah Samuel	Asafoatse Cocoa Cooperative	Member
Alice Ampomaah	Asafoatse Cocoa Cooperative	Member
Paulina Tetteh	Asafoatse Cocoa Cooperative	Member
David Nartey	Anuado Cocoa Cooperative	Member
Atsu Francis	Anuado Cocoa Cooperative	Member
Contact		
Discussions/Suggestions and Comments:		
1. Production		

Land preparation for cocoa works start in February and continues with the nursery which is from May to June. A cocoa tree takes about 4 to 5 years to bear fruit.

After the plucking the fruits from the tree, the cocoa beans are fermented for about 6 days either on their farms or at the homes. After the fermentation the cocoa beans are dried up for about 5 days. The beans are then bagged after drying and sent to the shed of the purchasing clerk.

Cocoa is harvested in two major seasons i.e major and the light. The light season is from July to September and the Major season is from October to May. However, the major season cycle is now changing to December-January.

2. Laborers

COCOBOD only provides laborers for farmers whose cocoa trees have been cut down due to the CSSVD. The laborers assist in the planting of seedlings and spraying of the farms for about two years. The laborers are however not able to work on everyone's farm before the duration of a particular activity passes. Due to this the farmers engages the services of casual workers (By-day Workers). A By-day worker charges GHS50.00 a day.

3. Input Services

Laborers and input services (nursery, ammonia, etc) are provided by COCOBOD to the farmers whose trees have been cut down. COCOBOD also help them in naturing and maintaining the farm until two years when the farmers are well equipped to take over the farms. But for a farmer who is about starting a new cocoa farm, COCOBOD only provides them with free seedlings. COCOBOD also do not support farmers whose land sizes are less than an acre with input and extension services.

The inorganic fertilizers that need to be applied to the farms, after 10 years are however paid for by the farmers but at a subsidised price. The fertilizer is however still expensive to buy because of the increase in price even though COCOBOD provides a discount of 15% for them.

4. Diseases and Pest Infestation

- The most common types of diseases that affect the cocoa tree are black pods (Anunum), CSSVD and Capsid (Akate). Capsid could affect the tree right from the nursery stage till its maturity.
- Black pods infect the pods, stem, etc and mainly occur in the rainy season i.e from May to June. The disease is treated through the application of agrochemicals, pruning and weeding.
- The CSSVD causes the swelling of cocoa shoots. It is mainly transmitted through the roots of the trees and can affect the whole cocoa farm in no time. Its main mode of treatment is by cutting down the trees and replanting. But the rehabilitation procees of the farm mostly delay. CHED also captures the farmland into their system when cutting down the trees.
- Aside CSSVD all other diseases and pest infestation of the cocoa tree can be treated through the appropriate application of agrochemicals.
- Diseases and pests reduce the yield of the cocoa tree.

5. Other Livelihoods

Cocoa life and CHED provides other livelihood training for the farmers. This includes training them on rearing of livestock, baking and practicing of intercropping.

6. Pesticides and Agrochemical Use

- The farmers are being given one bottle ammonia fertilizer every year but does not need to be applied after the fourth year. At the fifth year a liquid fertilizer is then applied. Also, inorganic fertilizer is applied from tenth year.
- Some of the farmers practice the triple rinsing method of handling the chemical containers after use. They also punch hole into the container to render it not useful for any domestic usage. Others also have bins in the farms where they keep the containers until a recycling company comes for them, while some also bury the containers on their farms.
- They have been educated and trained by the extension officers to use PPE during farming activities particularly, during spraying but they are not able to keep up with this advice due the costly nature of the PPEs. COCOBOD only provides PPEs for the Mass sprayers an not the farmers.

7. Post-Harvest Losses

The farmers only record post-harvest losses when the fruit is over ripped or the cocoa beans are not well dried. This causes the purchasing clerks to reject their produce. This practice also reduces the quality of the cocoa bean.

The spoilt beans are either sold to “Abinkyi” at GHS120-GHS150 and they use it for soap, etc. or thrown away.

8. Loss of Yield/Farm Loss

Low soil quality, disease and pest infestations and low amount of rainfall affects the yield of the cocoa trees. Also, causes of farm loss in the area could be attributed to:

- Low or no rainfall;
- Wrong application of agrochemicals; and
- Conflict between the owner and the tenant (farmer). This is major challenge in the area because the owner can just decide to compensate the farmer while he cut down the cocoa trees and give out for rubber plantation.

9. Land Tenure

Majority of the lands in the area are stool lands, which requires a tenant to pay yearly to the traditional authorities. However, majority of the farming lands in the area leased out on the terms of Abunu and Abusa. Abusa is where one is being hired as a caretaker by the owner of the cocoa farm. The caretaker bears the cost involved in ensuring the maintaining the farm, i.e buying of agrochemicals, weeding etc. The profit from the produce of the cocoa farm is however divided into three where the owner of the farm takes two third while the caretaker takes one third.

Abunu on the other hand, is where one takes the farmland from the traditional authorities and share it with other farmers. Where the other farmers grow food crops in addition to cocoa, the owner of the farmland takes one third of the food crops, but the produce of cocoa is shared equally. He makes the yearly payment to the traditional authorities.

10. Child Labour

The farmers are well educated on child labour by the Ccocoa life and CHED. They understand child labour as the engagement of children in works that are hazardous to their health or deprives them of going to school. According to the farmers, the involvement of children in farming activities could cause their certificate of cooperatives to be withdrawn. They also acknowledge that most of the farming activities are hazardous to the health of the child.

Children are below the age of 18 years are engaged in fetching of water on the farms, picking of cocoa pods after being plucked from the tree and gathering of cocoa beans. They are however not allowed to work for more than two hours.

There are Child Protection Committees (CPC) within each of the cocoa cooperatives in the communities. The CPC mostly does monitoring to reduce the use of child labour and also educates parents on situations where children are found on the farm. But should it persist, the parent of the child is reported to the police by the committee for appropriate redress. Also, Child Rights, which is an NGO also does data collection of child labour on within the district, their focus is on children from the age of six years and above. This is also used as a medium of monitoring the use of child labour on the farms.

11. Tree Crop Affecting Other Crops

Is very possible that the implementation of the project within the district would affect cocoa farming. There are instances where people have converted their cocoa farms to oil palm and rubber farms

12. Bushfires

Bushfires is not a major occurrence, as there have not been any record. They been educated and encouraged to create fire belts around their farms and also practice control burning should the need be. The last records of bushfire within the district were 2013 which destroyed about half of a farm size. The causes of the bushfires could be attributed to the activities of hunters, palm wine tapers and burning of weeds.

13. Deforestation

The farmers do not cut down trees because the cocoa trees also need shade. CHED also provides them with plantain suckers, which also aid in providing shade for the trees. The plantain also provide water for the cocoa tree during the dry season due to its ability to withhold water. The plantain also serves as other source of livelihood to the farmers during the rehabilitation process of the farm.

14. Compensation

COCOBOD compensates farmers whose cocoa trees have been cut down due to CSSVD. An amount of GHS400 is paid per acre as compensation to the owner of the land and the farmer. The amount is then shared between the owner and the farmers based on the land tenure system. For the Abusa system, the farmer does not get any share of the amount given while with the Abunu system, the owner of the land and the farmer shares the amount given equally. There are however some delays in the payment of the compensation.

15. Transportation

Transporting of the nursery from either SSPD Station or the satellite station to their farms is very expensive. The transporters charges GHS0.50 per nursery.

16. Waste

When the trees are cut down during the during the rehabilitation process, the branches and stems are used for firewood while the leaves are left on the farm to decay.

17. Water Supply

- Watering of cocoa farms are mostly dependant on rainfall
- Almost all the water resources in the district are contaminated by Galamsey activities.
- The farms are usually very far away from water sources

18. Challenges

- The laborers are not well trained and as a result they end up cutting down some of the trees.
- The machines meant for pruning are also very heavy.
- The compensation for the farmers whose trees is cut down are mostly delayed.

19. Recommendations

- COCOBOD should provide them with the fuels for the spraying machines.
- The spraying machines should be under the management of the cooperatives.
- COCOBOD should assist in conducting soil test on farms before giving out seedlings.
- Irrigation should be considered during the implementation of the project.

6.4 Female Cocoa Farmers

Engagement Tool/location: Interview/ WMA, Asamankese	Date: 16/02/2023	Time: 1:30pm
Discussants: Faustina Kwapong, Women Rep-Kwakusa Cocoa (Cocoalife) - 0201385913 Alice Ampomaah, Member- Asafoatse Cocoa Cooperative - 0543382750 Paulina Tetteh, Member- Asafoatse Cocoa Cooperative - 0208348508 Akumaa Adjatery, Treasurer- Brekumanso Cocoa Cooperative - 0207673050 Consultants: Kwakye Mamphey – 0558341865 Zawi N Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Access to Input Services Women are provided with land size that need for their farming activities. They also have access to input services such as seedlings, fertilisers, etc.		
2. Sexual Harassment Women involved in agriculture, particularly the tree crop sector have never been sexual harassed by their male counter parts before.		
3. Low Participation of Women in Extension Training Cooperative meetings or extension trainings are mostly characterised with low participation of women as compared to the men. This due to the domestic and other economic duties they engage in outside farming hours.		

4. Recommendation

- Credit loans should be provided for the farmers to enable them buy other type of fertilizers needed for their farms
- The spraying machines should be given to the various cooperative unions within the municipality

6.5 West Akim Coconut Farmers Association

Engagement Tools/locations: Interview/ WMA, Asamankese	Date: 17/02/2023	Time: 2:30 – 3:00pm
Participant: Omani Awuah Kingsley, President – 0543949872		
Consultant: Kwabena Kwakye Mamphey – 0558341865 Barikisu Nasiru Zawi – 0548925327		
Discussions:		
1. Coconut Farming and Farm Size Coconut farming is an upcoming industry within the West Akim municipality. This started within the last 3 years and the farms haven’t got to the fruiting stage. Currently the total coverage of coconut farm is about 50 acres with the farm size ranging from 1-10-acres.		
2. Land Availability Because coconut grows well in damp areas, land availability is a challenge within the municipality due to the scarcity. The lands within the municipality are mostly family lands and the “Abunu” structure of farming is not embraced by most farming demotivating them from going into it.		
3. Farm Inputs One of the major challenges with coconut farming is the unavailability of seedling. The fast-growing sector demands large quantities of seedlings which are not being met due to unavailability of nurseries within the farming areas. Other farm inputs such as pesticides and fertilisers are available on the market for sale.		
4. Workforce Coconut farming does not demand a large workforce since it involves minimal effort. Farmers either high laborers or do the farm works by themselves depending on the farm size. The hired workers are mostly “by-day” workers where they are paid at the end of the day’s work. These workers are not covered under any form of insurance. They engage in activities such as periodic spraying and weeding of the farm.		
5. Insect and Pest Infestation Beetles are most problematic insects affecting farms within the municipality. When they attack the tree, it destroys it and can easily spread to other trees. It is mostly advised to fence the affected tree to prevent it from spreading. Due to the hardened nature of the beetle, there are currently no insecticides that can be used in fighting them.		
6. Pesticide and Agrochemical Use Farmers who use agrochemicals do not usually have their PPEs on during this activity. Most farmers also do the spraying themselves and do not use certified sprayers.		
7. Child Labour Due to the skill required in handling coconut seedlings and growing them, children are usually not involved in the farming activities.		
8. Females in Coconut Farming Because coconut farming is now coming up there are a few farmers engaged in it. There are about 3 female farmers within the association with a total farm size of 3-acres (one each).		
9. Challenges		

The major challenge with coconut farming is beetle infestation.

Seedling provided are not enough and as of last year only 10 acres of seedlings were provided for distributions within the district.

10. Recommendation

Farmers should be provided with more seedlings and ones that have a faster maturity rate.

6.6 Private Nursery Operator – Henry 86 Enterprise

Engagement Tool/location: Interview/Wenchi	Date: 28/02/2023	Time: 2:45pm
Discussants: Henry Osabutey, Director - 0502209292	Consultants: Kwaky Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327	
Discussions/Suggestions and Comments:		
1. Production The firm produces about 2,000 nurseries annually. The production capacity is however determined the contracts they get within a year. The contract terms also include transporting it to the client’s location.		
2. Agrochemicals The chemical containers were burnt until EPA advised them to stop and rather keep the containers for collection by the agrochemical companies. But the programme has not yet been initiated as suggested by EPA and as such they have resulted to disposing of into bins.		
3. Laborers The laborers are either monthly or commission workers. Each of the nursery farms have 3 workers constituting 2 attendants and 1 manager. The managers are paid GHS800 while the attendants are paid GHS 400 monthly.		
4. Association The association for the private nursery operators is called Association of Private Tree Crop Nursery Organisation with some of the members located in Kintampo, Tumu, Techiman, Sunyani, etc.		
5. Challenges • Selling of the nurseries to the farmers is one of the biggest challenges faced by the private operators. • The private operators do not have scion banks but depend on that of the Agric Station.		
6. Recommendation • The capacities of the nursery facilities need to be expanded to meet the demand • The project should support the operators with mechanised boreholes • Scion banks should be developed or established for each of the individual nursery operators		

6.7 Wenchi Cashew Buyers Association

Engagement Tool/location: Interview/Akrobi, Wenchi	Date: 01/03/2023	Time: 11:50am
Discussants: Osei Eric, Vice Chairman – 0203621552 Ali Awudu, Member – 0246572220 Saliu Ansomanh, Member – 0556660621 Osei Kuffor Benjamin, Member - 0249956114		
Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Drying of Cashew Nuts		

Although the Association had advised its members to desist from buying wet nuts, the interest expressed by some of buying companies motivates them to also buy them wet from the farmers. Hence, the directive of asking the farmers to dry the nuts till a 10% moisture content is obtained cannot be enforced.

2. Climate Change

Rainfall serves as treatment for some of the diseases that affect the cashew tree, thereby increasing the quality of nuts obtained. But then again, it makes it difficult for farmers to harvest during this period, making the nuts absorb the water and hence decreasing the quality of the nuts.

3. Challenges

Most of the Agents who are not registered with any of the buying companies go in for loans to purchase the nuts from the farmers. After purchasing the nuts, some of the buying companies either buys them at a reduced price or on a credit basis, reducing their profit margins or making losses.

4. Recommendation

- The buying companies should be regulated and asked to buy only the dry nuts.
- The farmers should also be sensitized on the benefits of drying the nuts before selling them to Agents.
- The Association should be provided with grants to build warehouses to facilitate their activities.

6.8 Individual Agent

Engagement Tool/location: Interview/Wenchi	Date: 28/02/2023	Time: 3:00pm
Discussants: Henry Osabutey, Director - 0502209292	Consultants: Kwaky Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327	
Discussions/Suggestions and Comments:		
1. Pricing of the Nuts The nuts are bought at any price as desired by the buying companies. For instance Olam buys a kg at GHS10.20 while Usibras buys at GHS9.40. Some of the buying companies include Olam, Usibras etc.		
2. Drying of Cashew Nuts The Agents most at times buys wet nuts from the farmers. This act has of buying the wet nuts has affected quality of nuts produced bought from Wenchi. Hence, the Kernel Outturn Ratio (KOR), which is used in determining the quality of nuts is 42% for Wenchi and 52% for Sampa.		
3. Recommendation The agents should be employed and trained by the buying companies to regulate their activities. Also, each of the buying companies should have a warehouse in each of the cashew producing communities or MMDAs.		

6.9 CropLife Ghana

Engagement Tools/locations: Interview/FSD-FC, Accra	Date: 3/02/2023	Time: 10:00am
Discussants: Kadiri Rashad, Programme Manager– 0249689725		
Consultants: Yaw Amoyaw-Osei – 0243223864 Mavis Tetteh – 0545065083		

Discussions:**1. CropLife Ghana**

CropLife Ghana is an association affiliated to CropLife International which represent the plant science industry worldwide. CropLife Ghana represent the plant science industry in Ghana. CropLife Ghana is a membership driven organization whose members are basically into the manufacturing, importation and distribution of pesticides and fertilizers. Its activities of plant protection (protection of all crops including tree crops) takes into account the entire cycle of identifying the right pesticides through to buying, transportation, storage, application, disposal and the use of PPE's by the farmers. It has control over close to 80% pesticides companies in Ghana (i.e, about 80% of pesticide companies in Ghana are members). CropLife has a total of eight (8) personnel who have been trained on the safe and responsible use of pesticides and can offer training to farmers.

CropLife is premised on the following:

Stewardship

- Safe and responsible use of pesticides and fertilizers
- Handling empty pesticide container (empty pesticide container management programme)
- Advocacy and regulation which is done in close proximity with CCMA (EPA) and PPRSD (MoFA). It involves the advocacy or the fight against the sale of counterfeit and other illegal pesticides in Ghana

2. Work Structure of CropLife

CropLife works on project basis. (For instance, on the World Cocoa Foundation Project, CropLife worked on the farms of its member companies who work with World Cocoa Foundation and in the Global Gap Farm Assurance Project, CropLife worked on the farms of its member companies who work with Global Gap Farm Assurance.

3. Activities of CropLife Ghana

- Train and build capacity of farm hands on safe and responsible use of pesticides through face-to-face and digital systems (SMS and voice) training.
- Sensitization and education of farmers to reduce residue levels and mitigate farmers exposure to pesticides as well as promote the use of PPE's and also ensure environmental safety.
- Training on the empty pesticides management programme. The programme educates and provides farmers with collection cages where they are required to deposit used pesticide containers. To ensure this is practiced by the farmers, member companies are motivated with paraphernalia and other discount on purchases packages with which they also motivate farmers. The programme will enable reduction in counterfeit production as containers are taken back.
- Exposure rate of pesticides has to do with handling, storage, application, spraying and cleaning of the containers. As part of the container management programme, the farmers are trained on how to triple rinse their containers after use. Triple rinse technique according to Food and Agricultural Organization Standards contributes to the removal of about 90% of the chemical residues in the container.
- The use of pictorial sensitization materials such as posters and brochures showing processes to follow in pesticide application, storage, etc. to enhance easy learning and adoption by farmers.
- Recycled pesticides containers were formerly assembled at a CropLife facility at Pokuase to be sorted and segregated into HDPE and PET materials and sent to Turkey to be recycled into materials for undomestic purposes (such as underground pipes). But after some of the materials were recycled for domestic purposes, they are now sent to Mini Plasts, a subsidiary of Interplast to be recycled. A talk is ongoing to bring on board a facility at Kumasi who will recycle the materials into biodigester.
- Research has also shown the containers can be recycled into construction materials.

4. Integrating Empty Pesticide Management Programme as part COCOBOD and TCDA Roles

- The programme can be considered as a subproject with oversight supervisory role by TCDA and COCOBOD. On the other hand, CropLife in tangent with COCOBOD and with the supervisory role by EPA can embark on the programme.

5. Establishment of Agricultural Input Centres

- The establishment of the Centre to serve as a one-stop shop centre for agric-input will be advantageous as collection cages for empty pesticide containers could be positioned at the Centres to collect empty pesticide containers. The main concern of agricultural inputs is with its availability and accessibility. The inaccessibility of farm inputs especially pesticides and fertilizers could result in misapplication of these chemicals (i.e below recommended levels). The Centres should be sited close to the farming

communities where farmers could easily access them. A reasonable distance should be considered for the siting of the Centres (for instance, it could be less than 5km, but it might not apply to all the Centres).

6. Establishment of Nursery Centres

Nursery Centres should be sited in close proximity to agricultural input centres for easy access to farm inputs..

7. Certification

- The Global Gap Farm Assurance (a Fruit and Vegetable Certification Body) awards certificate to farmers who have pesticide container management programmes in place. This certification process can be adopted, such that farmers who have undergone the empty pesticide management programme are certified. This will serve as a motivation to the farmers to return empty pesticide containers.
- Certification seal should include EPA, COCOBOD and CropLife Ghana.
- A similar certification program can be adopted for child labour (but CropLife Ghana do not encourage children. and women participation in pesticide usage).

8. Recommendation/Suggestions

- Relevant stakeholders should collaborate to develop minimum requirement standards for PPE's for farmers and also develop community alternatives with local materials.
- Personnel for COCOBOD spraying guns should also be trained.

6.10 Wenchi Municipal Cooperative Cashew Farmers and Marketing Union Limited

Engagement Tool/location: Focused Group Discussion/Wenchi	Date: 28/02/2023	Time: 9:30am
Discussants: Nsiah Robert, Chairman – 0541497878 Yahya Abubaro, Secretary - 0241085524 Ibrahim Yaya, Organiser – 0247840774 Alhaji Mohammadu, Member – 0244092619 Queenstar Frimpomaah, Member – 0554633620 Salifu Gausu, Member - 0244459731 Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327		
Discussions/Suggestions and Comments:		
1. Membership The Union has about 6,000 members with about 20% females, made of both farmers and agents/aggregators. It has various committees including the executive board, environmental, quality and production, child labour committee, discipline committee, etc. The Union is registered with Fairtrade, an organisation based in Germany, whose aim is promoting the welfare farmers and laborers. The union is responsible for • Providing training for its members on cashew growing, • Ensure the high quality of nut is maintained through training, • Obtain purchasing orders for its members and ensure the members are paid adequately for their produce • Obtain funding/grant and farm inputs for its members • Monitor and regulate the operations of its members as well as sanction members who go against the constitution of the union		
2. Obtaining Seedlings from Nurseries		

Seedling for planting can be obtained either from the Agric Station or private nurseries. Some NGO's like African Cashew Initiative usually pays the Agricultural Station to produce for the Union for free. But when they fail to get any sponsorship from an NGO, the farmers tend to pay for the seedlings. They buy the seedlings from the Station at GHS4 and at GHS5 from the private nurseries.

Transportation of the seedlings to the farm gate is a major due to the high cost involved. The seedling are also delicate and if not handled carefully it could get destroyed while in transit.

The Agricultural Station provides the farmers with free nurseries, but the farmers bear the transportation fares of transporting it their farms. The farmers however buy the nurseries from the private operators at a discount price when the Station runs out of stock.

3. Farm Size and Labour

Almost 70% of agricultural lands in the municipality are used for cashew farming. The farm size ranges from 2 to 250 acres. Aside individual ownership, there are also companies who have farms within the area.

Majority of the labour force used by individual farmers is casual labour while the companies use both employed labour and at times casual labour. Laborers for individual farmers are usually paid on a per day ("by day") basis (mostly GHS 40-50) or on a contract basis where the farmer goes into an agreement with the laborer to carry out some task at a lump sum rate. During picking season, some farmers also pay their laborers with a small paint bucket filled with nut at the end of the picking day. This is done mostly when the farmers cannot afford to pay the laborers in cash.

4. Land Tenure

There are 3 main ways of obtaining land for cashew farming within the area and this includes family land (inheritance), lease of land and the "Do ma yen ky3" system where the farmer goes into an agreement with the landowner to grow and maintain the farm and at the end of each year, the produce is shared equally between the two parties for some agreed number of years (mostly 8 years), after which the farm is now divided into two equal halves where both parties take one each.

5. Women in Farming

Cashew within the area is predominately grown by men and majority of these men work with their wives on the farm with the perception that the farm belongs to the couple, however the operation of the farm is led by the males. Most females who own cashew farms are mostly obtained through inheritance from their family or when they lose their husband.

6. Water Supply

Water is very essential at the early stages of cashew farming for the watering of seedling. The current source of water are streams close to the farm and during the dry season, these streams dry up making access to water a challenge.

7. Input Services

Farm inputs such as fertilizer, pesticides, etc are obtained from agrochemical shops within the area. Other input services such as chainsaws and spraying machines are hard to come by for retail. Farmers also obtain extension services from the Agric Department of the assembly.

The Agriculture Department provides adequate extension services on pruning, spacing, quality, harvesting and group management. The only issue about the extension services, is that the number of attendees that are mostly requested for is very limited. They sometimes require the Union to provide just about 5 members for training programs.

8. Diseases and Pest Infestation and Agrochemical Use

The most common disease currently being experienced in the area is the die back disease.

The Brazilian Kernel introduced into the system by the Agric Directorate are susceptible to cold weather conditions. The nuts from such trees begin to rot when exposed to cold weather conditions or some small amount of rainfall. This has been the major contributing factor to the poor kernel outturn being experienced with the cashew produced within the Wench Municipality.

Fertilisers are usually used in the farming activity. Weedicides are also used as a quick remedy for weeds. The farmers do not mostly put on their PPEs when using these chemicals with the excuse of it being uncomfortable. Chemical containers are also buried in the farm after use.

9. Other Livelihoods

Almost all the cashew farmers do not only farm cashew but also engage in the farming of other crops such as cocoa, coconut, maize, cassava, etc.

10. Theft Issues

Theft is a major problem for cashew farmers mostly during the picking season. Cashews are made to drop before they are picked and the nut are removed for drying. However other persons visit the farm at dawn to pick up some of the nuts prior to the farmers arrival. Also due to the large sizes of some farms, when the farmer and his laborers are at a section picking, other individual may also be at distant sections of the farm also picking. There are also instance where the Fulani herdsmen take their cattle to the farms to feed on the dropped cashew and the end up taking in both the cashew and the nuts, which is later collected from the dunks of the cows. The stolen nuts are mostly sold to the agents in a wet form.

11. Farm Loss & Low Yield

Lack of maintenance is also a key cause of low yield. For cashew, the maintenance activities include pruning, thinning and application of fertiliser to enrich the soil nutrients. Most farmers are unable to carry out the maintenance activities leading to low yield. The noncompliance with the spacing when planting the cashew seedlings also affects the productivity.

Currently, the general yield of farms has reduced. This is largely affecting the income of the farmers.

12. Deforestation

In growing cashew during the land preparation activities, all trees on the land will have to be cleared for effective lining and pegging as well as allowing the cashew to have enough room for growth.

13. Waste

- Lots of waste is generated from the cashew fruits. The Union generates total about 17,000 metric tonnes of waste annually (cashew fruit).
- Only 25 tonnes of the fruit produced is processed into fruit juice by Natu Processing Company.

14. Child Labour

The child labour committee of the Union does frequent monitoring on the farms, particularly during school hours to ensure the services of child are not employed. When a member is found engaging the services of a child on his farm, the disciplinary committee issues a communique to the Union, and with that the Union stops buying cashew from such famer. With such measure the said farmer would also not benefit from the premium paid that year.

Children of the farmers above the age of 12, however accompany their parents to the farms on weekends during harvesting periods. The children are given a portion of the nuts they gather to motivate them to learn more about the trade.

15. Cashew Nut Purchasing

The purchasing of the nut currently lots of problems associated with it. According to the directives of TCDA, farmers are to dry their nut to achieve a 10% moisture content, however, due to the high demand and threat of price reduction by the aggregators, farmers end up selling their cashews to aggregators without drying. Due to this the farmers are unable to dry their produce and take out the bad nuts to sustain a superior quality of nuts on the market.

The buying of wet nuts also promotes theft since the stolen nut can be sold right after picking without any checks on where the produce is from.

Also, the purchasing companies have different prices for buying the nuts even though they may no be below the set minimum price. This makes it difficult for aggregators who are registered with companies with lower rates since all the farmers would want to sell to the highest bidder. Some aggregators give farmers money ahead of picking season to supply them with nuts.

16. Fire

Cashew trees can grow back within three years after it has been affected by fire unless it is in its early ages (i.e 1 to 2 years).

17. Participation of Women in Extension Training

About 80% of the attendees at meetings or extension trainings are mostly women.

18. Health and Safety

- Cut an waist pains are some of the occupational health and safety risks associated with cashew farming
- Lots of snakes can be found on cashew farms but the farmers usually takes in some herbal medicine (in a form of a powder) to protect them against snake bites.

19. Challenges

The union does not have pruning machinery (chainsaw) and spraying equipment but depends on the Agricultural Department and Zoomlion for the pruning machinery and spraying of the equipment respectively.

The union in the past was able to acquire contracts for the supply for nuts, where all its members bring their dried nut and they are compensated appropriately. And according to the constitution, dues of members are taking from the money received for the products sold. Since the association are now unable to get contracts due to the high demand and rush on farmers by aggregators, the union is unable to get these supply contract making it difficult to get its dues.

20. Recommendation

- Providing the union with pruning machinery and spraying equipment.
- Providing the farmers or union with motor kings to transport the nurseries and cashew produce to the farm and home respectively.
- A nursery farm should be established for the farmers.

Appendix 7.0: Research Institutions – Engagement Outcomes

7.1 Oil Palm Research Institute

Engagement Tool/Location: Interview/Oil Palm Research Institute		Date: 17/02/2023	Time: 1:45 pm
Attendance: Dr. Emmanuel Andoh-Mensah, Director			
Consultant Team: Joshua Wemegah – 0249742014 Ewurama Kakraba-Ampeh - 0266018989			
Discussions			
1. Planting material - It is difficult for farmers to get planting materials since the coconut programme is based in Sekondi and it has the only seed garden and supply is not adequate to meet demand. This makes it easy for people to sell seed any seed nuts to farmers which are not the right ones. - This seed garden doesn’t cover a large area which makes it difficult to produce seed nuts in large quantities. Seed gardens require large areas of land since the hybridisation process only produces 5-8 nuts per bunch compared to oil palm which gives about 2000 nuts per bunch. The yield potential for SDD-VTT variety is high, producing about 22,000 nuts per hectare per year. - The private sector must come on board to establish more seed gardens, in collaboration with OPRI. A proposal has been sent to Exim Bank to establish seed gardens in 10 out of the 40 coconut producing districts.			
2. Pests and Diseases - The Cape St. Paul Wilt Disease is a major problem on coconut farms and a big threat to the industry. - A variety tolerant to this disease, the SDD-VTT Hybrid, has been developed. It is a cross between the dwarf VTT variety and the tall Sri-Lankan variety. Farmers are encouraged to use this variety.			
3. Education and Training The Institute started providing training to coconut farmers in the municipality just last year. Farmers have to pay to participate.			
Engagement Tools/locations: Interview/ Accra		Date: 03/03/2023	Time: 11:25am
Discussant: Mr. Emmanuel Andoh-Mensa, Director, Oil Plam Research Institute (OPRI) – 0244056473			
Consultant: Yaw Amoyaw-Osei – 0243223864			
Discussions:			
1. Support to CRI - There will be a construction of new laboratory for coconut research at Sekondi-Takoradi. - The Institute has nurseries for seedling trails. We will not need additional space. The existing nurseries have enough space			
2. Laboratory Items Request			
Category	Item	Qty	
PCR	Bio-Rad T100 thermal cycler	2	
	Bio-Rad QX200 Droplet Digital PCR System	1	
	Applied Biosystems™	1	
	QuantStudio™ 7 Flex Real-Time PCR System, 384-well, desktop	1	

Electrophoresis units	Bio-Rad PowerPac Universal Power Supply	2
	Bio-Rad Sub-Cell GT Cell Horizontal Electrophoresis Systems	2
	Bio-Rad Mini-Sub Cell GT Cell Horizontal Electrophoresis Systems	2
	Bio-Rad Wide Mini-Sub Cell GT Cell Horizontal Electrophoresis Systems	2
	Bio-Rad Mini-PROTEAN® Tetra Cell Vertical Nucleic Acid Electrophoresis Systems	2
	Bio-Rad Pulsed-field gel electrophoresis system CHEF-DR III.	2
Imaging and Analysis System	BioRAD GelDoc™ XR Molecular Imager	2
	Bio-RAD Mini Transilluminator	2
	Image Lab Software Suite	1
Spectrophotometer	Thermo Fisher Scientific NanoDrop One/One° UV-Vis	1
	UV-Vis spectrophotometers	1
	Thermo Scientific™ Varioskan™ LUX multimode microplate reader	1
	Foss NIRSTM DS3 for oil processing	1
	Thermo Scientific™ Antaris™ II FT-NIR Analyzer	1
	Agilent 7900 ICP-MS (Inductively Coupled Plasma - Mass Spectrometry)	1
	PerkinElmer 2400 CHNS Organic Elemental Analyzer	1
Microscopes	ZEISS Axio Imager A2 (Zeiss fluorescent microscopes with cameras and image analysis software).	2
	Leica Light DM1000	2
	Leica M205 C	1
	Motic DM143 Digital Stereo Microscope	1
Vortexers	Fisherbrand™ Variable Speed Mini Vortex Mixer	2
	OHAUS Multi-Tube Vortexers	2
Centrifuges	Thermo Scientific™ Primo™/Primo R Centrifuge	2
Minifuges	Thermo Scientific™ Sorvall™ Legend™ 14 Personal Microcentrifuge	1
	PlateFuge™ Microplate Microcentrifuge with rotor and plate carrier	1
	Thermo Scientific™ Multifuge X1R Pro, 120V TX-400 Cell Culture Package with rotors for 15 and 50 ml conical tubes and microplates	2
Water bath	VWR® Digital General-Purpose Water Baths (28 L 57.2L×44.5W×45.7H cm 24.1x43.2x20.3 cm 76308-904)	2
	VWR® General Purpose Unstirred Digital Water Bath Range Grant Instrument (485L x 281W mm)	1
	VWR® Shaking Baths, Aqua Pro Series, Grant Instruments (Orbital/Linear Shaking Bath) (10158-864)	1
Freezers	Thermo Scientific™ TSX70086A TSX Series -80°C Ultra-Low Freezers	2
Refrigerator	Thermo Scientific™ TDE60040FA TDE Series -40°C Ultra-Low Temperature Freezers	2
Incubators	Thermo Scientific™ Heratherm™ General Protocol Microbiological Incubators Catalog number: 51029322	3
	Fisherbrand™ Microbiological Incubator, 180 L, Stainless Steel	2
	Shell Lab SRI6PF DROSOPHILA INC 6 CF PELTIER 115V	1
	Caron new 7340-Series Insect Rearing Chamber	1

Autoclave	Kinematica HMC Europe Vertical Autoclaves 50L-110L	1
	Amerex Instruments HA-300MW	1
Water systems	ZR0Q008WW Milli-Q® Direct Water Purification System	1
	Thermo Fisher Scientific Barnstead GenPure Water Purification Systems (50131217)	1
Laminar flow	Thermo Scientific™ Herasafe™ 2025 Class II Biological Safety Cabinet, Cross Beam UV function (1.8 m, 1.5 m, and 1.2 m)	4
	Thermo Scientific™ Heraguard™ ECO Clean Bench	2
Fumehood	Fisherbrand™ Bench Fume Hood Adjustable Height Ceiling Enclosure	1
Cannister	Thermo Scientific™ Arctic Express™ Dual Storage Systems	2
	Thermo Scientific™ Bio-Cane™ Cane and Canister Systems	1
	Thermo Scientific™ Thermo-Flask™ Benchtop Liquid Nitrogen Containers	1
Camera	Pentax 645z Medium Format DSLR Camera with lens	1
	Nikon D850 FX-format Digital SLR Camera with lens	1
Hoods and incubators	FALC Instruments S.r.l. Plant growth chamber GVS 940	1
	Caron full line of Plant Growth Chamber	1
Flow Cytometer	Thermo Scientific Attune CytPix Flow Cytometer	1
Microtomes	Thermo Scientific Rotary microtome HM 355S	1
pH meters	Mettler Toledo SevenCompact pH meter S210-Std-Kit	2
	Mettler Toledo Seven2Go Cond meter S7-Field-Kit	2
Refractometer	Refractometer Excellence R4	1
Computer clusters	Dell PowerEdge R940 Rack Server (2x Intel® Xeon® Gold 6252 2.1G, 24C/48T, 10.4GT/s, 35.75M Cache, Turbo, HT (150W) DDR4-2933) 512 GB ECC RAM 44 TB RAID array	1
Chromatography	Agilent 1290 Infinity II LC System (HPLC)	1
	Thermo Fisher Scientific Orbitrap Exploris GC 240 MS (GC-MS/MS)	1
Magnetic resonance	Oxford Instrument Shamrock 750 Nuclear magnetic resonance Spectrometer	1
Root Imager	CID Bio-science CI-600 In-Situ Root Imager	1
Shakers	Stuart Orbital Shakers	1
orbital shaker	Lab Companion Dual-Action Shakers	1
Nutator	Fisherbrand™ Variable Speed Nutator	1
rocking platforms	Fisherbrand™ Open-Air Rocking Shakers	1
	Thermo Scientific™ MaxQ™ HP Incubated and Refrigerated Console Shakers	1
Hotplate	Thermo Fisher Scientific RT2 Basic and RT2 Advanced Hotplate Stirrers	2
	Thermo Fisher Heating & Cooling Dry Bath	1

7.2 Crop Research Institute for Rubber (CRI-CSIR)

Engagement Tools/locations: Interview/ Accra	Date: 03/03/2023
Discussant: Dr. Erasmus Narteh Tetteh, Tree Crops Agronomist, CSIR-Crop Research – 0244826485	Consultant: Yaw Amoyaw-Osei – 0243223864
Discussions:	
3. Support to CRI - Rehabilitation of existing structures/facilities. - Installation of laboratory equipment and facilities	

- Rehabilitation of laboratory equipment and facilities
- Establishment of experimental fields or seedling stations
- Refurbishment of the laboratories and offices
- Funding support for researcher's refresher programmes and international networking through conferences and workshop attendance and electronic meetings

7.3 Wenchi Agricultural Station

Engagement Tool/location: Interview/Wenchi		Date: 27/02/2023	Time: 2:47pm
Discussants: Bright S A Sarpong, Assistant Agric Officer, 0208265963			
Consultants: Kwakye Kwabena Mamphey – 0558341865 Zawi Nasiru Barikisu – 0548925327			
Discussions/Suggestions and Comments:			
1. Seedlings There are three types of cashew seedlings: grafted nursery, polyclonal seeds and the normal seeds picked from other cashew farms.			
2. Production at the Agric Station The grafted nursery is produced mainly by the Station and individual nursery operators. The Agric Station has a cashew Germplasm collection of different assertion of clones from different countries such as Benin, Tanzania and Brazil. They study the collection of clones with the help of Cocoa Research Institute of Ghana (CRIG). The Station also has a scion bank for its scion’s production and a nursery capacity of 150,000. Majority of the individual private nursery operators within the Wenchi Municipality were trained by the Station and they all obtain their scions from the Station. It has other scion banks at Babile, Mampong, Asawase and Kpeve.			
3. Production Process for the Grafted Nursery The first process is called potting. This is where black soil and sawdust is mixed in equal proportion into a 7 x 5 polybag. The soil mixture is then watered and seeded for about a week. The seed is allowed to germinate for 45-60 days (Root stalk). The root stalk is the exposed to the sun for it to harden. A scion from the scion bank is then grafted with the root stalk. Hence, the only time a farmer is likely not a to get a true to type grafted nursery is when the scion used for the grafting was not obtained from the Station. The seedlings are sold to the farmers at a subsidised price.			
4. Polyclonal Seeds These seeds are mainly supplied by the Agric Directorate. It is produced using different varieties of cashew nuts after assessing the mother tree selected during the genetic trial.			
5. Planting • Before transplanting the nursery plants, the existing trees and their roots are removed. After that, a hole of 50cm is dug all round, then stocked with manure. The manure is left to decay before transplanting is done. • The planting distance for cashew was 10 by 10 but the farmers are now adopting 12 by 12 because this allows for easy pruning and does not require them to practice thinning. The failure to thin a farm affect the growth of the trees which eventually affect the yield of the farm. • After planting it take about 2 to 3 years for it to bear fruits (low yield) but takes about 8 to 10 years for the farmer to harvest in large quantities.			
6. Intercropping			

Intercropping can be practiced only at the early stages (i.e 1 to 4 years) of the cashew farm when the leaf canopies have not completely closed completely. Crops such as maize and sorghum could be intercropped with the cashew.

7. Pest and Diseases

Pest and disease infestation of the nursery is not common, however, when a seedling is diseased or has signs of pest or disease infestation, that seedling is taken out of the nursery. Also, preventive spraying is done (averagely every 3 months) to avoid pest and diseases from attacking the nursery.

Some of the pests that affect the cashew tree are leaf miner (affects the leaves), stem borers and tea mosquito bug, whilst the diseases are anthracnose (affects the leaves, nuts, etc), leaf rust, die back, etc.

8. Agrochemicals

- Some of the agrochemicals used during the nursery period are abamet, etc.
- The chemical containers used are either burnt or disposed of into bins.

9. Extension Services

It is the sole responsibility of the Agric Directorate provides extension service for all cashew farmers within the area.

10. Low Yield

The quality of input materials and the age of the cashew tree determines the yield of the tree. The cashew tree is said to be aged when it is 50 years and to rejuvenate such poor yield trees, top working is done. The unproductive trees are cut down at height of 5cm from ground level and grafted with new scions.

11. Labour

- The laborers employed at the station are casual workers. They are paid based on the amount of work done (daily).
- The only time much labour is needed is during harvesting and the maintenance period (ie weeding). But with the weeding the farmers prefer to use weedicides.

12. Child Labour

Children are only involved during the harvesting periods of the cashew, ie they sent to the farms to pick the nuts. The normal and peak harvesting periods for cashew are November to December and December to March respectively.

13. Waste

The cashew fruits are left to rot on the farms after the nuts have been taken out. The waste is however regarded as manure. The fruit could however be processed into alcohol or cashew fruit juice.

14. Buying Companies

- The nuts are bought from the farmers by the Agents. The Agents then sell them to the buying companies such as Olam and Usibras.
- The minimum price set by the government for the purchase of 1kg of cashew nut is GHS8.50. But some companies depending on their demand could peg it GHS10. One bag of cashew nuts is equivalent to 80kg.

15. Challenges

- The farmer is expected to dry the nuts to a moisture content of 10% before selling it to the agent. But the farmers are mostly forced to sell the wet nuts to the agents who are in high demand for it. This has affected the quality of nuts from Wenchi.
- The main challenge at the Station is encroachment and cattle grazing. The 940 acres of land has been vastly encroached by the community members.

16. Recommendation/Suggestions

- Support companies to process the cashew fruits into alcohol or juice
- Establish new nursery farms to meet up with the projected demand of the project
- Support the Station to build perimeter fence wall
- Provide them with an automatic net removal to automate their operations

Appendix 8.0: E&S Risk Management Capacity Need Analysis

8.1 COCOBOD

Engagement Tools/locations: Questionnaire & Virtual Meeting, Accra		Date: 01/03/2023 & 06/03/2023	Time: 1:01pm & 8:50 – 9:30am
Discussant: Eric Dickson Amengor, Research Manager, Research Monitoring & Evaluation Department, Ghana Cocoa Board – 0243212214		Consultant: Yaw Amoyaw-Osei – 0243223864	
1. E&S Safeguards Roles and Positions			
• Number of officers for E&S safeguards roles and their positions	Eric Dickson Amengor	Environmental Specialist	
	Sena Yawa Tabbicca	Social Safeguards Specialist	
• Qualification and Experience of the officers (e.g. training courses attended and years of experience)	Highly qualified and experienced specialists for the environmental safeguard roles. The Social and Gender Specialist has educational background and experience largely geared towards climate change.	Table of qualification and experience below	
2. Qualification and Experience of the officers			
Academic Qualification	Experience	Role	
Eric Dickson Amengor - Environmental Specialist			
MA Environmental Economics from GIMPA, Accra BA Hons (Economics and Political Science) University of Ghana, Legon	- Coordinator and focal person – Ghana Forest Investment Programme (GFIP). - Member of the Implementation Committee of the Ghana Cocoa Forest REDD+ prog (GCFRP) - Supervisor – All COCOBOD agroforestry projects/ progs - Team Lead – Sustainability Desk of COCOBOD Trainings: - The World Bank ESF in Practice: Ghana Country Management Unit Training, Nov. 2022 - South-South knowledge exchange program on sustainable cocoa initiatives through agroforestry	- Prepare necessary E&S TORs - Consultations with stakeholders and disclosure of E&S instruments/ documents - Incorporate E&S requirements in bidding & contract documents - Develop and implement an M&E system for env. monitoring - Advice PCU on env. requirements including compliance with the statutes	
Sena Yawa Tabbicca - Social and Gender Specialist			
Professional Law Course – Ghana Sch. of Law Bachelor of Laws, LLB MSc. Climate Change & Dev. with supplementary diploma, Univ. of Reading UK BSc. Natural Resource Management from KNUST, Ghana.	- Team member of sustainability desk; overseeing the implementation of projects across the cocoa landscape. - Team member for climate smart desk; in charge of all emission reduction progs and projects - Liaisons with other stakeholders. - Member of the Climate Smart Cocoa (CSC) Production Standard Committee of COCOBOD. - Team member of gender mainstreaming desk; overseeing the preparation of Ghana's National Cocoa Gender policy.	- Prepare and review of necessary E&S TORs - Consultations with stakeholders and disclosure of E&S instruments/ documents - Advice the project coordination unit (PCU) on environmental requirements including compliance with the statutes	

	- M&E activities of depts, subsidiaries and divisions as well as other stakeholders. - GHG emission reduction from deforestation and forest degradation, biodiversity conservation in cocoa landscapes. - Experience in ESF of World Bank financed projects. Trainings: - E&S Framework in Practice - Training of Trainers on Gender Integration - Training on Safeguards Info. System (SIS) - Certificate- Project Cycle Management - ISSER, Univ. of Ghana - Certificate in Project Management Professionals – GIMPA	
3. Location of the E&S Safeguards Officers	Head Office, Accra and District CHED Offices	Leave E&S governance gaps in the 3 project districts for oversight roles e.g. on child labour, deforestation, pesticides handling, empty pesticide container management, nursery centres and input supply centres, etc.
4. Designation of E&S Safeguards Unit/Department at COCOBOD	Research, Monitoring and Evaluation Department	Identified personnel for training to perform required E&S functions at regional and district levels: • District CHED Officers (Focal Points) - 3 • Regional Managers - 2 High level sensitization prog to enhance commitment for Director of Research & Deputy Chief Ex. (Ops)
5. Location of E&S Safeguards Unit in COCOBOD organizational structure	Reports directly to Deputy Chief Executive (Operations)	Reporting lines: • District CHED Officers report to Regional Managers • Regional Managers → E&S Safeguards Specialists • E&S Specialists → Director of Research Director of Research → Deputy Chief Executive
6. Qualification and experience of the identified officers for E&S Safeguards functions (regional and district levels)	The Social and Gender Specialist will require capacity building to undertake social safeguards and gender risk and impact management. District CHED Officers have bachelor's degree with limited E&S experience. Regional Managers have master's degree, but also without E&S experience.	Full scale E&S safeguards capacity building plan will be prepared (CHED. Officers and Regional Managers), including international training and conferences to ensure professionalism, boost confidence and promote professional networking. The Env/Social Safeguards Specialist will also benefit from int. conferences. The Social and Gender Specialist will undergo training in social safeguards covering: • Social and gender risk and impact identification • Management of social and gender risks and impacts • Monitoring of social and gender safeguard performance
7. Will E&S Safeguards Specialists provide capacity building for District and Regional officers?	External support needed for capacity building and sensitization of senior executives.	This is to enhance the capacity of the Social and Gender Specialist to manage the social and gender issues associated with the operation of COCOBOD and effective implementation of the ESMF.

8. Level of commitment of management on E&S safeguards issues	Very Committed. A Team set aside specifically for it	The existing ESMS is very relevant for this ESMF work to avoid duplication of effort and potential inconsistencies in E&S approaches, policies, etc. Copies of ESMS and ESMP made available for review and incorporation of relevant section. The consultant's duty is to align relevant sections of the ESMS with the ESMF outcomes (and the appropriate reference made).
9. Availability of E&S policy for the organization (e.g. in ESMS and ESMP)	COCOBOD's ESMS and ESMP – copies to be made available. AfDB-prepared systems could introduce conflict due to differences.	
10. Availability of COCOBOD's E&S management system	Yes	The referred structure in COCOBOD is available in the ESMS document.
11. Any additional information	E&S specialists assigned would work with existing structure in COCOBOD. Also collaborate with the Labour and Gender Desks at MELR and MGCSP respectively.	The consultant will ensure streamlined integration of the ESMF outcomes into the existing E&S management system (in the ESMS), and where gaps are identified fill them in. The Ministries of Employment & Labour Relations, and Gender, Children & Social Protection will be involved to support training on labour and gender issues respectively.

8.2 TCDA

Engagement Tools/locations: Questionnaire & Virtual Meeting / Accra		Date: 02/03/2023 & 06/03/2023
Discussant: Kingsley Agyeman, E&S Specialist – 0243695775; Email: kingsleykagyeman@gmail.com Foster Boateng, Ag Deputy CEO, Operations – 0540116738, Email: orleansboateng@gmail.com		Consultant: Yaw Amoyaw-Osei – 0243223864
1. E&S Safeguards Roles and Positions		
• Number of officers for E&S safeguards roles and positions	Kingsley Kwasi Agyeman	Environmental Specialist
• Qualification and Experience of the officers (e.g., training courses attended and years of experience)	Highly qualified and experienced specialists for the E&S safeguards roles	Table of qualification and experience below
2. Qualification and Experience of the officers		
Academic Qualification	Experience	Role
MSc Natural Resources Sustainable Environmental Management, University of Greenwich, UK	- Experience in Ghana EA Regulations and World Bank ESF financed projects. - Supported preparation/implementation of E&S Management Instruments (e.g. ESMF, ESMPs, RPF, EIA, SEP) for funded projects of MoFA such as Sustainable Land and Water Management Project (SLWMP); Ghana Commercial Agricultural Project (GCAP); Ghana Peri-urban vegetable value chain project (GPVVP); Ghana Agricultural Sector Investment Programme (GASIP); Savannah Zone Agricultural Productivity Improvement Project (SAPIP); Support Transition Towards Climate-Smart Agriculture and Food	- Prepare necessary E&S TORs - Lead in the acquisition of necessary statutory permits such as the EPA permit - Timely consultations with stakeholders and disclosure of E&S instruments/documents - Incorporate E&S requirements in bidding and contract documents

	Systems; Resilience Landscapes for Sustainable Livelihoods (RLSL) and Integrated Climate Risk Management Project (ICRMP). Previous position - Env. and Climate Change Specialist for GASIP, Feb '18 to Sept '20 - E&S Safeguard Officer, GPVVP, November, 2019 to June, 2020. Trainings: - The World Bank ESF in Practice: Ghana Country Management Unit Training, Nov. 2022. - Training workshop and Capacity Building Workshop on AfDB Projects in Ghana, June, 2022. - Certificate of participation, short course on climate change and food security nexus, CDI Wageningen UR, Netherlands, December, 2016. - Certificate of participation, short course on climate change governance, CDI Wageningen UR, Netherlands, December, 2015. - Certificate of Completion, GHG Inventory and Mitigation Modelling training prog: GIR, Korea, June, 2015. - Safeguards Frameworks in World Bank Financed Projects, Accra, June, 2014. - Green impact audit training certificate: University of Greenwich, United Kingdom, March, 2012.	- Advise the PCU on environmental requirements including compliance with the statutes - Develop and implement an M&E system for environmental monitoring.
3. Location of the E&S Safeguards Officers	Head Office	Head office only leaves E&S governance gaps in 8 project districts; Oversight needed for child labor, deforestation, pesticide handling, etc. No regional offices provided.
4. Designation of E&S Safeguards Unit/Department at TCDA	Within TCDA, the E&S risk management activities fall under the Operation Division, which is headed by the Deputy CEO, Operations	For effective implementation of the ESMF and its functioning, the E&S Safeguards unit must be designated or present at the project districts (8), regions (4) and Head Office Operations Division (facilitated/ supported by the PCU-TCDA) A proposed arrangement for E&S safeguards and reporting lines/relationships could be as follows: • Deputy CEO Operations ↑ • Director of Operations (supported by PCU) • Zonal offices (Coordinate Value Chain Actors/Managers)↑ • District level (Value Chain Managers to double up as E&S Specialists) • Value Chain Associations (support, e.g. to train / sensitize the farmers) • Local level (FBOs/beneficiaries)
5.) Location of E&S Safeguards Unit in TCDA's organizational structure	At the PCU-TCDA and reports to the Project Coordinator	An organizational structure of TCDA for the ESMF to indicate the position/location of the E&S Unit is relevant. This will among others show how close this position is from top management for the appropriate consideration of E&S matters, including (in terms of) budgetary allocation.

6. Qualification and experience of the proposed officers for E&S Safeguards functions (regional, district, local levels)	The Environmental Specialist has the qualification and has rich experience in environmental safeguards. However, there is no Social Development Specialist for the management of social risk and impacts associated with the activities of the Authority.	The required capacity building to enable performance of the identified E&S functions (in the ESMF) at Head office, regional, district and local levels will feature in the capacity building plan.
7. Will the E&S Safeguards Specialist be able to provide needed E&S capacity building for the District and Regional officers?	External support needed for capacity building, including senior executive sensitization for TCDA. The Environmental Specialist will support the district/regional level training, including TCDA Zonal Coordinators and Value Change Managers, VC Associations and FBOs.	This will involve full scale E&S safeguards capacity building (for district, and regional level officers), including international training and conferences to ensure professionalism, boost confidence and promote professional networking. The Env/Social Safeguards Specialist will also benefit from int. conferences. A Social Development Specialist will recruited to oversee the management social issues associated with the operations of TCDA.
8. Level of commitment of management on E&S safeguards issues	E&S is central to the TCDA's Corporate mission statement. Under the project, TCDA has committed 5.5% of the budget for E&S safeguards issues	TCDA relies on the existing structure in MoFA (i.e. Env. Land and Water Management Unit of MoFA, Env. and Regional Env. Desk Officers at the Regional Dept of Agric), etc. TCDA is, however, making effort at developing its systems - yet to have its own E&S management system and corporate E&S safeguards policy in place.
9. Availability of E&S policy for the organization (e.g. ESMS and ESMP)	No	
10. Availability of TCDA's E&S management system	No	
11. Any additional information	The E&S specialist will work with the existing structure in MoFA Env. and Regional Env. Desk Officers at the Regional Dept of Agric). And also work with the Labour and Gender Desks at the MELR and MoGCSP respectively.	The Ministries of Employment & Labour Relations, and Gender, Children & Social Protection will be involved to support training on labour and gender issues respectively for the officers at the local, district and regional levels.

Appendix 9.0: Project E&S Screening Checklist and Exclusion List

9.1 E&S Screening Checklist

Type of Project	Environmentally Sensitive Criteria and Project Threshold	Screening Outcome
1) Construction/installation and operation of laboratory structure	Stand-alone structure (with/without experimental/seed garden or field station)	PEA
	Rehabilitation of existing laboratory structure (with/without experimental fields/stations)	ESMP
2) Tree Crop Development Centre with commercial nursery	- On land $\leq$ 40Ha - Non-environmentally sensitive site - Impacts generally localized, short-term and reversible	IA
	- On land $>$ 40Ha - Non-environmentally sensitive site - Impacts generally localized, short-term and reversible. - Mitigation measures easy to design/implement - Not requiring much primary data	PEA
	Within/Bordering < 100m from - Water source / water body - Other environmentally/socially sensitive area	EIA
	Where integrated in an existing facility or involving rehabilitation	ESMP
3) Tree Crop Service Centre development for agricultural input storage/ distribution to farmers	- On land $\leq$ 10Ha - Non-environmentally sensitive site - Impacts generally localized, short-term and reversible	PEA
	Within/Bordering < 100m from - Water source / water body - Medical or health facility - Educational facility - Houses or residential areas	ESIA
	Rehabilitation of existing facility	ESMP
4) Rehabilitation of CSSVD-affected farms (including management of cutting waste and spraying)	Irrespective of farm size/area	ESMP
5) Compensation for rehabilitation of CSSVD-affected farms.		RAP
6) Construction/installation of digitalization system for farm and household mapping for traceability	Stand-alone digitalization system/service	IA
	Rehabilitation of or integrated in existing facility	ESMP
7) Construction/installation of equipment for post-harvest management, quality processing and	Small-Scale Enterprise	IA
	Medium-Scale Enterprise	PEA

value addition (including waste management)	<i>Within/Bordering < 100m from</i> • Water source / water body • Other environmentally/socially sensitive area	ESIA
8) Installation of equipment for post-harvest management, quality processing and value addition for SMEs	Rehabilitation of installation/equipment in existing facility for SME	ESMP
9) Land-take for any of the above facilities construction / installation	Affecting people/families or people's property	RAP

9.2 E&S Exclusion List

ENVIRONMENTALLY SENSITIVE AREAS

(SCHEDULE 5 (Regulation 30 (2)) of ENVIRONMENTAL ASSESSMENT REGULATIONS, 1999 (LI 1652)

1. All areas declared by law as forest reserves, national parks, watershed reserves, wildlife reserves and sanctuaries including sacred groves.
2. Areas with potential tourist value.
3. Areas which constitute the habitat of any endangered or threatened species of indigenous wildlife (flora and fauna).
4. Areas of unique historic, archaeological or scientific interests.
5. Areas which are traditionally occupied by cultural communities.
6. Areas prone to natural disasters (geological hazards, floods, rainstorms, earthquakes, landslides, volcanic activity etc.).
7. Areas prone to bushfires.
8. Hilly areas with critical slopes.
9. Recharge areas of aquifers.
10. Water bodies characterized by one or any combination of the following conditions:
 - a. water tapped for domestic purposes;
 - b. water within the controlled and/or protected areas; c. water which support wildlife and fishery activities.
11. Mangrove area characterised by one or any combination of the following conditions
 - a. areas with primary pristine and dense growth;
 - b. areas adjoining mouth of major river system;
 - c. areas near or adjacent to traditional fishing grounds;
12. Areas which act as natural buffers against shore erosion, strong winds or storm floods.
13. Other exclusion areas
 - a. Manufacturing of pesticides, herbicides, fungicides, and other agrochemicals
 - b. Construction and/or rehabilitation of irrigation schemes
 - c. Establishment of farms in legally protected areas
 - d. Expansion of farms into protected forests, reserved forests, state forests and wildlife parks
 - e. Substantial depletion of habitats and biodiversity
 - f. Use of forced labour
 - g. Use of child labour
 - h. Over-abstraction of water resources
 - i. Use of unregistered and unapproved agrochemicals/pesticides

Appendix10.0: Generic E&S Assessment Guides and Formats

10.1 Environmental and Social Assessment Procedure

The World Bank ESS 1 provides guidance on the environmental assessment procedures for World Bank funded projects. The Ghana EIA procedures (EPA, 1995) have also established a process to screen and evaluate all developments, undertakings, projects and programmes which have the potential to give rise to significant environmental impacts. The two processes are largely similar, and the Ghanaian procedures are therefore given in the following sections. The PCU/PIU will ensure that project activities apply the provisions under the relevant World Bank ESSs while ensuring that the Ghana EPA regulations and guidelines relevant for the project activity are complied with.

The Environmental and Social Development Specialists of TCDA and Environmental and Social and Gender Specialists of COCOBOD will provide safeguard supervision overall subprojects. Subprojects which require licensing will only be developed after securing an Environmental Permit from the EPA. The following steps will be followed by the consultants for subprojects requiring PEA and ESIA to ensure environmental and social compliance of projects.

Selection of Consultant

For sub-projects requiring PEA/ESIA/ESMP and RAP, a qualified and experienced consultant will be contracted to conduct the study. The E&S Specialist of TCDA and COCOBOD will prepare the Terms of Reference (ToR) for the PEA/ESIA/RAP/ESMP study, consult with stakeholders and seek the World Bank's No Objection on the ToR. After the Bank clears the ToR, the unit/department with the procurement department of the implementing agency will collaborate to recruit qualified consultant(s) to conduct the environmental and social assessment for the project activities following the procurement rules.

The ToR will cover the following key areas:

- Overview and description of the project;
- Objective of the assignment;
- Scope of work (areas the assignment is supposed to cover) and expected deliverables;
- Required qualification of consultant; and
- Duration for the assignment.

Procedure for Subproject Activities Requiring PEA

After selecting a consultant to undertake the PEA study, the consultant in collaboration with the TCDA and COCOBOD E&S Specialists will be directly responsible for the registration of the PEA subprojects with the EPA as required by Environmental Assessment Regulation, 1999 (LI 1652).

The Environmental Assessment Registration Form 1 (Appendix 10.2) will be used based on the screening checklist provided in this ESMF for the registration of sub-projects requiring PEA. The EPA after receipt of the application shall specify the level of assessment the sub-project will be subjected to i.e., PEA and request for the proponent out the assessment and submit the Preliminary Environmental Report (PER). Where the EPA review of the PER finds it satisfactory and approves the report, the Agency will register the sub-project and issue an environmental permit.

Procedure for Project Activities Requiring ESIA

After selecting a consultant to undertake the ESIA study for a project activity, the Consultant will collaborate with TCDA and COCOBOD in registering the sub-project with the EPA. Sub-project requiring Environmental and Social Impact Assessment will complete the Form EA2 (Appendix 10.3) for registration. The EPA after receipt of the application shall request for the proponent to carry out a scoping exercise and submit a scoping report with the draft ToR for the ESIA study.

The scoping report will be developed by the Consultant and will set out the scope/extent of the ESIA to be carried out. The draft ToR will also indicate the essential issues to be addressed in the ESIS. As part of the scoping activities, the consultant will serve scoping notices to relevant Assemblies and project communities obtain concerns from the public on the project. The format for the scoping notice is presented in Appendix 10.4

The EPA upon receipt of the Scoping Report with the Draft ToR will review and inform the applicant within 25 days of receipt of the report and indicate whether it has been accepted or not. Where the application is not accepted, the EPA will request the applicant to revise the Scoping Report and submit for review. Where the Scoping Report is accepted, the EPA shall request the proponent (TCDA and COCOBOD) to submit the Environmental and Social Impact Statement (ESIS) based on the approved Draft ToR.

Review and Approval of the ESIA for Sub-projects; Public/Dissemination of ESIA

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

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

Copies of the ESIA will be placed at vantage points including the EPA Library, relevant District Assembly, EPA Regional Offices and COCOBOD/TCDA head office and district office of project areas. EPA serves a 21-day public notice in the national and local newspapers about the ESIA publication and its availability for public comments. Additionally, the implementing agencies will disclose the ESIA and ESMP cleared by the WB and EPA in the media, project communities and other suitable locations. Once the documents are disclosed, the WB will disclose them on their external website.

Public Hearing and Environmental Permitting Decision (EPD)

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

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

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

Environmental Permitting Decision

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

Resettlement Procedure for Project Components

For project activities that may lead to restrictions on land use and involuntary resettlement or involuntary land acquisition, the Resettlement Policy Framework will serve as a guide in preparing an ARAP/RAP for the sub-project.

Format for the ESIA:

The report will follow the following format:

- Executive Summary
- Introduction
- Institutional Frameworks Related to ESIA Preparation (policy, legal and administrative frameworks)
- ESIA Methodology
- Description of Project (including components / interventions / activities)
- Analysis of Alternative Project Approaches
- Environmental and Social Baseline Information
- Stakeholder Consultations
- Assessment of Potential Environmental and Social Impacts (identification, prediction and evaluation of significance)
- Mitigation Program
- Monitoring Plan
- Costed Environmental and Social Management Plan
- Bibliography
- Appendices

10.2 Environmental Assessment Registration Form 1

ENVIRONMENTAL PROTECTION AGENCY, GHANA

ENVIRONMENTAL ASSESSMENT REGISTRATION FORM

(To be completed in Duplicate)

PROPONENT:

Address for correspondence:

Contact Person:

Position:

Phone No.:

Fax No.:

Email:

ASSESSMENT NO:		FILE NO:	

Environmental Protection Agency
P.O. Box M 326
Accra, Ghana

Tel: 664697/8, 664223, 662465

Fax: 662690

Email: support@epagghana.org

Web-site: www.epa.gov.gh

This Form shall be submitted to the relevant EPA Regional Office. It is important that you read carefully the guide for completing the Form before starting.

*

1. PROPOSED UNDERTAKING / DEVELOPMENT

Title of proposal (General Classification of undertaking)

Description of Proposal (nature of undertaking, unit processes [flow diagram], raw materials, list of chemicals (source, types and quantities), storage facilities, wastes/ by-products (solid, liquid and gaseous), etc.

Scope of Proposal (size of labour force, equipment and machinery, installed/production capacity, product type, area covered by facility/proposal, market)

2. PROPOSED SITE

Location (attach a site plan/map)

Plot/House No.

Street/Area Name:

Town:

District/Region:

Major Landmarks (if any)

Current zoning

Distance to nearest residential and/or other facilities

Adjacent land uses (existing & proposed)

Site description (immediate activities should be described)

3. INFRASTRUCTURE AND UTILITIES

Structures (buildings and other facilities proposed or existing on site):

Access to water (source, quantity):

Access to power (type, source & quantity):

Drainage provision in the project area:

Nearness to water body:

Access to project site:

Other major utilities proposed or existing on site, etc.:

4. ENVIRONMENTAL IMPACTS

Potential environmental effects of proposed undertaking (Both constructional and operational phases):

5. OTHER ENVIRONMENTAL ISSUES

Potential significant risks and hazards associated with the proposal (including occupational health and safety). State briefly relevant environmental studies already done and attach copies as appropriate.

6. CONSULTATIONS

Views of immediate adjoining neighbours and relevant stakeholders (provide evidence of consultation)

7. MANAGEMENT OF IMPACTS AND ENHANCEMENT MEASURES**ATTACHMENTS**

Tick appropriate boxes below indicating that the following required documents have been attached:

- ☐ Authentic Site Plan (signed by a licensed surveyor and certified by Survey Dept.)
- ☐ Block Plan of the site
- ☐ Photographs of the site
- ☐ Fire report from the Ghana National Fire Service (where necessary)
- ☐ Zoning letter from Town & Country Planning Department
- ☐ **DECLARATION:**

I, ..., hereby declare that the information provided on this Form is true to the best of my knowledge and shall provide any additional information that shall come to my notice in the course of processing this application. I also declare that information provided is true.

Signature

Date

* Use additional sheets where spaces provided in 3, 4, 5 and 7 are inadequate.

10.3 Environmental Assessment Registration Form 2

ENVIRONMENTAL PROTECTION AGENCY, GHANA**ENVIRONMENTAL ASSESSMENT REGISTRATION FORM****(To be completed in Duplicate)****FEE GH¢7.00**

Serial No.

FORM EA2

ASSESSMENT NO:		FILE NO:	

Environmental Protection Agency (Head Office)
P. O. Box M.326
Accra, Ghana

Tel: +233 0302 664697/8, 664223, 662465
Fax: +233 0302 662690

Environmental Impact Assessment Registration Form

PROPOSED:

Address for correspondence

Contact Person _____ Position _____

Phone No. _____ Fax No. _____

1. Proposed Undertaking/Development:

Sector: _____

Shareholders: _____

2. Proposed Site _____

Town/Village _____

(Attach Location Map)

District: _____

Region: _____

10.3 Generic ESMP

The proposed ESMP outline is provided below:

1. Executive Summary
2. Introduction
 - a. Background
 - b. Objectives of the project
 - c. Purpose of the Environmental and Social Assessment
 - d. Methodology and Approach
 - e. Report organization
3. Description of project
4. Applicable legal, policy and institutional framework including World Bank Environmental and Social standards
5. Analysis of project alternatives
6. Environmental and social baseline conditions
 - a. Physical environment
 - b. Socio-cultural/socio economic environment
 - c. Biological environment
7. Stakeholder/public consultation
8. Assessment of potential project environmental and social impacts/risks
9. Management and enhancement measures of risks and impacts
10. Environmental and social management plans
 - a. Implementation plan
 - b. Environmental and social monitoring plan
 - c. Estimated cost of the ESMP
 - d. Capacity building
 - e. Grievance redress mechanism
11. Decommissioning
12. References
13. Appendices
 - a. Correspondence
 - b. Minutes of engagement
 - c. Environmental and social clauses

Table below is a matrix to be considered and filled out for applicable projects that will require a separate Environmental and Social Management Plan (ESMP) according to the impact level.

Subproject Activity	Potential Environmental or Social Impacts	Proposed Mitigation Measures	Responsibility (including enforcement and coordination)	Monitoring Requirements (including supervision)	Time Frame or Schedule	Cost Estimate

NB: The key aspects of the ESMP have been detailed out in the next section, using a Nursery Facility as an example.

1 INTRODUCTION

The introductory chapter is expected to cover the following sections:

- Background (brief description of the projects in the context of GTCDP and establishing relevant linkages);
- Objectives of the project (clearly defined outcomes or outputs of the undertaking);
- Purpose of preparation of the Environmental and Social Management Plan (ESMP);
- Methodology and Approach; and
- Report organization.

2 PROJECT DESCRIPTION

A detailed description of the relevant projects or interventions must be provided in this chapter. Generally, projects requiring the preparation of ESMPs must be defined under the GTCDP, which has five components as follows:

- Component 1: Institutional strengthening and value chain governance.
- Component 2: Improving productivity and climate resilience.
- Component 3: Support for Post-Harvest Management, Processing, Value Addition and Market Access.
- Component 4: Project Coordination, Management, Monitoring and Evaluation.

Component 1. Institutional Strengthening and Value Chain Governance

The objective of this component is to identify and build institutional capacities of TCDA and COCOBOD. This will include the capacity to improve the governance of the value chain associations and their umbrella organization (i.e., FAGE), as well as the business enabling environment for farmers and agribusinesses in the cocoa, cashew, coconut and rubber value chains. It will also facilitate policy formulation, advocacy, and implementation by selected MDAs (i.e., MOFA-DCS, MOFA-PPRSD, MOGCSP, and MELR), digitize the value chains for traceability, and strengthen national capacity to prevent, monitor, identify and remediate child labour.

Component 2: Improving Productivity and Climate Resilience

The largest project component in terms of scope and budget aims to improve the socially and environmentally sustainable productivity, profitability, and climate resilience of tree crop farms by addressing a lack of access to and availability of technologies. This component's investments are subdivided into the three sub-components.

Component 3: Post-Harvest Management, Processing, Value Addition and Market Access

The objective is to support post-harvest management, processing, and marketing of cocoa, cashew, and coconut, with the intention of enhancing quality, value addition, and supply to new markets. This will provide technical assistance, and matching grant to facilitate SMEs access to finance and market.

Component 4: Project Coordination, Management, Monitoring and Evaluation

Component 4 focuses on the establishment of a Project Coordination Unit (PCU) at TCDA and Project Implementation Unit (PIU) at COCOBOD for effective coordination, management, and project monitoring and evaluation (M&E).

3 APPLICABLE LEGISLATIONS, POLICIES AND REGULATORY FRAMEWORKS

This chapter must discuss relevant national sector policies and plans, legal and institutional frameworks/arrangements, international conventions and the World Bank safeguard policies, as well as the national environmental quality standards to guide the sustainable implementation of the various projects.

Depending on the project, the following national policies, regulations and institutional frameworks may be relevant:

Table 3.1 *Applicable National Policies, Regulations and Institutional Frameworks*

National Environmental Policy and Requirements	
National Environmental Policy, 2013	Environmental Assessment Regulations, 1999 (LI 1652)
National Environmental Action Plan, 1991	Fees and Charges (Amendment) Instrument, 2019 (LI 2386)
Environmental Protection Agency Act, 1994 (Act 490)	National Climate Change Policy, 2013.
Agriculture, Food and Trade Related Requirements	
Tree Crop Policy, 2012	Food and Agriculture Sector Development Policy, 2007
Medium Term Agriculture Sector Investment Plan, 2010	Ghana Shared Growth and Development Agenda, 2014
Ghana's Seed Policy, 2013	Ghana Investment Promotion Centre Act, 2013 (Act 865)
Plants and Fertilizer Act, 2010 (Act 803)	
Waste Management Policies and Related Requirements	
Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917)	Environmental Sanitation Policy, 2010.
Hazardous, Electronic and Other Waste, Control and Management Regulations, 2016 (LI2250)	
Water Related Policies and Requirements	
Water Resources Commission Act, 1996 (Act 522)	National Water Policy, 2007
National Irrigation Policy, 2010	Riparian Buffer Zone Policy, 2013
Water Use Regulations, 2001 (LI 1692)	
Wildlife, Forestry, and Cultural Heritage Protection	
Forest and Wildlife Policy, 2012	National Museums Act, 1969 (N.L.C.D 387
Forestry Commission Act, 1999 (Act 571)	
National Planning and Development Requirements	
National Land Policy, 1999	Lands Commission Act, 2008 (Act 767)
Land Use and Spatial Planning Act, 2016 (Act 925)	Local Governance Act, 2016 (Act 936)
National Building Regulations, 1996 (LI 1630)	Land Act, 2020 (Act 1036)
The Lands (Statutory Wayleaves) Act, 1963 (Act 186)	
National Labour, Gender, and Human Rights Requirements	
The Constitution of Ghana (1992)	National Gender Policy, 2015
Children's Act, 1998 (Act 560)	National Employment Policy, 2014
Hazardous Child Labour Activity Framework (2016)	Labour Regulations, 2007 (LI 1833)
Workmen's Compensation Law, 1987 (PNDCL 187)	Labour Act, 2003 (Act 651)
Data Protection Act, 2012 (Act 843)	Persons with Disability Act, 2006 (Act 715)
Inter-Sectoral Standard Operating Procedures for Child Protection and Family Welfare, 2020	
Education and Training Requirements	

Education Act, 2008 (Act 778)	National Vocational Training Act, 1970 (Act 351)
National Health and Safety Requirements	
National Workplace HIV/AIDS Policy, 2012	National Health Policy, Revised 2020
National HIV/AIDS and Policy, 2019	Imposition Restriction 2020, (Act 490)
Public Health Act, 2012, (Act 851)	Ghana National Fire Service Act, 1997 (Act 537)
Factories, Offices and Shops Act, 1970 (Act 328)	National Wildfire Management Policy, 2006
Fire Precaution (Premises) Regulations, 2003 (LI 1724)	Control and Prevention of Bushfires Act, 1990 (PNDCL 229)
National Environmental Quality Standards	
Ghana Standard on Health Protection - Requirements for Ambient Noise Controls (GS 1222:2018)	Ghana Standard on Environment and Health Protection - Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019)
Ghana Standards Environment Protection-Requirements for Effluent Discharge (GS 1212:2019).	
International Requirements and Conventions	
United Nations Convention on Biological Diversity	International Labour Organization Conventions (ILO)
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	African Charter on the Rights and Welfare of the Child
Stockholm Convention on Persistent Organic Pollutants (POPs)	United Nations Framework Convention on Climate Change (UNFCCC)
Convention on the Rights of the Child, 1989	Convention on the Elimination of All Forms of Discrimination against Women (CEDAW, 1979)
International Plant Protection Convention	The Montreal Protocol (1987)
International Code of Conduct for The Distribution and Use of FAO Pesticides	Basel Convention
Regional Policies and Frameworks	
Volta River Basin Convention	Water Charter for the Volta River Basin.
Institutional Framework	
Ghana Irrigation Development Authority	Ministry of Food and Agriculture
Environmental Protection Agency	Lands Commission
Water Resources Commission	Traditional Authorities
Metropolitan, Municipal and District Assemblies	Council for Scientific and Industrial Research
Tree Crops Development Authority	Ghana Cocoa Board
Ministry of Trade and Industry	Ministry of Employment and Labour Relations
Ministry of Gender, Children & Social Protection	Ministry of Local Government, Decentralization and Rural Development
Local Government Office	

Additionally, this chapter will identify and discuss the relevant Environmental and Social Standards (ESSs) of the World Bank and health and safety guidelines. It will also identify the relevant approvals required and due process/diligence assessment needed. Some of the relevant approvals required for the implementation of the projects are summarized below:

Table 3.2 Key Regulatory Approvals applicable to projects under GTCDP

Regulatory body	Permits/licenses and certificates	Applicable	Project Phase	Remarks /Status

Environmental Protection Agency	Environmental Permit	Yes	Prior to construction phase of project	After acceptance of final EIS by the EPA.
	Environmental Certificate	Yes	Within 24 months of commencement of operations	After preparation of first ESMP; Renewable every 3 years
	Environmental and Social Management Plan	Yes	Submission to the EPA after 18 months of project commencement	The substantive ESMP replaces the Provisional ESMP that is submitted as part of the EIS
EPA – CCMC	Registration / licensing of commercial dealers in agro chemicals	Yes	Operations phase	The CCMC licences the products as well as the importers and distributors
Water Resources Commission	Water Use Permit	Yes	Prior to commencement of applicable project works	After obtaining Environmental Permit; renewable every three years
Lands Commission	Land acquisition	Yes	Planning, during acquisition of land	Are there any physical or socioeconomic encumbrances with the site
Ghana National Fire Service	Fire Permit/ Certificate	Yes	Construction of office buildings / public facilities	Renewable on annual basis
Metropolitan / Municipal / District Assembly	Development and building approvals	Yes	Prior to construction of project facilities and infrastructure	Permit is issued for office buildings and related facilities upon compliance with EPA and other statutory processes
Department of Factories Inspectorate	Certificate of Registration	Yes	Construction and Operation phase.	Renewable on annual basis

4 ENVIRONMENTAL AND SOCIAL MITIGATION PLAN

This chapter presents a brief discussion on the key risks and impacts that may be associated with activities under the nursery facility rehabilitation.

4.1 Evaluation of Potential Adverse Impacts

These risks and impacts are discussed broadly under 3 main categories:

- Preparatory and planning phase impacts;
- Rehabilitation and constructional phase impacts; and
- Operational and maintenance phase impacts.

4.1.1 Preparatory and Planning Phase Impacts

Uncertainty of the project schedule and scope could result in some level of unrest and anxiety among farmers who benefit from the nursery during the construction and rehabilitation phase of the proposed project. Feasibility studies and stakeholder consultations for the proposed projects will seek to allay these concerns.

4.1.2 Rehabilitation and Constructional Phase Impacts

Loss of vegetation and impacts on flora and fauna: The rehabilitation works would involve clearing several hectares of vegetation (aquatic weeds, shrubs, grass, trees) to the commencement of the civil works and earthworks. The proposed site may be an existing scheme where vegetation in the project site may be heavily modified as a result of agricultural activity.

Soil impacts: Construction and clearance activities could result in considerable disturbance to soil, through vegetation clearance, earthworks, site grading and vehicle/worker movements. There could be soil erosion and sediment release to land and water, soil mixing, compaction, topsoil loss, increased risk of contamination from fuels, oils and waste.

Generation and disposal of solid waste: Vegetative material and excavated soils will form the bulk of waste generated. Other wastes would include metal scraps, worn-out tyres and spent lubricating oil, empty lubricant containers, rubber seals, concrete debris, etc. which must be disposed of properly to avoid adverse impacts on the environment.

Occupational Health and Safety Issues: Workers would be exposed to noise, vibrations and dust. Additionally, there is considerable risk of accidents and injuries from the use of equipment and machinery and from working along access roads. Workers are also at risk of falling into dugouts.

Public/Community health impacts: Identified public health impacts include spread of HIV/AIDS and other sexually transmitted diseases (STDs) as a result of irresponsible sexual behaviour by migrant workers. Open defecation may also be promoted if adequate toilet facilities are not provided during construction for workers and food vendors who may patronize the site. Poor sanitation conditions may result in pollution of nearby waterbodies. Improperly covered trenches may result in stagnant water and breed mosquitoes.

GBV/SEA/SH impacts: Identified GBV/SEA/SH issues include employers soliciting for sexual favours from job seekers, male workers sexually harassing/abusing community folk, etc. This could result in pregnancies, single parenthood and economic hardship for women and the girls in the project areas.

Child Labour: Children from the neighbouring areas of the project communities could be engaged in menial activities such as carrying loads, pushing wheelbarrows, etc in the construction of the nursery facility.

Work Camp and Labour Issues: It is expected that the Contractor will provide an accommodation for some of its employees within a fenced compound or identify suitable locations within the area of the facility to construct camps and yards, if needed. The camp will include workers' accommodation, potable water facilities, kitchen, clinic and sanitation facilities. The yard will include fuel storage area, cement warehouse, concrete batching plant, parking area for machinery, general workshop, maintenance workshop, areas for storing chippings and sanitation facilities. Such work camps and yards, if not well managed, can lead to a wide range of adverse impacts.

While this ESMP offers mitigation measures against these adverse impacts, the contractor even before construction works start is expected to prepare and submit for approval, an Environment, Social, Health and Safety Management Plan (ESHS-MP) or Contractor's ESMP (C-ESMP) based on the findings and mitigation measures in the ESIA and ESMP. Additionally, the contractor will prepare a code of conduct which will be signed by all workers and enforced by the contractor. At the bidding stage, all bidders will be required to demonstrate their appreciation of ESHS issues by submitting an ESHS Management Strategy as part of their proposal or bid.

The contractor's ESHS-MP or C-ESMP will incorporate all the following plans as a single report or each may be submitted as a standalone report:

- Waste Management Plan;
- Emergency Preparedness Plan;
- Pollution Management Plan;
- Health and Safety Plan;
- Labour Management Plan;
- Grievance Redress Mechanism;
- Community Engagement and Communication Plan;
- Social and Cultural Orientation Plan

The contractor's Code of Conduct at a minimum will address the following issues:

- Compliance with applicable laws, rules, and regulations of Ghana and applicable World Bank requirements;
- Compliance with applicable health and safety requirements (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment);
- The use of illegal substances;
- Non-Discrimination (for example on the basis of family status, ethnicity, race, gender, religion, language, marital status, birth, age, disability, or political conviction);
- Interactions with community members (for example to convey an attitude of respect and non-discrimination);
- Sexual harassment (for example to prohibit use of language or behaviour, in particular towards women, men or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate);
- Violence or exploitation (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favours or other forms of humiliating, degrading or exploitative behaviour);
- Protection of children (including prohibitions against abuse, sexual abuse and exploitation, and overall worker contact with children, ensuring children's safety in project areas) and child safeguarding measures for the workplace;
- Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
- Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favours, are not provided to any person with whom there is a financial, family, or personal connection);
- Respecting reasonable work instructions (including regarding environmental and social norms);
- Protection and proper use of property (for example, to prohibit theft, carelessness or waste);
- Duty to report violations of the Code;
- Non-retaliation against workers who report violations of the Code, if that report is made in good faith.
- Punitive actions for violations of the Code including caution, demotion, suspension, summarily dismissal, criminal prosecution etc.

4.1.3 Operational and Maintenance Phase Impacts

The identified significant adverse impacts during the operational and maintenance phase of the proposed project are as follows:

Impact from water abstraction: Uncontrolled abstraction of water for irrigation may affect the water level in the irrigation dam/waterbody, affecting aquatic life. This may be worse during prolonged periods of drought.

Impact on Public health and safety: Poor management of water abstraction from publicly used waterbodies could result in contamination of the water body which would prevent its use by nearby communities that rely on it one way or the other

Water quality deterioration: The high nutrient content of the wastewater from the farms, could lead to the proliferation of weeds in the river and affect water use downstream of the facility. Other possible sources of pollution of the river is the transport of agrochemicals in runoff water and waste water. Groundwater resources could also be contaminated from the percolation of agrochemicals and nutrients through the soil.

Pest Management: Disease infestation and pest/rodent infestation may result in loss of adversely affect seedlings. This may adversely affect revenue generation and consequently result in high investment losses.

Waste management and sanitation issues: Waste to be generated during the operational phase include crop residue and agrochemical containers. Other waste to be generated include pack house waste (mainly fruit and vegetable culls) and office waste (paper, drinking water sachets, etc.).

Occupational health and safety: Use of tools could expose workers to harm especially without the use of appropriate PPEs. There is a risk of injury if safety procedures are not followed. There is also a high risk of exposure to agrochemicals through storage, handling, application and disposal.

GBV/SEA/SH impacts: Identified GBV/SEA/SH issues include employers soliciting for sexual favours from job seekers, male workers sexually harassing/abusing community folk, etc. This could result in pregnancies, single parenthood and economic hardship for women and the girls in the project areas.

Emergency situation and sustainability of the nursery facility: Factors that may affect the sustainability of the targeted irrigation schemes include inadequate funding, poor capacity building within PIU-MOFA and the Water Users Association (WUA) for the management of the scheme and emergency situations such as fire, dam collapse and flooding.

4.2 Mitigation Measures for Significant Potential Adverse Impacts

Mitigation impacts have been proposed in **Table 4.1** below for the potential significant environmental and social impacts of the proposed project, especially with respect to the nursery project.

5.0 Environmental and Social Monitoring Plan

Environmental and social monitoring is an essential component of a continuous project review process following approval of an Environmental and Social Assessment. The monitoring of tangible and measurable environmental and social parameters will also help to confirm any predicted impact or otherwise and address the effectiveness of the implementation of the mitigation measures.

A comprehensive monitoring plan has been developed in **Table 5.1** to guide the implementation of the mitigation measures recommended for the identified adverse environmental and social impacts. The monitoring plan includes the proposed responsible institutions or persons and estimated budget/cost requirements. Detailed cost analysis from prospective consultants and experts to be engaged as part of the monitoring programme will be needed to confirm cost requirements.

Table 4.1 Mitigation Measures for the Identified Significant Impacts

Potential Risks / Impacts	Receptor(s)	Proposed Mitigation Measures	Responsibility	Annual Cost of Implementation (GHC)
Planning Phase Impacts				
Potential temporary loss of seedling supply	Farmer	- As part of its awareness creation efforts, PIU-MOFA will ensure that potentially affected individuals are adequately informed, in advance, of the scope, magnitude and schedule of the proposed project, its implications for their continued farming over the construction period. These measures will minimise the problem of confrontation and conflicts and will reduce this impact significantly. - PCU – TCDA will also ensure that farmers are informed of any changes in the project design that may affect them. - PCU – TCDA will ensure all grievances/concerns by local communities, traditional authorities and farmers are resolved prior to construction works.	PCU – TCDA	As part of regular operations
Construction Phase Impacts				
Loss of vegetation and impacts on flora and fauna	Flora, fauna, soil	- The Contractor shall limit the vegetation clearance to the exact land acreage required for construction works, as indicated on the project drawings or approved by the Supervising Engineer. - Where possible, complete felling of trees that have grown within the scheme area will not be done during vegetation clearance. The Engineer may order certain trees to be left standing; - PCU – TCDA will contractually prohibit contractor and workforce from hunting wildlife for game or any other purpose.	Contractor/ Supervising Engineer/ PCU – TCDA	Included in Contractor's Bills of Quantities (BoQ)
Impacts on water Quality	Water	- The contractor will implement standard erosion and sediment control best management practices - The contractor will ensure soils removed during construction are stockpiled for reuse where possible.	Contractor/ Supervising Engineer	Included in Contractor's BoQ
Soil impacts	Soil, water bodies, air	- To minimize erosion and sediment transport as a result of removal of vegetation, the necessary works to be carried out in the cleared locations will be done promptly. - The period of exposure of excavated soils to weather conditions will be limited to minimise the possibility of sediment transport as a result of storm water/runoff. Heaps of excavated soils suitable for reuse will be utilised in the shortest possible time to minimise exposure. Materials found to be unsuitable for backfilling will also be disposed of promptly.	Contractor/ Supervising Engineer/ PCU – TCDA	Included in Contractor's BoQ

Generation and disposal of solid waste	Land, water Bodies	- The contractor(s) will allow the neighbouring communities to collect the tree and shrub stems for use as poles, fuelwood and fencing material. As much as possible, the twigs and leaves will be spread and ploughed into soil or allowed to decompose. - Ensure efficient use of construction materials and re-use of excavated material to minimize the waste to be generated - Excavated material and cleared vegetation which cannot be re-used will be collected and disposed at identified borrow pits and spoil tips - PCU – TCDA will ensure the contractor(s) provide bins at work camp, yard and construction site for collection and disposal of plastic waste and polythene materials such as lubricant containers, drinking water sachets and carrier bags which will be regularly emptied at approved dump sites.	Contractor/ Supervising Engineer/ PCU – TCDA	Included in Contractor's BoQ
Occupational Health and Safety Issues	Workers	<u>Adoption of Health and Safety Policies/ESHS Plan</u> - The contractor(s) will be required to adopt a Health & Safety Policy to guide the rehabilitation and construction activities. The adoption of the health and safety policy at site will serve as a precautionary measure to prevent/minimise the possibility of accidents and reduce health associated risks. - Workers will therefore be required to follow the health and safety policy of the contractor. A health and safety officer will be appointed by the Contractor to ensure compliance with the Health and Safety Policy. - The contractor will be required to prepare and implement an ESHS-MP or C-ESMP which will be regularly updated to respond to emerging risks and impacts. <u>Provision and Use of Personal Protective Equipment (PPE)</u> - Ensure the contractor provides and enforces the use of appropriate personal protective equipment (PPE) such as safety boots, reflective jackets, hand gloves, earplugs and nose masks. Sanctions will be implemented where workers do not use the PPEs provided. <u>Use of Road Worthy Vehicles</u> - Require the contractor to use equipment in good working condition including regular maintenance and service of its bulldozers, excavators and tractors to ensure they are in good condition. Good conditioned and well-maintained equipment will reduce frequent breakdowns, noise nuisance and smoke emissions which could affect the operator's and other workers' health and safety.	Contractor/ Supervising Engineer/ PCU – TCDA	Included in Contractor's BoQ

		<u>Use of Qualified Personnel</u> • Ensure that the contractor employs only qualified machine operators with requisite skills and experience to operate the machines. • Ensure the contractor carries out regular training on standard operational procedures and health & safety for machine operators and workers. <u>First Aid</u> • Ensure the contractor provides first aid training for its workers and provide first aid kits at the project site during land preparation and construction activities to treat minor ailments. However, major cases will be referred to the nearest hospital or health post. <u>Hazardous Child Labor</u> • Ensure that all contracts have information and awareness of what are considered hazardous tasks for children, as listed in the Hazardous Child Labour framework, if it is expected that any child below 18 will be engaged in project activities • Ensure that contractors have monitoring and supervisory procedures in place to prevent and identify if children engage in hazardous tasks.		
Public health impacts	Land, water bodies, workers, public	• HIV/AIDS and STDs • The Contractor will be required to organise, in collaboration with the Municipal Health Directorates, awareness creation seminars and educational programmes for all workers and the surrounding communities on the behavioural changes required to prevent the spread of HIV/AIDS and other STDs. • Sanitation Issues • Ensure that the contractor covers all trenches or excavations to prevent accidents and collection of stagnant water which could breed mosquitoes. • Ensure the contractor provides adequate waste bins at the project site for use to minimise indiscriminate disposal of plastic and polythene material, cans and food waste by the workers. These bins will be frequently transported and emptied at approved dump sites. This will prevent the littering of the project site with cans and bottles which could collect water and breed mosquitoes.	Contractor/ Supervising Engineer/ PIU-MOFA Municipal Health Directorates	10,000.00 (awareness creation seminar) Remainder included in contractor's BoQ

		Ensure the contractor provides temporary toilet facilities at the project site for use by the construction workers. The workers will be educated against “free range” defecation.		
GBV/SEA/SH	Farmers and public	- The contractor shall ensure that the workers understand and signs to a code of conduct. - The contractor together with Traditional Authorities shall sensitize the community members, particularly women and girls on the grievance mechanism.	Contractor/ Supervising Engineer/ PIU-MOFA Social Welfare and Community Development Department	Included in contractor's BoQ
Child labour	Children	- Ensure the contractor adopt “No Child Labour Policy” on the project. This is to prohibit the contractor from employing children below the age of 18 years. - Ensure the Social Welfare and Community Development Department undertake quarterly monitoring of the construction activities.	Contractor/ Supervising Engineer/ PIU-MOFA Social Welfare and Community Development Department	Included in contractor's BoQ
Change in sociocultural characteristics	Workers Communities	- Ensure the contractor(s), together with opinion leaders such as the Assembly member and traditional leaders, sensitise migrant workers on societal norms, taboos and other cultural practices in the area. - The Contractor shall be required to submit for approval of the Engineer a social and cultural orientation plan for all his staff.	Contractor/ Supervising Engineer/ PCU – TCDA Traditional leaders	Included in Contractor's BoQ
Operations and Maintenance Phase Impacts				
Impacts of water Abstraction	Water, public	Employ personnel with adequate skills to manage water abstraction	Facility Management PCU – TCDA	Included in Contractor's BoQ
Impact on Public health and Safety	Land, air, water, workers, farmers, public	- Provide and enforce the use of separate labelled bins for the collection and disposal of used agrochemical containers (after they are triple-washed and punctured). - Collaborate with NGOs, as well as the District Department of Agriculture to carry out periodic awareness creation activities to educate farmers on the perils of reuse of agrochemical	Facility Management PCU – TCDA	20,000.00

		containers as well as train them in the proper disposal methods for these. Punitive measures will be put in place for offenders.		
Water Quality deterioration	Surface and underground water	• The farmers will adopt efficient use of fertilizers, weedicides and pesticides to reduce release of chemicals in the fields. • The provision of bunds around the plots will hold water in the plots and reduce transport of soil sediments through erosion by runoff. • The farmers will utilize pesticide application technologies and practices designed to minimize off-site movement or runoff (e.g., low-drift nozzles, using the largest droplet size and lowest pressure that are suitable for the product). • The farmers will ensure any unused dilute pesticide that cannot be applied to the crop—along with rinse water, and out of-date or no-longer approved pesticides—would be disposed of as a hazardous waste, as per FAO International Code of Conduct on Pesticides Management.	Facility Management	15,000.00
Waste management and sanitation issues	Land, water bodies, public	• The facility will be provided with adequate bins on the farm for the collection of plastic and polythene material such as drinking water sachets for proper disposal at approved dump sites. • Separate labelled bins will be provided on site for collection of agrochemical containers, foil seals, lids and fertilizer sacks for return to the suppliers for recycling/proper disposal, as per FAO International Code of Conduct on Pesticides Management. Empty agrochemical bottles / containers will be triple-washed and punctured prior to being stored in the separate labelled bins for returning to the suppliers. This will ensure they cannot be reused. • The facility management will ensure bins containing used agrochemical containers are stored safely and are secured under cover prior to their safe disposal; they will not be used for other purposes. • The facility management will be contractually required to prepare a pesticide waste disposal plan before it commences operations	Facility Management	10,000.00
Occupational health and safety	Farmers and workers	• The facility management will educate the farmers to ensure that any pesticides used are handled, stored, disposed of, and applied according to the FAO's International Code of Conduct on Pesticide Management. • The facility management will ensure that pesticides that fall under the World Health Organization's (WHO) Recommended Classification of Pesticides by Hazard Classes 1a (extremely hazardous) and 1b (highly hazardous), or Annexes A and B of the Stockholm Convention are not purchased, stored or used. • The facility management will ensure all pesticides listed in WHO Hazard Class II (moderately hazardous), will be avoided unless appropriate controls established with respect to the	Facility Management	10,000.00

		manufacture, procurement, or distribution and/or use of these chemicals are in place. These chemicals would not be accessible to personnel without proper training, equipment, and facilities in which to handle, store, apply, and dispose of these products properly. • The facility management will ensure all staff and farmers are trained on appropriate use and handling of agrochemicals. • The Facility Management will provide selected staff and farmers with first aid training, including on accidents associated with agrochemical use, to administer first aid health care in the event of any accidents. • The facility management will provide appropriate PPEs such as gloves, nose masks, coveralls, goggles, safety boots, etc. for its staff. Farmers will also be required to acquire and use PPEs. The use of PPEs will be enforced especially during the handling of agrochemicals such as during spraying of weedicides or the application of fertilizers.		
Pest Management	Farmers	• The facility management will review and follow labelling for pesticide handling, personal protection equipment (PPE) requirements, storage, and disposal guidelines. • The facility management will ensure training on EPA approved agrochemicals • The facility managers will adopt and implement the GTCDP Pest Management Plan	Facility management	10,000.00
Sustainability of the nursery project	Land, water, workers, public	• Well trained and experienced personnel will be employed by facility management to oversee the operations and maintenance of the irrigation project. • The facility management in consultation with the Ghana National Fire Service (GNFS), will ensure that all premises have fire permits and adequate fire prevention and control measure are put in place. • Prepare and implement and fire emergency response plan, in collaboration with the GNFS. • Prepare Emergency Response Plan	Facility management	35,000.00
GRAND TOTAL				110,000.00

10.5 Scoping Notice Format

SCOPING NOTICE

[Company] proposes to establish a [facility/project/etc] from-to/in the [location] in/of the [District] of the [region].

Notice of the proposed [Project] is hereby served for public information as required under the procedure for the conduct of EIA in accordance with Regulation 15(1) of (LI 1652).

Any person(s) who has an interest, concern, or special knowledge relating to potential environmental effects of the proposed undertaking, may contact or send such concerns, etc. to:

[Contact Person]

[Client Address]

[Email Address/Website]

[Tel No]

[Fax]

The Executive Director

EPA

P O Box M 326

Accra

info@epa.gov.gh

Tel:0302664697/8

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Appendix 11.0: Citizen Engagement Plan

Citizens, acting as individuals or groups, are important actors in development as they are the ultimate client of government, development institutions and private sector interventions in particular jurisdictions. Citizens' input and expectations for change increase accountability in public institutions and facilitate improved development outcomes. Engagement of citizens must therefore be a two-way interaction and give citizens a stake in decision-making. Consistent with the World Bank Group's Strategic Framework for Mainstreaming Citizen Engagement, the GTCDP in engaging citizens will focus on:

- Understanding the local context;
- Mapping stakeholders;
- Making clear the engagement scope and manage expectations;
- Leveraging government support;
- Defining processes and timelines; and
- Closing the feedback loop

The GTCDP will adhere to internationally accepted practices in engaging citizens. Particular attention will be paid to engaging communities, focus groups, NGOs and FBOs at the various locations where the program will be implemented. Regular consultations with stakeholders will be held throughout program implementation to solicit opinions from diverse groups including women, vulnerable and marginalized groups. Aided by the framework of the International Association for Public Participation, five (5) types of engagement will be carried out and it includes:

- Information – Providing the necessary details to the public to understand the goals as well as opportunities of the program.
- Consultation – Dialoguing, listening and acknowledging the expressed ideas and concerns, needs and motivations of citizens.
- Involvement – Ensuring that the ideas, concerns, motivations of citizens are directly reflected in the program activities.
- Collaboration – Using citizens to collect information, share their contributions and incorporate findings, observations, and comments into program outcomes.
- Empowerment – Providing resources, advice and assistance to citizens to improve their lot.

A tiered Grievance Redress Mechanism and a system for documenting and reporting utilization of citizens' feedback will be instituted. Monitoring responsibilities will be assigned to communities who are empowered through simplified systems of disbursement, contracting, program documentation, and grievance handling. To promote transparency, ownership and effectiveness, the citizen engagement process will be led by competent local experts and ensure inclusion of women, vulnerable and marginalized persons, academia, FBOs and NGOs.

Women Engagement

In most Ghanaian communities, women play a critical role in agriculture. However, they are rarely able to access their equal land and property rights in spite of legal provisions due to tradition and dynamics in household relations. Traditionally, land is mostly owned by males in both patrilineal and matrilineal systems. The eldest son inherits the deceased father in trust of the family thereby denying ownership of family assets by daughters. Women are mostly left with usage rights whilst the men control and make decisions on how the land should be utilized.

Society often assumes that concerns of women can be effectively addressed by their male representatives hence women are not considered as a distinct group of stakeholders. They are therefore not engaged extensively. To address this, COCOBOD and TCDA will ensure the inclusion of women in community representative bodies and gives women an opportunity to articulate their interests and preferences through a participatory process.

Appendix 12.0: Framework to Guide Supplementary Plans

12.1 GBV / SEA Action Plan

Violent behavior towards women is rampant globally with more than one out of three women having experienced some kind of physical or sexual violence in their lives. This includes intimate partner violence such as physical, sexual and/or emotional violence. The case is no different in Ghana where an estimated 13% to 61% of every partnered women having experienced some violence from current or previous partners; strangers, teachers, schoolboys, other family members and acquaintances. Social (negative norms), economic (poor economic empowerment) and legal factors have been found to render women powerless and unable to reject inappropriate advances without facing intimidation or violence.

Risk Assessment

In appraising project-related risk of exacerbating GBV, the country, regions and municipal/districts context the potential risks (low, medium or high) that the project may bring should be considered carefully. Assessment must be conducted throughout project implementation by monitoring the situation, assessing the effectiveness of risk mitigation measures, and adapting them accordingly.

Sub-projects under the GTCDP could increase the risk of GBV in different ways including:

- Low participation of women in extension training as compared to their male counterparts;
- Women being side-lined from compensation process;
- Employers soliciting for sexual favours from female job seekers;
- Supervisors/workers sexually harassing/abusing female colleagues;
- Male workers sexually harassing/abusing women and girls; and
- Contractors/service providers sexually harassing/abusing females.

Mitigation, Management and Monitoring

As prescribed by the World Bank Good Practice Note on Gender Based Violence (2018), mitigation measures, management and monitoring arrangements for the risks identified are presented under the GBV Risk Management Plan.

GBV Risk Management Plan

When	Action to Address GBV Risks	Timing for Action	Who Responsible is for Action	Ongoing Risk Management
Identification / Appraisal	Sensitize the IA as to the importance of addressing GBV on the project, and the mechanisms that will be implemented.	• Preparation. • Implementation.	• PIU.	• PIU to monitor and provide additional guidance as necessary.
	The project's social assessment to include assessment of the underlying GBV risks and social situation, using the GBV risk assessment tool to provide guidance and keeping to safety and ethical	• Preparation. • Implementation	• IA for social assessment and ESMP	• Ongoing review during implementation support missions.

	considerations related to GBV data collection. No prevalence data or baseline data should be collected as part of risk assessments.		• Contractor for C-ESMP. • PIU for GBV Risk Assessment	• Update project ESMP and Contractor's ESMP (C-ESMP) if risk situation changes.
	Map out GBV prevention and response actors in project adjoining communities. This should incorporate an assessment of the capabilities of the service providers to provide quality survivor centered services including GBV case management, acting as a victim advocate, providing referral services to link to other services not provided by the organization itself.	• Preparation • Implementation	• IA	• Update mapping as appropriate
	Have GBV risks adequately reflected in all safeguards instruments (i.e., Project ESMP, C-ESMP)—particularly as part of the assessment in the Environmental and Social Audit. Include the GBV mapping in these instruments.	• Preparation • Implementation (before civil works commence).	• IA for social assessment and ESMP • Contractor for C-ESMP.	• Ongoing review during implementation support missions. • Update project ESMP and Contractor's ESMP (C-ESMP) if risk situation changes.
	Develop a GBV Action plan including the Accountability and Response Framework as part of the ESMP. The contractor/consultant's response to these requirements will be required to be reflected in their C-ESMP.	• Preparation • Implementation (before civil works commence)	• IA	• Ongoing review during implementation
	Review the IA's capacity to prevent and respond to GBV as part of Safeguard Preparation.	• Preparation. • Implementation.	• PIU	• Ongoing review during implementation support missions. • Update project ESMP if risk situation changes.
	As part of the project's stakeholder consultations, those affected by the project should be properly informed of GBV risks and project activities to get their feedback on project design and safeguard issues. Consultations need to engage with a variety of stakeholders (political, cultural or religious leaders, health teams, local councils, social workers, women's organizations and groups working with children) and should occur at the start and continuously throughout the implementation of the project.	• Consultations need to be continuous throughout the project cycle, not just during preparation.	• IA	• Monitoring of implementation of Stakeholder Engagement Plan. • Ongoing consultations, particularly when C-ESMP is updated.

	The Stakeholder Engagement Plan of the project, which will be implemented over the life of the project to keep the local communities and other stakeholders informed about the project's activities, to specifically address GBV related issues.	• Consultations need to be continuous throughout the project cycle, not just during preparation.	• IA	• Monitoring of implementation of Stakeholder Engagement Plan. • Ongoing consultations, particularly when C-ESMP is updated.
	Make certain of the availability of an effective grievance redress mechanism (GRM) with multiple channels to initiate a complaint. It should have specific procedures for GBV including confidential reporting with safe and ethical documenting of GBV cases. Parallel GRM outside of the project GRM may be warranted for substantial to high risk situations.	• Prior to contractor mobilizing.	• IA, but discussed and agreed upon with the PIU.	• Ongoing monitoring and reporting on GRM to verify it is working as intended.
	Ensure IA has a GBV specialist/Officer to support project implementation.	• Preparation.	• IA.	• Ongoing reporting.
	For supervision have a social /environmental specialist in the supervision consultant's team with GBV specific skills to supervise issues related to GBV (e.g., supervise signing of Codes of Conduct (CoCs), verify working GRM for GBV is in place, refer cases where needed) and work with GBV Services Providers as entry points into service provision to raise awareness of the GRM.	• During procurement evaluation	• IA	• Ongoing reporting.
	Oversight through an independent Third-Party Monitor (TPM) organization/Independent Verification Agent (IVA) (civil society organization, international or local NGO, FBO, academic partner, private sector firm) with experienced GBV staff for monitoring the implementation of the GBV Action Plan and ensuring all parties are meeting their responsibilities.	• Preparation.	• IA	• Ongoing reporting.
	Funding must be available for IA to recruit GBV Services Providers to facilitate access to timely, safe and confidential services for survivors (including money for transportation, documentation fees, and lodging if needed).	• Preparation.	• IA.	• IA.
	Projects which do not use loan/credit/grant proceeds to hire GBV service providers at the start of project implementation encourage Borrowers include an escalation clause in the Environmental &	• Preparation.	• PIU.	• PIU.

	Social Commitment Plan (ESCP) should GBV risks become apparent over the course of the project implementation.			
Procurement	Clearly define the GBV requirements and expectations in the bid documents.	• Procurement.	• IA	• Review by PIU.
	Based on the project's needs, the Bank's Standard Procurement Documents (SPDs), and the IA's policies and goals, define the requirements to be included in the bidding documents for a CoC which addresses GBV.	• Procurement.	• IA.	• Review by PIU.
	For National Competitive Bidding (NCB) procurement, consider integrating the ICB SPD requirements for addressing GBV risks.	• Procurement.	• IA	• IA & Environmental Specialist of TCDP with review by PIU.
	The procurement documents should set out clearly how adequate GBV costs will be paid for in the contract. This could be, for example, by including: (i) line items in bill of quantities for clearly defined GBV activities (such as preparation of relevant plans) or (ii) specified provisional sums for activities that cannot be defined in advance (such as for implementation of relevant plan/s, engaging GBV service providers, if necessary)	• Procurement.	• IA	• Review by PIU.
	Clearly explain and define the requirements of the bidders CoC to bidders before submission of the bids.	• Procurement.	• IA	• Review by PIU.
	Evaluate the contractor's GBV response proposal in the C-ESMP and confirm prior to finalizing the contract the contractor's ability to meet the project's GBV requirements	• Procurement.	• IA	• Review by PIU.
Implementation	Review C-ESMP to verify that appropriate mitigation actions are included.	• Implementation.	• IA	• Review by IA. • Review by PIU.
	Review that the GRM receives and processes complaints to ensure that the protocols are being followed in a timely manner, referring complaints to an established mechanism to review and address GBV complaints.	• Implementation.	• PIU • IA	• Ongoing reporting. • Monitoring of complaints and their resolution.
	Codes of Conduct signed and understood Ensure requirements in CoCs are clearly understood by those signing. Have CoCs signed by all those with a physical presence at the project site.	• Initiated prior to contractor mobilization and continued during implementation.	• Contractor, Consultant, IA	• Review of GBV risks during project supervision (e.g., Mid-term Review) to assess any changes in risk. • Supervision consultant reporting that CoCs are signed and that workers have

	Train project-related staff on the behavior obligations under the CoCs. Disseminate CoCs (including visual illustrations) and discuss with employees and surrounding communities.			been trained and understand their obligations. • Monitoring of GRM for GBV complaints. • Discussion at public consultations.
	Have project workers and local community undergo training on SEA and SH.	• Implementation.	• IA, Consultants	• Ongoing reporting.
	Undertake regular M&E of progress on GBV activities, including reassessment of risks as appropriate.	• Implementation.	• IA, Consultants.	• Monitoring of GRM. • Ongoing reporting.
	Implement appropriate project-level activities to reduce GBV risks prior to civil works commencing such as: Have separate, safe and easily accessible facilities for women and men working on the site. Locker rooms and/or latrines should be located in separate areas, well-lit and include the ability to be locked from the inside. Visibly display signs around the project site (if applicable) that signal to workers and the community that the project site is an area where GBV is prohibited. As appropriate, public spaces around the project grounds should be well-lit.	• Prior to works commencing.	• Contractor/Supervision Consultant • PIU.	• Ongoing reporting. • Reviews during implementation support missions.

12.2 Child Labour Action Plan

Child labour can mean work that deprives children of their childhood, potential and dignity, and harmful to their physical and mental development and that is mentally, physically, socially or morally dangerous to children; and which invariably interferes with their education and educational prospects. A form of “work” can be considered “child labour” depending on a child’s age, the type and hours of work performed, conditions under which it is performed and the perspectives of individual countries and the applicable laws.

Ages 13 and 14 years are defined as the minimum age for light work in Ghana and the World Bank (per the ESS2) respectively. For the ILO, light work for children aged 13 to 15 must be for limited hours and not harming the health, safety or school attendance and achievement. ESS2 does not permit any child younger than 14, to be engaged to satisfy labour requirement on a World Bank funded project.

Of the 4 tree crops, cocoa is the sub-sector for which most documentation on child labour prevalence has taken place. The cocoa sector has been found prone to child labour due to the labour-intensive demands of cocoa cultivation and limited availability of labour force, and hazardousness, especially the widespread use of pesticides. Today, most child labour in the cocoa sector is thought to occur among seasonally hired farm workers. Work-related hazards associated with pesticide use are greater among workers in areas where production increases because knowledge on how to use pesticides is less widespread. Cashew harvesting involves picking the dropped nuts on the farm, and though simple, requires large labour force, and child labour could readily be deployed. labourlabourlabourhas been found that child laborers working in the agriculture sector outside of cocoa production are generally worse off in terms of their ability to attend school as the time intensity is considerably higher for child laborers working outside the cocoa sector.

The key issues associated with child labour and its adverse label for the tree crop sector could arise from the following:

- labourInformalities associated with the tree crop (agricultural sector) labour practices and associated difficulty to draw clear boundaries with “household chores” and farming;
- Lack of structured farmer education and accountability on child labour;
- Lack of understanding of reporting and response requirements in relation to different types of child labour cases;
- Absence of ready provision for custody and care of victims and trafficked children.

Other project components where contractors could deploy children as cheap means of labour could include:

- Establishment of Tree Crops Development Centres (TCDCs) as commercial nurseries for high-speed quality multiplication services for cashew, coconut and rubber plant varieties;
- Establishment of Tree Crops Service Centres (TCSCs)-certified agricultural (private-sector-driven) input distribution channels for farmers;
- Building of laboratory structures; and
- Rehabilitation of CSSVD-affected farms involving cutting, spraying, etc.

The child labour prevention plans for the projects will in due course be prepared by the relevant contractors and will be reviewed and cleared by the Social and Gender Specialist of COCOBOD/Social Development Specialist of TCDA as appropriate. These plans should include child labour prevention and mitigation measures including:

- An Accountability Framework showing how the PIU/contractor will handle identified child labour cases. This framework will include the following components:
 - Roles and responsibilities: Clearly defined roles and responsibilities for each stakeholder in the prevention plan, including government agencies, organizations, and individuals;
 - Performance measures: Clear and measurable performance indicators that will be used to assess progress towards the prevention plan's goals and objectives. These may include metrics such as reduction in the incidence of the problem being addressed, increased awareness of the issue, and improved access to services and resources;

- Reporting and feedback mechanisms: Regular reporting on progress and feedback on performance to ensure that stakeholders are aware of their progress towards the prevention plan's goals and can make adjustments as needed; and
- Consequences: Clearly defined consequences for perpetrators, including sanctions or penalties for non-compliance;
- A Reporting and Response Framework for reporting child labour cases if they are identified which will include:
 - Reporting channels: Clear and accessible channels for reporting incidents or concerns including reporting hotlines, email addresses, online forms, or in-person reporting mechanisms;
 - Incident classification: Define a set of criteria for classifying incidents ie; high risk or low risk cases of child labour;
 - Response procedures: Procedures to follow in response to reported incidents. This will include protocols for investigation, containment or referral of the case, and resolution of the incident;
 - Communication protocols: Clear communication protocols for notifying relevant stakeholders about cases, updates on the response process, and outcomes of the investigation; and
 - Feedback mechanisms: Mechanisms for providing feedback to individuals who report incidents and for continually improving the reporting and response system;
- Ages of project workers will be verified and investigated. The age verification process will include identification documents (ID) that are acceptable in local laws, employment and human resources practices as “proof of age” and testimony/affidavits from officials of the schools attended, a medical examination, statements from family members and parish/village officials/local authorities;
- Code of conduct (CoC) and parental consent forms with guidance on permitted and prohibited work of children will be developed by the contractor. It will be ensured that requirements in CoCs are clearly understood by project workers and parents whose children (of minimum age) will be involved as workers on the project;
- The Stakeholder Engagement Plan of the program, which will be implemented over the life of the program to keep the local communities and other stakeholders informed about all the activities, shall specifically address child labour issues. Consultations shall include a variety of stakeholders (farmers and farmer associations, political, cultural or religious leaders, local councils, social workers, women’s organizations and groups working with children) and will occur at the start and continuously throughout the implementation of the project;
- Project workers will be trained on the behaviour obligations under the CoCs. Also, CoCs (including visual illustrations) will be disseminated and discussed with employees and surrounding communities;
- Local communities will be sensitized through awareness creation campaigns and project workers will undergo training on child labour definitions and prevention, all facilitated by the SWCDDs and DOVVSU with support from the implementing agencies;
- Credible Civil Society Organisations (CSOs) and Non- Governmental Organisations (NGOs) that are available to remediate cases of child labour in the project areas will be identified with help from the various SWCDDs and DOVVSUs. Mapping of service providers in the project areas will incorporate an assessment of the capabilities of the service providers to provide quality survivor centered services including child labour case management, acting as a victim advocate and providing referral services to link to other services not provided by the organization itself; and
- Child labour prevention requirements and expectations will be clearly defined in bidding documents:
 - Based on the project’s needs, the Bank’s Standard Procurement Documents (SPDs), and the implementing agencies’ policies and goals, the requirements will be included in the bidding documents for a CoC which addresses child labour;
 - The procurement documents should also set out clearly how adequate child labour prevention costs will be paid for in the contract. This could be, for example, by including: (i) line items in bill of quantities for clearly defined child labour prevention activities (such as preparation of relevant plans) or (ii) specified provisional sums for activities that cannot be defined in advance (such as for implementation of relevant plan/s, engaging service providers, if necessary);
 - Clearly explain and define the requirements of the bidders CoC to bidders before submission of the bids; and
 - Evaluate the contractor’s child labour prevention proposal and confirm prior to finalizing the contract the contractor’s ability to meet the project’s child labour prevention requirements.

Other components of the child labour prevention plan should include the following:

- A description of Product Certification Standards and processes linked to child labour and the linked processes for Third-Party Monitoring of those standards; and
- Description monitoring on child labour prevention activities, including reassessment of risks as appropriate.

Futher Measures – Preventing and Responding to Child Labour

- Integrated, area-based child labour prevention and response system will be established in 11 project districts;
- Strengthening the capacity of district assemblies and communities for prevention, identification, monitoring and remediation of child labour;
- Scaling up national child labour prevention, identification, and referral initiatives to project districts through financing prevention of child labour;
- Scaling up of the inter-ministerial and decentralized Integrated Social Services (ISS) initiative in 7 of 11 project districts;
- Scaling up of MOGSCP Welfare Management Information System (SWIMS) and MELR's Child Labour Monitoring System (GCLMS) in the project districts through development of an interface between GCLMS and COCOBOD's CMS and TCDA's digital platform.
- Remediation of child labour through scaling up of MOGCSP alternate livelihoods package in project communities, with project beneficiary households; and
- Livelihood package tailored with MOGCSP, COCOBOD and TCDA to include soft interventions on parental skills training, coaching, counselling, healthcare, self-help groups and beneficiary welfare associations, as well as supporting physical/material needs of identified vulnerable households and communities.

Appendix 13.0: COVID-19 Control Protocols

The COVID-19 Restrictions enacted under E.I. 64, was revised to make the wearing of nose masks optional while encouraging the public to continue the practice of handwashing and social distancing. In-person activities such as those that take place in mosque, churches, private parties and events have been resumed in full capacity requiring all persons present to be fully vaccinated. The roles of employers and workers in responding to COVID-19 include:

- Facilitate employees getting vaccinated;
- Instruct workers who are infected, unvaccinated workers who have had close contact with someone who have tested positive for COVID-19, and all workers with COVID-19 symptoms to stay home from work to prevent or reduce the risk of transmission of the virus that causes COVID-19.
- Implement social and physical distancing in all communal work areas for unvaccinated and otherwise at-risk workers;
- Perform routine cleaning and disinfection of working areas;
- Record and report COVID-19 infections and deaths.

Employers should grant paid time off for employees to get vaccinated and recover from any side effects. Instruct workers who are infected, unvaccinated workers who have had close contact with someone who have tested positive for COVID-19, and all workers with COVID-19 symptoms to stay home from work to prevent or reduce the risk of transmission of the virus that causes COVID-19.

Additional Measures

Additional measures include:

- Worker Screening;
- Identify and isolate suspected cases;
- Implement the hierarchy of controls; and
- Use of PPEs.

Workers Screening

Screening workers for COVID-19 signs and/or symptoms (such as through temperature checks) is a strategy to implement as part of efforts to maintain or resume operations and reopen physical work sites. It could also serve as a criteria for return to work of exposed and recovered employees (those who have had signs or symptoms of COVID-19 but have gotten better).

Identify and Isolate Suspected Cases

In workplaces where exposure to COVID-19 may occur (such as the input centres, laboratories, etc.), potentially infectious individuals will be promptly identified and isolated in protecting workers, visitors, and others at the work site. Infectious people who report they are sick or have symptoms of COVID-19 will be kept out of the workplace. Workers who develops signs or symptoms of COVID-19 at the workplace will be sent to seek medical care.

If the person cannot immediately leave the workplace, the person will be isolated in a location away from workers, with a closed door (e.g., in a single occupancy restroom), if possible, until they can go home or leave to seek medical care

Implement the Hierarchy of Controls

The hierarchy of controls generally labels and prioritizes controls in the following order from most to least effective. i.e., elimination/substitution, engineering controls, administrative controls and safe work practices, and PPE.

Elimination control involves excluding potentially infectious individual from the workplace. Engineering controls typically require a physical change to the workplace to isolate workers from a hazard. Examples include:

- Adjusting ventilation systems to introduce additional outside air and/or increase air exchange to introduce fresh air. Consult a qualified technician if necessary;

- Modifying physical workspaces to increase the distance between employees.

Administrative controls and safe work practices involves changing policies and procedures for how workers perform job duties to ensure work activities are conducted safely. Examples of administrative controls for protecting workers from COVID-19 include:

- Posting signage, in languages the workers understand, to remind workers to maintain a distance between one another and to practice regular hand hygiene;
- Providing training and information in languages the workers understand; and
- Increasing the frequency of cleaning and disinfection within the work site.

Use of PPEs

PPEs protect workers from hazards when engineering and administrative controls are insufficient on their own. Train employees on how to properly put on, take off, and dispose of all PPEs.

Appendix 14: IUCN Status of Flora and Fauna in the Guinea Savannah Zone

Plant species within the Zone include the common tree species (*Lophira lanceolata*, *Anogeissu sp*, *Azelia Africana*, *Prosopis Africana*, *Pterocarpus erinaceus*, *Parkia clappertoniana*, *Butyrospermum parkii* and *Antiaris Africana*). In the less eroded areas of the zone, *Andropogon gayanus*, the commonest grass, may be replaced by *Hyparrhenia* and *Heteropogon spp*. While *Aristida* and *Cymbopogo gigantus* dominate the badly eroded sites. *Vetiveria nigritana*, *Seteria anceps* and *Sedges* occur in alluvial sites (FAO-RAF, 2000/1). The wildlife species include *Panthera leo* (lions), *Panthera pardus* (leopards), *Loxodonta aficana* (elephants), *Syncerus caffer* (buffalo), *Neotrigus pygmaeus* (royal antelope) and *Colobus* and *Cercopithecus sp* (monkeys), *Hippopotamus amphibius* and *Crocodilus sp*. Snakes including pythons and poisonous ones such as *Naja melanoleuca* (cobra), *Bitis gabonica* (gaboon viper) and Lizards, e.g., *Veranus niloticus*, often of striking colours are common. Large snails, spiders and scorpions are also present in large numbers.

The bird species include *Fringilla sp* (bush fowl) *Falconidae sp* (falcons, hawks, and eagles) *Psittacus erithacus* (grey parrot), *Neophron sp*. (vultures), *Guttera edouardi* (guinea fowl) and many more. Savanna fauna comprises at least 93 mammal species, over 350 bird species, 9 amphibians and 33 reptiles. Savannah Region falls within the savannah vegetations. Cashew plantation is the selected commodity of the regions within the savannah vegetation (Savannah, Bono, and Bono East Regions) and the interventions will cover improvement in productivity and value addition. The table below presents the International Union for Conservation of Nature (IUCN) status of typical flora and fauna species mentioned above.

Scientific Name	Common Name	IUCN Status		Scientific Name	Common Name	IUCN Status
Flora				Fauna		
<i>Ceropegia gemmifera</i>	Parachute flower	Critically Endangered		<i>Panthera leo</i>	Northern lion	Vulnerable
<i>Commiphora dalzielii</i>	Myrrh	Endangered		<i>Panthera pardus</i>	Leopard	Least Concern
<i>Pteleopsis habeensis</i>	Lallen giiwaa	Endangered		<i>Loxodonta africana</i>	African bush elephant	Endangered
<i>Eugenia coronta</i>	Amame	Critically Endangered		<i>Syncerus caffer</i>	Savannah buffalo	Not Threatened
<i>Andropogon gayanus</i>	Gamba grass	Least Concern		<i>Neotragus pygmaeus</i>	Royal antelope	Least Concern

<i>Diectomis fastigiata</i>	Foldedleaf grass	Endangered		<i>Colobus</i>	Guereza	Vulnerable
<i>Pennisetum pedicellatum</i>	Desho grass	Least Concern		<i>Cercopithecus sp</i>	Mona monkey	Vulnerable
<i>Loudetia togoensis</i>	Buri palm	Data Deficient		<i>Hippopotamus amphibius</i>	Hippopotamus	Vulnerable
<i>Heteropogon contortus</i>	Spear grass	Least Concern		<i>Crocodilus sp</i>	West African crocodile	Least Concern
<i>Schoenefelda gracilis</i>	Slender braid grass	Data Deficient		<i>Naja melanoleuca</i>	Black cobra	Least Concern
<i>Aristidaa hordeacea</i>	Arista	Critically Endangered		<i>Bitis gabonica</i>	Gaboon viper	Vulnerable
<i>Vitellaria paradoxa</i>	Shea tree	Vulnerable		<i>Veranus niloticus</i>	African small-grain lizard	Least Concern
<i>Parkia biglobosa</i>	African locust bean tree	Least Concern		<i>Francolinus sp</i>	Wattles	Least Concern
<i>Piliostigma thonningii</i>	Monkey biscuit tree	Data Deficient		<i>Falconidae sp</i>	Falcon	Vulnerable
<i>Combretum glutinosum</i>	Kantakara	Least Concern		<i>Psittacus erithacus</i>	African grey parrot	Least Concern
<i>Anogeissus sp</i>	Galama	Least Concern/ Endangered		<i>Neophron sp.</i>	Scavenger vulture	Endangered
<i>Detarium sp.</i>	Sweet detar	Least Concern		<i>Guttera edouardi</i>	Crested guineafowl	Least Concern
<i>Afzelia Africana</i>	African Mahogany	Vulnerable				
<i>Prosopis sp</i>	African mesquite	Data Deficient				
<i>Pterocarpus sp</i>	African coralwood	Least Concern				
<i>Butyrospermum sp</i>	Vitellaria	Vulnerable				
<i>Antiaris toxicaria</i>	Kyere	Least Concern				
<i>Vitex sp</i>	Plem	Critically Endangered				

<i>Lonchocarpus sp</i>	Lancepods	Least Concern		
<i>Acacia sp.</i>	Sawere	Least Concern		

Appendix 15.0: Grievance Redress Form

GRIEVANCE REGISTRATION FORM (FORM A) – For Complainant

Name (Complainant):

ID Number (PAPs ID number):

Contact Information (house number/ mobile phone)

Nature of Grievance or Complaint:

Details of Grievance:

.....

.....

.....

Name (Receiver): Signature Date.....

Name (Filer): Signature..... Date.....

Relationship to Complainant (if different from Complainant):

.....

GRIEVANCE AND RESOLUTION FORM (FORM B) – For GTCDP

Name (Complainant):

ID Number (PAPs ID number):

Contact Information (house number/ mobile phone)

Nature of Grievance or Complaint:

Details of Grievance:

.....

.....

.....

.....

Name (Receiver):

..... Signature..... Date:.....

Name (Filer):

..... Signature..... Date:.....

Relationship to Complainant (if different from Complainant):

Review/Resolution **Level 1 (District)** ☐ **Level 2 (Zonal)** ☐ **Level 3 (National)** ☐

Date of Conciliation Session:

Was Filer/Complainant Present? Yes No

Was field verification of complaint conducted? Yes No

Findings of field investigation

.....

.....

Summary of Conciliation Session Discussion

Issues.....

Was agreement reached on the issues? Yes No

If agreement was reached, detail the agreement

.....

 If agreement was not reached, specify the points of disagreement:.....

.....
 Signed (Conciliator): Signed (Filer/Complainant):
 Signed:
 (Independent Observer e.g. Assembly Member/Opinion Leader)

Date:

Implementation of Agreement

Date of implementation:

Feedback from Filer/Complainant: Satisfied ☐ Not Satisfied ☐

If satisfied, sign off & date:.....

(Filer/Complainant)

(Conciliator)

If not satisfied, recommendation/way forward:.....

(Signature & date of Filer/Complainant)

(Signature & date of Conciliator)

Appendix 16: Generic Guidance on Preventing and Mitigating Child Labour Risk in Ghana Projects

The below guidance informed the ESMF and will be adapted for the specific purposes of the project.

Definition of Child Labour

Child	A child means every human being below the age of eighteen years unless under the law applicable to the child, majority is attained earlier.
Permitted / authorized work of children	The International Labour Organization (ILO) says that light work for children aged 13–15 (for limited hours and not harming their health, safety or school attendance and achievement), or for those aged 12–14 if the minimum age is set at 14, can be permitted. Helping around the house in a safe way can be an important part of childhood in some cultures. Light work, however, should not be for more than 14 hours per week. Children above the minimum working age / minimum age for employment (between 15–18 in most countries) can work full time so long as they are not doing work which is considered a “Worst Form of Child Labour” (see below definition). On World Bank projects the ESS2 defines that minimum age for employment or engagement in connection with the project, which will be the age of 14 unless national law specifies a higher age. Ghana legislation (Children’s Act 1998) defines minimum age for light work to 13 years, which means that on a World Bank project the higher standard of 14 years applies. Ghana legislation (Children’s Act 1998) furthermore defines minimum age for employment (on a labor contract) to 15 years. In this case, Ghana legislation sets a higher standard which means that on a World Bank project, children can be employed on a labor contract at the age of 15 and above only. Specific conditions apply for each age-group and are further described in the guidance note.
Child labor	Work that deprives children of their childhood, their potential and their dignity, that is harmful to physical and mental development and that is mentally, physically, socially or morally dangerous and harmful to children; and/or that interferes with their schooling by: depriving them of the opportunity to attend school; obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work. ³ Whether or not particular forms of “work” can be called “child labor” depends on the child’s age, the type and hours of work performed, the conditions under which it is performed and the objectives pursued by individual countries. The answer varies from country to country, as well as among sectors within countries.
Worst Forms of Child Labor	Defined by Article 3 of ILO Convention No. 182 to include: all forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labor, including forced or compulsory recruitment of children for use in armed conflict; the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic performances; the use, procuring or offering of a child for illicit activities, in particular for the production and trafficking of drugs as defined in the relevant international treaties; work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children.
Hazardous child labor	Within the meaning of Article 3 of ILO Convention No. 182, hazardous work is considered to be work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children. Hazardous work is one of the Worst Forms of Child Labor.

³ <https://www.ilo.org/ipec/facts/lang--en/index.htm>

Forced Labor	According to Conventions n ° 29 14 and n ° 105 15 of the ILO on Forced Labor, forced labor is defined as “all work or service exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily”. (NB: consent is never applicable for children)
Child trafficking	As to Article 3 of the Protocol to Prevent, Suppress and Punish trafficking in Persons Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime (“Palermo Protocol”): “Trafficking in persons” shall mean the recruitment, transportation, transfer, harboring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation of the prostitution of others or other forms of sexual exploitation, forced labor or services, slavery or practices similar to slavery, servitude or the removal of organs; The consent of a victim of trafficking in persons to the intended exploitation set forth in subparagraph (a) of this article shall be irrelevant where any of the means set forth in subparagraph (a) have been used; The recruitment, transportation, transfer, harboring or receipt of a child for the purpose of exploitation shall be considered “trafficking in persons” even if this does not involve any of the means set forth in subparagraph (a) of this article; “Child” shall mean any person under eighteen years of age.
Vulnerability	According to the United Nations “Palermo Protocol”, “abuse of a position of vulnerability” qualifies as the combination of means through which persons can be subjected to a range of particular actions such as recruitment, transportation and harboring, for purposes of exploitation. “Vulnerability” is used to refer both to the pre-existing individual and structural factors that may increase the susceptibility of an individual or group to trafficking in persons (further referred to as “susceptibility” to trafficking) and to those elements that may be generated by the trafficker in order to maximize control over the victim in the context in which the exploitation takes place (such as isolation, dependency and irregular legal status).

Detailed Guidance: Conditions for Employing 15+ Children on World Bank Projects in Ghana

Minimum age as per national legislation	World Bank project requirements (as per ESS2)	Under what conditions
Children 15-17 years	Same as national legislation	- Can undertake normal/non-hazardous tasks and be employed (have a labor contract). - Under condition that a medical practitioner has certified that the young person is in good health and is medically fit for work. - Employers in an industrial undertaking shall keep a register of young persons employed by him or her and their dates of birth or their apparent ages. - That age can be verified through different methods (birth registration or ID-card and in the absence of that through a method that triangulates at least two different sources, e.g., school records, interviews with a caretaker and or the child)

		• That weekly rest periods and right to holidays are respected (same as for 18+) • The work does not exceed 8 hours of work per day and 43 hours per week if the work is light. If the work takes place in heavy manual work occupations such as fishing, agriculture and mining, the work should not exceed 4 hours per day and 25 hours per week • The work should not take place night-time. The Child Act defines “night-time work” (thus prohibited for below 18) as before 6:00 a.m. and after 8:00 p.m.

The minimum age to perform light work (but not to be employed): children under 15 years of age and over 14 years of age may perform economic activities under World Bank projects if such activities are considered light work and are not harmful. Light work may occur under World Bank projects, for example, in sectors where informal labor is widespread, such as when labor services are provided by family members. In Ghana, for example, this includes labor services in agriculture (working on one's own farm), in the service sector, and also in industry, such as small-scale mining and quarrying. The minimum age for children performing light work in World Bank projects in Ghana should be set at 14 years (according to ESS2), although Ghanaian legislation allows this type of work from the age of 13.

Conditions for allowing 14+ children to undertake light work on World Bank projects

Minimum age as per national legislation	World Bank project requirements (as per ESS2)	Under what conditions
Children 13-14 years	From 14 years	• Can undertake light work limited to helping in economic activities such as for example in the family business, and under certain conditions, e.g., to earn a little pocket money outside of school hours or during school holidays, but cannot be employed (under a labor contract) • Should be undertaken under the supervision of an adult, for the purposes of education and social integration of the child. • Should not jeopardize the health or physical, mental, moral or social development of the child. • Should not compromise the school attendance and participation of the child. This includes should not compromise the child's possibility to do homework, prepare for tests and benefit fully from education. • The work should not take place night-time (before 6 a.m. or after 8 p.m.) or during regular school-hours • Although national legislation does not prescribe specific maximum hours of that children can perform economic activities that are light work, the daily working time of actual work should not exceed 2 hours for a school day and 4 hours for a non-school day. The effective weekly working time should not exceed 12 hours for a school week and 14 hours for a non-school week • None of the tasks undertaken should be hazardous tasks.

Prohibited work of children on World Bank projects in Ghana: The use of children under 14 years of age to satisfy labor requirements on World Bank projects is prohibited. In general, tasks that are undertaken by a child under adult guidance as a contribution to household chores, for less than 28 hours per week during hours that are not regular school hours is not considered to be child labor. But none of the labor requirements on World Bank projects qualify as *household chores* so this permission does not apply to World Bank projects. The involvement of children below 18 in hazardous tasks is also prohibited. Box 2 provides a list of hazardous work prohibited to young persons in Ghana.

Prohibited hazardous work for young people in Ghana

- (a) manual lifting of loads the weight of which exceeds twenty-five kilograms
- (b) work on scaffold and other structures at a height exceeding two and a half meters,
- (c) the use of substances and materials that emit (i) radiation, or (ii) poisonous gases or fumes,
- (d) the use of dangerous chemicals,
- (e) excessive noise,
- (f) the felling of timber,
- (g) night work exceeding eight continuous hours, or
- (h) other situations considered by the Chief Labour Officer as hazardous.
- (i) production and screening of pornographic materials, or
- (j) work at areas in a hotel which are likely to corrupt the moral development of that young person.

Sector Specific Hazards which, if Reduced, can Reduce Incidence Of Child Labor and Hazardous Child Labor

Sector	Pointers of sector-relevant factors that increase the risk of children to be exposed to hazardous work conditions in Ghanaian context
Any sector	Manual lifting of loads the weight of which exceeds twenty-five kilograms, work at a height exceeding two and a half meters, use of substances and materials that emit radiation, or poisonous gases or fumes, use of dangerous chemicals, excessive noise, the felling of timber; night work exceeding eight continuous hours, exposure to production and screening of pornographic materials, work at areas (of a hotel) which are likely to corrupt the moral development of that young person.
Agriculture	General: Exposure to weeds, reptiles, rodents, sharp cutlasses, axes and chisels, manual handling, noise from chain saw, stumps, falling trees, agrochemicals. Grinding & milling: noise, electricity, exhaust fumes, cereal dust

Manual and labor-intensive work, especially when adult labor is scarce, can increase the risk of child labor. The lack of protective clothing and equipment can also increase the risk of hazards to any worker, including children (e.g., children 15 years of age and older who have the permissible age for employment can be exposed to hazardous child labor). Investment projects that initiate sector modernization and sector reforms to increase productivity and effectiveness can proactively address these hazards and do much to reduce the incidence of child labor and hazardous child labor. In Ghana, some sector-specific hazards have been identified in labor legislation and guidelines on hazardous activities for children. World Bank projects, particularly in agriculture and industry, can proactively ensure that modernization reforms reduce these hazards (e.g., through the introduction of machinery to replace manual labor, protective equipment, more resistant varieties of crops, eco-friendly pest management methods etc.).