

SAFEGUARDS MONITORING REPORT

JUABOSO - BIA HIA

**JAN – JUN,
2023**

**CLIMATE CHANGE DIRECTORATE
(NATIONAL REDD+ SECRETARIAT)**

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LIST OF ABBREVIATIONS

COCOBOD	Ghana Cocoa Board
CREMA	Community Resource Management Area
CRMC	Community Resource Management Committee
CSO	Civil Society Organisation
FC	Forestry Commission
FGRM	Feedback and Grievance Redress Mechanism
FR	Forest Reserve
GoG	Government of Ghana
HFZ	High Forest Zone
HIA	Hotspot Intervention Area
HMB	Hotspot Intervention Area Management Board
NCRC	Nature Conservation Research Centre
NGO	Non-Governmental Organisation
PMU	Project Management Unit
REDD+	Reducing Emissions from Deforestation and Forest Degradation, the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
SAP	Safeguards Action Plan
SESA	Strategic Environmental and Social Assessment
SHEC	Sub-HIA Executive Committee
SIS	Safeguards Information System
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank

1.0 INTRODUCTION

The Ghana Cocoa Forest REDD+ Programme (GCFRP) is the premier emission reductions programme fully developed from a 25-year Ghana REDD+ Strategy (GRS) by the Government of Ghana through the Forestry Commission and Ghana Cocoa Board (Cocobod) with funding support from the Forest Carbon Partnership Facility (FCPF) of the World Bank. The programme seeks to significantly reduce carbon emissions resulting from cocoa expansion into forests through the promotion of appropriate climate-smart cocoa production approaches, including intensification and yield enhancement. The programme spans a mosaic landscape that produces commodities of international and national importance; - cocoa, timber, palm oil, food crops. However, the dominant crop in the landscape and also of national importance is the cocoa from which the programme derives the name “Ghana Cocoa Forest REDD+ Programme”.

Cocoa is Ghana’s most important agricultural commodity, accounting for roughly 57 percent of all agricultural exports and supporting the livelihoods of about 2.5 million rural farmers and their dependents. Cocoa production is predominant in the High Forest Zone (HFZ) of Ghana. The Western Region holds the largest area of remaining primary forest in Ghana and produces over 50 percent of the country’s cocoa beans. However, Ghana’s forests have come under severe threat from agricultural expansion, which is the major cause of forest loss, mainly being driven by cocoa production. This makes cocoa production the single biggest driver of deforestation in the landscape. Underlying causes for this include: limited financial and technical support for sustainable cocoa production leading to expansion into forest areas; legal disincentives to maintaining trees on farms; a lack of land use planning and landscape management; and a lack of collaboration amongst cocoa stakeholders.

In line with the goal of GCFRP, on-the ground implementation of GCFRP is routed through Hotspot Intervention Areas situated within the GCFRP operational area. The Juaboso-Bia HIA is the first HIA developed under the GCFRP, where implementation is underway with the support of a consortium made up of Forestry Commission, COCOBOD, Partnership for Forest (P4F), Touton SE, Agro-Eco, SNV and Nature Conservation Research Centre (NCRC). The partnership adopts a jurisdictional approach which ensures that all stakeholders across the

cocoa sector commit to and collaborate on achieving Climate Smart Cocoa which is tied to Ghana's Emission Reduction Programme. Key activities implemented in the HIA include restoration (Enrichment Planting, Modified Taungya System, Tree On Farm), livelihoods improvement interventions and Climate Smart Cocoa. All these interventions are primarily aimed at helping farmers with the necessary ecological and economic investments to ensure sustainable optimum cocoa production.

The United Nations Framework Convention on Climate Change (UNFCCC) requirements as stipulated in the Warsaw Framework for REDD+ recognizes that safeguards are a key part of REDD+ implementation and links the Cancun safeguards to results-based payment. This requires that countries implementing REDD+ should demonstrate how they have addressed and respected safeguards through the implementation of their REDD+ interventions. One of UNFCCC key priorities is ensuring that social and environmental safeguards are adhered to, throughout the REDD+ process. In addition, since the Carbon Fund via the World Bank will be purchasing the ERs generated from the GCRFP, environmental and social risks associated with the GCRFP activities would be mitigated and addressed using the World Bank safeguards policies and procedures. To comply with the World Bank's safeguards requirements, Ghana has carried out a Strategic Environmental and Social Assessment (SESA) to better understand the environmental and social concerns of the programme, and to better define the necessary mitigation mechanisms and safeguards compliance issues associated with activities to be implemented in the GCRFP. Specifically, it details the risks and opportunities, and identifies the World Bank Safeguards policies triggered. The SESA report resulted in an ESMF to guide the implementation of the proposed ER programme. The National REDD+ Secretariat (NRS) of the Forestry Commission is responsible for ensuring that mitigation measures and recommendations provided in the ESMF applicable to the ER Programme area are implemented.

Table 1: World Bank Operational Procedures triggered by the GCRFP

World Bank Safeguard Policy	Triggered under REDD+ in Ghana
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OP Environmental Assessment	4.01:	GCFRP will engage IN activities that use forest resources in the HIAs and potentially impact other environmental areas. These activities may have environmental impacts on a limited scale, but a safeguards screening checklist has been prepared to screen activities under the programme and ESMPs subsequently prepared to guide in addressing or mitigating potential impacts.
OP 4.04: Natural Habitats		Some of the HIAs contain critical ecosystems. GCFRP will enhance the quality of the management of these critical ecosystems and reduce risks associated with cocoa and other agroforestry practices. The ESMP provides guidance on avoiding or mitigating impacts on natural habitats.
OP 4.36: Forest		Forest policy and management are a primary focus of this project, in addition to trees in the agroforestry landscape. The screening done provides guidance on managing forest ecosystems and their associated resource as reflected in the ESMF.
OP 4.09: Pest Management		The project will not directly finance the use of pesticides but will promote integrated pest management (IPM) and climate-smart practices and resilient 'shade' cocoa. The project-specific Pest Management Plan has been prepared. The ESMF provides identification of IPM activities linked to the cocoa enhancement activities. In addition, key environmental and social issues and risks associated with chemical applications in cocoa have been analyzed in the ESMP.
OP 4.11: Physical Cultural Resources		The ESMF and Process Framework incorporate screening to ensure that the project would not have any negative impact on sacred sites. Screening of sites for pilot activities will include specific screening under the ESMF.
OP Involuntary Resettlement	4.12:	No involuntary resettlement is expected. However, as part of plans for ensuring that forests are protected and well managed there will be efforts to reduce encroachment due to expansion of cultivated areas. These restrictions of access will be negotiated with farmers. Inputs and incentives will be offered to increase agricultural productivity within the historical boundaries of admitted farms. Process Framework will be used to guide and ensure participatory processes during implementation.

This Safeguards monitoring report has been developed to demonstrate how environmental and social safeguards requirements of the World Bank were adhered to throughout the implementation of activities/interventions in the Juaboso-Bia HIA.

2.0 ACTIVITIES/INTERVENTIONS IN JUABOSO – BIA HIA

2.1 Restoration Activities

Restoration consists of activities that lead to tree planting in on-reserves and off-reserves. Under the emission reduction programme three main restoration activities are recognised in the HIA namely: Modified Taungya System (MTS), Enrichment Planting and Trees on Farm (ToF).

2.1.1 Modified Taungya System (MTS)

This is a system of agroforestry practice where farmers from fringe communities of Degraded Forest Reserves are allocated degraded areas on reserve to undertake plantation development. In this system, farmers provide labour for the site preparation, pegging, planting and tending of the plantation. The Forestry Commission provided logistics (including; pegs, tree seedling and some other farming tools as well as protective clothing) and technical support to the farmers. Farmers were allowed to grow food crops along with the tree seedlings and harvest the crops for themselves whiles tending the tree seedlings for three to four years when tree canopy closes and crop production becomes impossible under the shade. A Benefit Sharing Plan (BSP) was instituted for the MTS with a proportion of 40%: 40%: 15%: 5% to Farmers, Forestry Commission, Community and Traditional Authorities respectively.

The selection of a community or farmer group for the MTS was based on the following criteria among others:

- I. Proximity to the planting site; Since the plantation establishment is labour intensive especially during activities such as site preparation, selection of communities or farmer group was based on their proximity and thus those fringing the Forest Reserves are selected. Another reason was that communities are responsible for ensuring that the plantation and the Forest Reserve as a whole is protected from wildfire, illegality, etc. and so communities fringing the reserve were mostly selected.
- II. Willingness to participate: As per the Benefit Sharing Plan, proponents are responsible for their individual roles, thus it requires a willing farmer or a community that understand and are willing to invest and wait for the returns in a long term. Some farmers would prefer to be paid for their labour and forfeit future returns.

- III. Previous experience: With the implementation of MTS in Ghana nearing two decades, the FC has had a myriad interactions and engagements with communities fringing Forest Reserves and have institutional memory of committed communities based on their past performance. Thus, the selection criteria of farmers also included past community performance in MTS establishment including their ability to protect previous plantation stands established.
- IV. Ability to work on the farm: Selection of farmers was also based on their age and health conditions. Strong adults and youth were preferred regardless of the gender.

2.1.2 Enrichment Planting

Enrichment planting was undertaken in a fairly degraded forest with the aim of increasing tree cover by planting tree seedlings within the forest. This plantation model has introduced valuable species to degraded forests without the elimination of valuable individuals already present. In Juaboso-Bia HIA, the FC Forest District manages Enrichment Planting activities. In Enrichment Planting, strips of 5-6-meter width are cut through the degraded portions of the compartment along which tree seedlings are planted and nurtured to increase tree density. This work is done under the supervision of Forestry Commission.

2.1.3 Trees on farms (ToF)

This system of carbon stock enhancement focuses mainly on cocoa farms in off-reserve areas that are unshaded or not fully shaded according to the right regime. Farmers were supported and have incorporated trees in their farms to ensure sustainable yield whilst at the same time contributing to climate change mitigation. By incorporating trees on their farms, they contribute to carbon stock enhancement, which serves as a carbon sink.

In executing this model, COCOBOD and private sector cocoa companies supported ToF implementation since it falls directly within their remit although under strong coordination and partnership with the Forestry Commission and COCOBOD. Farmers benefit from agricultural extension services as well as supervision and logistical support. In this HIA, Assin Fosu Forest District, COCOBOD Districts, and NCRC as well as Cocoa companies such as Ecom and Hershey are leading ToF.

2.2 Climate- Smart Cocoa

Climate-Smart Cocoa (CSC) consists of farm-level activities that lead to increased resilience, carbon sequestration and general improvement in the livelihood of farmers. At this, a number of REDD+ partners in the HIA including COCOBOD and the private sector cocoa companies undertake climate-smart related activities. The Ghana Cocoa Board generally term their version of CSC as Productivity Enhancement Programme (PEP). COCOBOD since 2017 has rolled out the PEPs to shore up cocoa production in the country and consolidate its position as the leading producer of premium quality cocoa beans in the world. The objective of the PEPs is to roll out a set of measures that will improve productivity per hectare and increase cocoa production levels well above 1 million metric tonnes per year (versus an average of 800,000 tonnes per year over the last ten years). The PEPs mainly entail measures to sustainably increase plant fertility; develop irrigation systems; rehabilitate aged and disease-infected farms; increase warehouse capacity; and create an integrated farmer database. Some of the activities under PEPs include the following:

- Cocoa Rehabilitation Programme
- Cocoa Diseases and Pest Control Programme (CODAPEC)
- Cocoa HiTech (Fertilizer) Programme
- Free Hybrid Cocoa Seedling Distribution
- Artificial Hand Pollination
- Mass Cocoa Pruning
- Cocoa Management System (CMS)
- Irrigation

1. Irrigation Cocoa Rehabilitation Programme

Under this programme, COCOBOD bears the full cost of the two-year rehabilitation process which involves the cutting of cocoa trees affected by the Cocoa Swollen and Virus Disease (CSSVD), treating whole farms and replanting them with disease-tolerant, early bearing, and high yielding cocoa hybrid cocoa seedlings as well as complementary plantain suckers to

provide temporary shade for the young cocoa seedlings and recommended desirable shade tree species to provide permanent shade for the newly established cocoa.

2. Cocoa Disease and Pests Control (CODAPEC)

COCOBOD introduced the CODAPEC programme (Mass Spraying) in 2001/2002 to control black pod disease and mirids (capsids) to prevent their effects on cocoa production. The programme comes at no cost to the farmer. Only mapped farms in good condition are considered under this exercise. COCOBOD takes full responsibility of carting chemicals to the regions and districts for onward distribution to farmers through various task forces in districts and communities. The chemicals are allocated to farmers to arrange with supervisors of spraying gangs to plan spraying schedules to spray their farms. There are 2 components involved:

- Capsid control
 - i. A 7-member spraying gang (supervisor inclusive) ensures two (2) rounds of insecticides application in April/May and September/October respectively.
 - ii. Cocoa farmers are then expected to complement the first two (2) rounds with additional two (2) rounds in June and December within a cropping year.
- Black pod Control
 - i. The first three (3) rounds of fungicides application spraying are carried out between 3-4 weeks' intervals by COCOBOD in June, July and August/October.
 - ii. Cocoa farmers are encouraged to work closely with the gang to identify which periods within the intervals to complement with additional three (3) rounds application of the fungicides

3. Cocoa HiTech Programme

Management of Ghana Cocoa Board (COCOBOD) re-introduced the Subsidized Fertilizer Programme following evidence of widespread theft, nepotism, favouritism diversion and smuggling which characterized the then 'Free Fertilizer Programme' some years ago. The aim of the fertilizer distribution was to restore soil nutrients depletion to enable a smooth process during cocoa production. The Subsidized Programme, which makes use of the private sector in the distribution processes, seeks to ensure availability, equity, and transparency. The introduction of this new scheme, with active private sector participation, has also helped to

create jobs to boost economic growth in the country. Generally, the Cocoa HiTech Programme has a number of benefits including:

- cutting off the needless politicization, nepotism and theft that hitherto characterized the distribution of fertilizers
- stimulating an industry that is one of Ghana's top earners of foreign exchange and accounts for about 7 percent of gross domestic product.
- eliminating market distortions as well as steps to map cocoa farms and soil, improving sector management, upgrading ports and storage facilities and rehabilitate ageing trees.
- enhancing access of the ordinary cocoa farmer to the right fertilizer which will help stimulate productivity and increase livelihood.
- Promoting a subsidized programme, which makes use of the private sector in the distribution processes, ensures availability, equity, and transparency

The mode of distribution of the farm inputs is done through the following processes:

- Farmer based Cooperatives are formed, in order to facilitate equitable distribution of fertilizers. Each farmer must belong to a community farmer based corporative.
- Cooperatives then must apply for the subsidized fertilizers at COCOBOD. Farmers can therefore apply through these approved farmer-based cooperatives.
- Farmers are given a one-year moratorium for the payment of the subsidized fertilizers.

4. Free Hybrid Cocoa Seedling Distribution program

Every year, Ghana Cocoa Board (COCOBOD) through the Seed Production Division (SPD) raises disease-tolerant hybrid cocoa seedlings for distribution to farmers free of charge. The initiative is aimed at increasing cocoa production and incomes of cocoa farmers.

Distribution of the seedlings to farmers is mostly done from May – July every year to enable farmers plant them. The mode of distribution takes the following processes:

- The seedlings are raised by the Seed Production Division (SPD) at over 380 nursery sites established in communities across the cocoa regions.
- The Cocoa Health and Extension Division (CHED) distributes the seedlings using farmer data.

5. Artificial Hand pollination programme

This is done to induce pollination of matured cocoa trees to enhance productivity. The processes involved are detailed below:

- A farm earmarked for pollination must be pruned two months before it is pollinated
- Transfer of pollen grains is aided by forceps and containers
- Application of fertilizers is essential to support pod setting and development

6. Mass cocoa pruning programme

A strategy to prune all productive cocoa across all cocoa growing regions and districts. To this end COCOBOD has supplied 100,000 motorized pruners to various farmer cooperatives to encourage pruning and weeding/slashing as pruning is the master key that unlocks flowering in cocoa to aid flowering and pod setting. It also helps to reduce the incidence of pests and diseases that affects cocoa farms.

7. Cocoa Management System (CMS)

Popularly known as Cocoa farmer census is a program under which all cocoa farmers are enumerated with their data captured including useful sociodemographic characteristics. Their farm sizes and other farm characteristics are also captured. This data will eventually be the platform upon which essential services like cocoa farmers pension scheme would be rolled out for farmers by COCOBOD

8. Irrigation

Due to climate change and its devastating effects COCOBOD has embarked on an aggressive irrigation programme to bring irrigation to the farm gate of the ordinary cocoa farmer as a climate change mitigating and coping strategy. To this end a lot of boreholes have been sunk and solar powered to irrigate some clusters of farms in the various districts. Plans are far advanced to dam some big rivers in the cocoa districts for irrigation purposes.

2.3 Wildlife Conservation and Protection

The Wildlife Division of the Forestry Commission has a mission to ensure conservation, sustainable management and development of Ghana's wildlife resources for socio-economic benefit to all segments of society. Specially, the Division has adopted the following strategies:

- Protect and develop Ghana's permanent estate of wildlife-Protected Areas (PAs).
- Promote management and development of wildlife outside wildlife-Protected Areas.
- Develop Eco- tourism potentials of the PAs.
- Promote the development of wildlife - based enterprises.
- Develop linkages with other agencies and NGOs whose activities impact wildlife.
- Assist local communities to develop and manage own reserves
- Foster closer collaboration with communities closer to PAs through the promotion of community resource management areas (CREMA).
- Promote public awareness and education on wildlife management issues.

In line with the above, in the Juaboso - Bia HIA, the Wildlife Division at the district level embarked on a number of activities including community education and sensitization, protection of cocoa farms against elephant crop raiding, and livelihood improvements. These included

- School visits for World Wildlife Day Celebration
- Community visits
 - Information Centres
 - Group meetings
- Logistical support
 - Cutlasses
 - Wellington Boots
 - Rain coats
- Bee keeping alternative livelihoods support
- Elephant crop raiding intervention

2.4 Forest for a Just Future - Green Livelihood Alliance Programme II (GLAII) – Tropenbos Ghana

The goal of this programme is to ensure tropical forests and forest landscapes are sustainably and inclusively governed to mitigate and adapt to climate change, fulfil human rights and safeguard local livelihoods. The programme aims to put local communities in the Juaboso-Bia landscape at a level of awareness, interest and capacity that drives an increase in tree cover,

conservation of existing forests and sustainable or climate-smart agriculture (agriculture being the major livelihood activity in the landscape). The programme seeks to realise these in an environment where environmental rights defenders feel safe to operate and the voices of the ordinary citizens are considered in decision-making processes relating to forests and the environment.

Key activities:**Landscape Level**

- i. Capacity development for communities on climate-resilient farming practices including restoration of degraded areas and integration of trees in cocoa farms
- ii. Promotion of inclusive governance in community/landscape setups that contribute to natural resource management and related decision-making processes.
- iii. Pursue actions e.g. institutional capacity, training, livelihood options, integrated planning, awareness on forest and mining laws, etc. to help halt deforestation that is driven by agro-commodity production (in this case, cocoa) and mining within the Juaboso-Bia and Sefwi-Wiawso landscape.

National Level

- i. Lobby and Advocate government (MLNR, COCOBOD, FC, Minerals Commission, etc to make their operations and policies supportive of GLA agenda i.e. tree tenure, wildlife policy, etc.
- ii. Engagement with Private firms e.g cocoa, timber, oil palm, etc. on matters of sourcing and illegal cocoa production in forest reserves.
- iii. Smallholder farmers will be trained to integrate trees in their farms and apply only approved environmentally safe inputs.
- iv. Support and contribute to the creation of an enabling environment where CSOs, local communities (including women and youth) enjoy human rights and safely participate in social movements advocating for sustainable and inclusive natural resource management.
- v. Strengthen the capacities of CSOs (including media) to lead environmental social movements and defend environmental human rights.

2.5 Mobilizing more for climate (MoMo4C) – Tropenbos Ghana

This is a project intends to bring together entrepreneurs, firms, policymakers, investors and civil society organizations to make green business propositions that tackle causes and impacts of climate change at the landscape level in developing countries, and to attract investments to implement these initiatives.

Key activities:

Enabling Environment

- i. Strengthening Multi-stakeholder Platform (MSP) in JB and SW landscape to understand, acknowledge climate change risk, and promote climate-resilient actions, regulations, and policies.
- ii. Strengthening Multiple landscape actors (Small-holders' farmers, communities, public and private sector) change mind-set by adapting and practicing climate-resilient actions.

Business cases

- i. Promoting climate resilient business cases available for public and private investors contributing to sustainable development.
- ii. Strengthen the capacity of identified groups in financial literacy, entrepreneurship, green-business opportunities, and possible investments in their landscape.
- iii. Supporting entrepreneurs and investors formulate bankable business cases and pilots.
- iv. Facilitating and supporting entrepreneur, financial institutions, and investors formulate investment action plans for possible business cases in Key Landscape Challenges (cocoa, crop diversification, NTFPs, and others)
- v. Organizing green business investment day event to showcase all the bankable green business cases to prospective investors and multiple landscape actors to receive input into the business investment plan and validate the business investment plan.

Harvesting lessons

- i. Facilitate opportunities for mutual learning by the alliance from the project intervention in SW and JB landscape

2.6 Working Landscape Programme – Tropenbos Ghana

This programme aims for impacts in terms of sustainable land use, inclusive governance, and responsible finance and business, with an emphasis on local men and women foresters and farmers, communities, indigenous peoples and forest, and farm producers' organizations. The objective is to promote transformational change towards climate-smart landscapes in the forested tropics, to help achieve the climate goals as defined in the Paris Agreement, while also contributing to the Sustainable Development Goals.

Key activities:

Landscape Level

- i. Capacity building and informed dialogue facilitation on climate smart practices
- ii. Capacity development on climate change mitigation and adaptation (agroforestry, climate smart practices, etc) while supporting people's livelihoods and sustaining agricultural value chains.
- iii. Promoting sustainable land use including diversification.
- iv. Promoting responsible finance and business through establishment of VSLAs and financial literacy training.

National Level

- i. Supporting Ghana's policy direction and related actions such as the Ghana National Climate Change Policy, the Ghana Forestry Development Master Plan (FDMP), Ghana Cocoa Forest REDD+ Programme (GCFRP) and the Nationally Determined Contributions (NDCs)

2.7 Support to Juaboso-Bia Landscape Management Platform (Partnership for Forest - P4F)

This programme aims at operationalizing a multi-stakeholder governance mechanism to manage the Juaboso-Bia landscape in a way that conserves forests in the landscape while providing incentives such as additional livelihoods and climate smart cocoa practices leading to a long-term deforestation-free landscape. The objective is to sustain an effective and attractive HMB that will attract investment to the landscape and position the HMB in the

cocoa value chain. The programme is being implemented by Tropenbos Ghana with sponsorship from P4F.

Key activities:

The programme is targeted towards two main outputs:

- **Landscape Governance Sustainability and Fund Mobilization**
 - Training of 25 smallholders on Bee Keeping, vegetable and piggery farm enterprise and maintenance.
 - Providing legal advisory support to HMB on enterprise management contract and financial governance arrangement
 - Set-up an HMB Governance and Enterprise Fund in support of the HMB

- **Smallholder Farmers' livelihoods and Enterprise supported**
 - Setup HMB enterprises, provide backstopping support and coach individual beneficiary farmers on enterprise management
 - Develop a marketing strategy, product branding and seek off-taker suppliers' agreements and purchase orders for the HMB enterprise
 - Organise HMB workshops on branding and packaging products

2.8 Fire Smart Landscape Governance Programme – Tropenbos Ghana

The intervention envisions a wildfire resilient landscape where local actors including communities, statutory & regulatory bodies, and local governments inclusively adopt comprehensive and effective wildfire management approach/ practices to minimise incidence of wildfires and its associated negative imprints e.g., deforestation, loss of lives and property, etc. Tropenbos Ghana is implementing this programme with a set of objectives;

1. Establish a common entry point for negotiating inclusiveness and participation in effective wildfire management between communities, formal (e.g., MMDAs, MLNR-FC & EPA, GNFS, GPS, MoFA, etc.) and informal institutions (e.g., Traditional authorities, Community Fire Volunteers, etc.).

2. Review existing wildfire management practices to ascertain effectiveness of structures, institutional mandate, roles and responsibilities, as well as challenges/capacity gaps.
3. Negotiate and adopt options for effective and efficient wildfire management approach/practices through multi-stakeholder dialogue, capacity development, and collaborations in target landscapes.
4. Stimulate a national policy, or regulatory, or guidelines on landscape approach to wildfire management.

Key activities:**Landscape level**

- i. Participatory and collaborative research to review and ascertain effectiveness of existing wildfire governance and management practices including structures (MoPs, Guidelines, Community Fire Volunteers, Statutory bodies, etc.) and institutions (policy, regulatory, etc.).
- ii. Joint (multi-stakeholder) identification of niches, consensus building and synergies (among institutions) for the design of landscape approach to wildfire management.
- iii. Capacity development (communities, statutory institutions, etc.) for adoption, pilot and upscale of effective and efficient wildfire management approach and practices (i.e. landscape approach) in target landscapes.
- iv. Awareness creation for participatory monitoring & evaluation, lobby and advocacy to inform national policy and practice on effective wildfire management.

National level

- i. Establish a partnership with the Regional West Africa Fire Management Resources Center (RWAFFMRC) as network wing of the Global Fire Monitoring Center (GFMC) for bridging the gap between scientific research findings to policy making, to provide sufficient knowledge for decision making

2.9 Landscapes and Environmental Agility across the Nation (LEAN)

LEAN is a four-year project funded by the European Union’s flagship GCCA+ initiative that aims to conserve biodiversity, build climate resilience, and reduce emissions from land-use changes in the savannah, high forest, and transition zones of Ghana—and all while helping local farmers to improve their livelihoods. The project seeks to address three structural barriers that have historically hindered efforts by governments, civil society organizations, and the private sector to halt land degradation and deforestation through the uptake of landscape approaches. First, most stakeholders while interested in conserving natural capital and helping to improve livelihoods, have only had the capacity and knowledge to act within their direct sphere of influence or economic interest and not at broader scales. Secondly, even though there is growing recognition of the importance of working at a landscape level to address sustainability, there has remained a lack of effective tools, resources, and incentives to drive aligned action at such a scale. Lastly, although some multi-stakeholder governance structures have been encouraged, Ghana doesn’t have an example to date of one sustainable or self- sustaining landscape governance model for scale up. The project is implementing Integrated Landscape Management (ILM) models in three priority landscapes across the savannah, high forest and transitional ecological zones of the country through functional and sustainable landscape governance structures, market incentives and diversified income-generating activities. By using the landscape sustainability measurement framework (LandScale), an evidence-based ILM model will be produced for national and regional scale-up. The programme is being implemented by various CSOs/NGOs across the landscapes.

Landscape	Implementing partner
Transitional Landscape	Tropenbos Ghana
	Eco-Care Ghana
High Forest Landscape	The Rainforest Alliance
Savannah Landscape	World Vision Ghana

Key activities:

- i. Establishment of a participatory landscape management structures that will facilitate easy uptake of Integrated Landscape Management (ILM) technology and innovation.

- ii. Working alongside with all stakeholders to mobilize and effectively deploy resources and tools that will support targeted sustainability interventions.
- iii. Trainings on Climate smart practice and integrated landscape management systems.
- iv. Promoting and implementing alternative livelihood support for smallholder farmers on bee keeping, piggery.
- v. Establishing of nursery sites

3.0 UPTAKE OF SAFEGUARDS IN REDD+ PROGRAMMES/ACTIVITIES AT THE HIA LEVEL

Generally, the mix of projects/interventions being implemented in the Juaboso - Bia HIA have contributed to many transformational positive impacts with minimal risks/impacts. This attests to the fact that stakeholders have taken safeguards adherence extremely seriously following the capacity building/training on safeguards in project implementation. Additionally, community members interacted with during the monitoring exercise attested to the numerous trainings / capacity building opportunities they have received from various stakeholders on a number of topics. The topics include climate-smart cocoa, farmer business school, safe handling of agro-chemicals, proper disposal of agrochemicals, compost/organic fertilizer application, buffer zone protection, wildlife and forest protection, to mention a few. Again, it came to light that there has been deep involvement of local traditional systems and decision-making processes throughout REDD+ related activities fostering many impacts including community ownership and acceptance of the Ghana emission reduction programme. The rights and knowledge of local communities were observed to have been strictly respected including taboos and totems, experience/knowledge in cocoa farming and traditional conflict resolution mechanisms. It worthwhile to share that gender has been progressively integrated and mainstreamed in project implementation by the project proponents.

Furthermore, the non-carbon component of the emission reduction programme has been much emphasized. Greater number of communities have been supplied with farm inputs such as cocoa and shade tree seedlings free of charge to enhance contributions towards emission reductions and yield enhancement.

The adherence of the safeguard in the REDD+ implementation the HIA has helped to maximize both environmental and social benefits with some examples below:

- improved vegetative or tree cover in the project communities
- improved environmental integrity of the project landscape
- Lead to livelihood improvement of beneficiary communities
- improved resilience to climate change
- Encourage knowledge sharing among beneficiaries and communities

- Increased livelihood and economic activities of beneficiary communities
- Enhanced health standards
- Good time management for productive activities
- Reduced conflicts and enhance peaceful co-existence amongst community members
- Accelerated development of communities
- Improved income for farmers

Table 2: Results of monitoring of activities in the HIA

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
Modified Taungya System	Poor records of primary supply and contract workers	4.01 Environmental Assessment	<ul style="list-style-type: none"> Proper records of workers are kept and updated as appropriate 	<ul style="list-style-type: none"> Records of workers 	
	Failure to honour MTS benefit arrangement	4.04 Habitats	<ul style="list-style-type: none"> Ensured engagement of MTS beneficiaries on the right percentages due them. 	<ul style="list-style-type: none"> Records of engagement 	
	Unavailability and no/limited use of personal protective equipment	4.36 Forests	<ul style="list-style-type: none"> Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. Education and sensitization were done on the need for and proper usage of PPEs 	<ul style="list-style-type: none"> Records of PPE supply Confirmation with workers 	
	Limited awareness creation programs on health and safety including chemical handling.		<ul style="list-style-type: none"> Design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical handling was done Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. 	<ul style="list-style-type: none"> Confirmation with workers On-site verification with farmers 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
Enrichment planting	Poor records keeping of primary supply workers	4.01 Environmental Assessment	<ul style="list-style-type: none"> • Employment and other opportunities were given to local communities as much as possible. 	<ul style="list-style-type: none"> • Confirmation with communities 	
	Poor records keeping of contract workers	4.04 Habitats	<ul style="list-style-type: none"> • Proper records of workers are kept and updated as appropriate 		
	Unavailability and no/limited use of personal protective equipment	4.36 Forests	<ul style="list-style-type: none"> • Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. • Education and sensitization were done on the need for and proper usage of PPEs 	<ul style="list-style-type: none"> • Site observation • Confirmation with communities 	
	Limited awareness creation programs on health and safety		<ul style="list-style-type: none"> • Design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical handling was done • Workers wore suitable Personal Protective Equipment (PPE) as appropriate. 	<ul style="list-style-type: none"> • Confirmation with communities • On-site verification with farmers 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Delay in payment of contract workers		<ul style="list-style-type: none"> Ensured workers were paid on time 	<ul style="list-style-type: none"> Records of payments 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
Trees on Farms	Disturbance of flora and fauna	4.01 Environmental Assessment 4.04 Habitats 4.09 Pest Management 4.36 Forests	<ul style="list-style-type: none"> Environmentally sensitive sites and unnecessary exposure or access to sensitive habitats were avoided Planting was designed to include both exotic and indigenous plants in the right proportions and positions Organic farming practices were implemented and this helped minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration Labour-intensive approach using simple farm tools like hoes and cutlasses was employed. 	<ul style="list-style-type: none"> Site observation Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Planting single tree species		<ul style="list-style-type: none"> Planting was designed to include variety of both exotic and indigenous plants in the right proportions and positions Planned and strategized the procurement of desirable and diversified seedlings 	<ul style="list-style-type: none"> Site observation Records of seedlings supplied 	
	Planting/ keeping shade tree with undesirable characteristics e.g. Disease prone shade trees, host of pest and diseases, easily broken branches etc.				
	Planting inadvisable shade tree species e.g. invasive species				
	Planting more trees than required leading to over-shadowing of cocoa farms.		<ul style="list-style-type: none"> Farms were mapped to determine farm sizes and site/area specific conditions to avoid over supply of seedlings Thinning out was done to adjust the number of trees on the farms 		

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Limited understanding on shade tree management.		<ul style="list-style-type: none"> Education/ adequate trainings were provided to farmers 	<ul style="list-style-type: none"> Training report 	
	Destruction from harvesting of timber resources on farm		<ul style="list-style-type: none"> A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate Appropriate sanctions were applied on offenders including fines and jail sentences 	<ul style="list-style-type: none"> FGRM operationalized Reports 	
	Failure to register farmers		<ul style="list-style-type: none"> Records of farmers are kept 	<ul style="list-style-type: none"> Records of farmers 	
	Limited awareness creation on health and safety including tools and equipment handling		<ul style="list-style-type: none"> Design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical and equipment handling was done Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate 	<ul style="list-style-type: none"> Training report On-site verification with farmers 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Unavailability and no/limited use of personal protective equipment		<ul style="list-style-type: none"> Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. Education and sensitization were done on the need for and proper usage of PPEs 	<ul style="list-style-type: none"> Records of PPE supply Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
Climate Smart Cocoa	Exposure of local folks (farmers) to chemicals during and after application of agrochemical on cocoa farmers.	4.01 Environmental Assessment 4.04 Habitats 4.09 Pest Management	<ul style="list-style-type: none"> Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. Education and sensitization were done on the need for and proper usage of PPEs The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where possible, mechanical weed control was considered instead of the use of weedicides. 	<ul style="list-style-type: none"> Records of PPE supply Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Generation of fumes during cutting down of diseased or over-aged cocoa trees.	4.36 Forests	<ul style="list-style-type: none"> • Minimized burning of biomass as much as possible • Fire was used only in situations where this was effective and least environmentally damaging • The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where possible, mechanical weed control was considered instead of the use of weedicides. 	<ul style="list-style-type: none"> • Site observation • Records of PPEs provided • Training report 	
	Disturbance of flora and fauna		<ul style="list-style-type: none"> • Environmentally sensitive sites and unnecessary exposure or access to sensitive habitats were avoided • Planting was designed to include both exotic and indigenous plants in the right proportions and positions • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) were implemented and this helped minimize the use of inorganic fertilizers 	<ul style="list-style-type: none"> • Site observation • Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<p>and herbicides that are major contributors to soil and surface water quality deterioration</p> <ul style="list-style-type: none"> • Labour-intensive approach using simple farm tools like hoes and cutlasses was employed. 		
	Land clearing and vegetation loss at rehab farms		<ul style="list-style-type: none"> • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) were implemented and this helped minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration • Labour-intensive approach using simple farm tools like hoes and cutlasses was employed. • Felled trees and cleared under- brushes were chipped and formed into windrows and allowed to decompose and/or used as pegs for planting 	<ul style="list-style-type: none"> • Site observation • Training report 	
	May accelerate erosion by water		<ul style="list-style-type: none"> • Sensitive sites with high erosion risk were identified and were not cultivated. Vegetation of such areas was 	<ul style="list-style-type: none"> • Site observation • Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<p>maintained to help control erosion as well as to ensure soil stability</p> <ul style="list-style-type: none"> Implementation of standard erosion and sediment control best management practices 		
	<p>Potentially pollute/contaminate water bodies with (herbicides, pesticides, insecticides, weedicides, ash, dust)</p>		<ul style="list-style-type: none"> The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where possible, mechanical weed control was considered instead of the use of weedicides. Promotion of buffer zones along the local streams to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. Farmers trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) 	<ul style="list-style-type: none"> Site observation Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> • Farmers whose farms located along water bodies were provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Implementation of standard erosion and sediment control best management practices • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) were implemented and this helped minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration 		
	Involve the harvesting of timber resources		<ul style="list-style-type: none"> • A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate 	<ul style="list-style-type: none"> • FGRM operationalized • Reports 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> Appropriate sanctions were applied on offenders including fines and jail sentences 		
	Cultivating cocoa without adherence to the buffer zone policy		<ul style="list-style-type: none"> Farmers trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) Farmers whose farms located along water bodies were provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. Technical officers and farm inspectors sampled and visited farms to check compliance 	<ul style="list-style-type: none"> Training report Site observation 	
	Increase in pests and disease due to too much shade and undesirable shade trees		<ul style="list-style-type: none"> Producers (farmers) trained on pruning techniques to reduce unnecessary shade Producers (farmers) trained to control pest using the Integrated Pest Management (IPM) techniques to use only approved crop protection products for all other crops fields. 	<ul style="list-style-type: none"> Site observation Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Involve the use of unapproved/ not recommended agrochemicals (weedicides, pesticides, insecticides etc.)		<ul style="list-style-type: none"> • Raised awareness on the list of approved agro-inputs and the list shared/pasted at vantage points for public viewing 	<ul style="list-style-type: none"> • Training report • List of approved and unapproved agrochemicals shared 	
	Over-use of agro-inputs such as fertilizers and agro-chemicals.		<ul style="list-style-type: none"> • The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where possible, mechanical weed control was considered instead of the use of weedicides. • Education and sensitization was done on the proper use and dosage of agro-inputs 	<ul style="list-style-type: none"> • Training report • List of approved and unapproved agrochemicals shared 	
	Use of fire during land preparation		<ul style="list-style-type: none"> • Fire was used only in situations where this was effective and least environmentally damaging • Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. 	<ul style="list-style-type: none"> • Site observation • Records of PPEs provided 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Limited and/or untimely supply of cocoa seedlings		<ul style="list-style-type: none"> Seedlings were supplied on time to meet onset of reliable rainfall Seedlings were sourced within close proximity/catchment area 	<ul style="list-style-type: none"> Records of seedlings supply 	
	Establishing new farms cocoa farms within forest reserves.		<ul style="list-style-type: none"> Admitted farmers that expanded beyond allowed limits were made to return to the permitted areas only District Assembly by-laws used to support the conservation of dedicated forests and to sanction encroachment Farmers trained and encouraged to involve in alternative livelihood programs to prevent the risk of expansion in to protected areas. 	<ul style="list-style-type: none"> Engagement/training Reports Records of admitted farms DA by-laws 	
	Generation of hazardous waste such as aboricides, herbicides, weedicides, and pesticides.		<ul style="list-style-type: none"> Mass sprayers who spray agro-chemicals for farmers have been cautioned and educated on proper disposal of chemical containers after use 	<ul style="list-style-type: none"> Training report Awareness creation materials displayed 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Lead to the transportation of hazardous chemicals (aboricides, herbicides, weedicides, and pesticides)		<ul style="list-style-type: none"> Famers have been encouraged to report hazardous activities of neighbors to through the FGRM for correction remedy Training on safe chemical application was given Trained farmers on how to wear PPEs and the essence of PPEs. 	<ul style="list-style-type: none"> List of approved and unapproved agrochemicals shared FGRM operationalized 	
	Improper disposal of hazardous waste				
	Poor storage of hazardous chemicals				
	Recycle of hazardous chemicals				
	Improper or poor records keeping of direct workers		<ul style="list-style-type: none"> Employment and other opportunities were given to local communities as much as possible. Proper records of workers are kept and updated as appropriate 	<ul style="list-style-type: none"> Records of workers 	
	Improper or poor records keeping of contracted workers				

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Improper or poor records of primary supply workers				
	Potentially could cause or aggravate land-use conflicts		<ul style="list-style-type: none"> • A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate • Stakeholder consultations done to identify best practices and guide implementation in partnership with traditional authorities • Forest Management plan prepared for all sites to also reflect community expectations • Admitted farmers that expanded beyond allowed limits were made to return to the permitted areas only • District Assembly by-laws used to support the conservation of dedicated forests and to sanction encroachment 	<ul style="list-style-type: none"> • FGRM operationalized • Forest Management plan • Engagement/training Reports • Records of admitted farms • DA by-laws 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Unavailability and no/limited use of personal protective equipment		<ul style="list-style-type: none"> Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. Education and sensitization was done on the need for and proper usage of PPEs 	<ul style="list-style-type: none"> Training report 	
	Limited awareness creation of programs on health and safety including chemical handling		<ul style="list-style-type: none"> Design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical handling was done Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate 	<ul style="list-style-type: none"> Training report On-site verification with farmers 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
Additional livelihoods Activities/Interventions	Potentially pollute/contaminate water bodies (herbicides, pesticides,	4.01 Environmental Assessment	<ul style="list-style-type: none"> The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where 	<ul style="list-style-type: none"> Site observation Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	insecticides, weedicides, ash etc.)	4.04 Habitats 4.09 Pest Management 4.36 Forests	<p>possible, mechanical weed control was considered instead of the use of weedicides.</p> <ul style="list-style-type: none"> Promotion of buffer zones along the local streams to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. Farmers trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) Farmers whose farms located along water bodies were provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. 		

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> Implementation of standard erosion and sediment control best management practices Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) were implemented and this helped minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration 		
	Potentially could be located within buffer zones or water bodies		<ul style="list-style-type: none"> Promotion of buffer zones along the local streams to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. 	<ul style="list-style-type: none"> Site observation Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> • Farmers trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) • Farmers whose farms located along water bodies were provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Technical officers and farm inspectors sampled and visited farms to check compliance 		
	Use of fire during land maintenance		<ul style="list-style-type: none"> • Fire was used only in situations where this was effective and least environmentally damaging • Most biomass generated was used as firewood and also as pegs • Minimized burning of biomass as much as possible 	<ul style="list-style-type: none"> • Site observation • Records of PPEs provided • Training report • FGRM operationalized 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> Workers wore suitable Personal Protective Equipment (PPE) as appropriate A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate 		
	Over-use of agro-inputs such fertilizers and agro-chemicals		<ul style="list-style-type: none"> The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where possible, mechanical weed control was considered instead of the use of weedicides. Education and sensitization were done on the proper use and dosage of agro-inputs 	<ul style="list-style-type: none"> Training report List of approved and unapproved agrochemicals shared 	
	Lead to the transportation of hazardous chemicals		<ul style="list-style-type: none"> Mass sprayers who spray agro chemicals for farmers have been cautioned and educated 	<ul style="list-style-type: none"> Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	(herbicides, weedicides, and pesticides)		on proper disposal of chemical containers after use	<ul style="list-style-type: none"> Awareness creation materials displayed 	
	Generation of hazardous waste such as herbicides, weedicides, and pesticides.		<ul style="list-style-type: none"> Famers have been encouraged to report hazardous activities of neighbours to through the FGRM for correction remedy Training on safe chemical application was given 	<ul style="list-style-type: none"> List of approved and unapproved agrochemicals shared 	
	Improper disposal of hazardous waste		<ul style="list-style-type: none"> Trained farmers on how to wear PPEs and the essence of PPEs. 	<ul style="list-style-type: none"> FGRM operationalized 	
	Improper storage of hazardous waste				
	Improper or poor records keeping of workers		<ul style="list-style-type: none"> Employment and other opportunities were given to local communities as much as possible. Proper records of workers are kept and updated as appropriate 	<ul style="list-style-type: none"> Records of workers 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Potentially could cause or aggravate land-use conflicts		<ul style="list-style-type: none"> • A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate • Stakeholder consultations done to identify best practices and guide implementation in partnership with traditional authorities • Forest Management plan was prepared for all sites to also reflect community expectations • District Assembly byelaws used to support the conservation of dedicated forests and to sanction encroachment • Admitted farmers that expanded beyond allowed limits and were made to return to the permitted areas only 	<ul style="list-style-type: none"> • FGRM operationalized • Forest Management plan • Engagement/training Reports • Records of admitted farms • DA by-laws 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Low percentage of women in livelihood improvement activities		<ul style="list-style-type: none"> • Employment and other opportunities were given to local communities as much as possible. • Equal opportunity was given to all abled bodied persons who wanted to participate • Gender empowerment trainings were carried out for farmers 	<ul style="list-style-type: none"> • Records of farmers • Training reports 	
	Prioritization of a few demographic in terms of labour				
	Unfair selection of beneficiaries				
	Limited awareness creation of programs on health and safety issues		<ul style="list-style-type: none"> • Design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical and equipment handling was done • Workers wore suitable Personal Protective Equipment (PPE) as appropriate 	<ul style="list-style-type: none"> • Training report • On-site verification with farmers 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
Additional livelihoods Activities/Interventions	Generation of smoke from burning of biomass (debris and logs) during land preparation for vegetable farming	4.01 Environmental Assessment 4.04 Habitats 4.09 Pest Management 4.36 Forests	<ul style="list-style-type: none"> • Most biomass generated was used as firewood and also as pegs • Minimized burning of biomass as much as possible • Workers wore suitable Personal Protective Equipment (PPE) as appropriate • A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate 	<ul style="list-style-type: none"> • Site observation • Records of PPEs provided • FGRM operationalized 	
	Exposure of workers/communities to smoke generated during land preparation for vegetable farming		<ul style="list-style-type: none"> • Minimized burning of biomass as much as possible • Fire was used only in situations where this was effective and least environmentally damaging • Workers wore suitable Personal Protective Equipment (PPE) as appropriate 	<ul style="list-style-type: none"> • Site observation • Records of PPEs provided • FGRM operationalized 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Potentially pollute/contaminate water bodies (herbicides, pesticides, insecticides, weedicides, ash etc.)		<ul style="list-style-type: none"> A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where possible, mechanical weed control was considered instead of the use of weedicides. Promotion of buffer zones along the local streams to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. 	<ul style="list-style-type: none"> Site observation Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> • Farmers trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) • Farmers whose farms located along water bodies were provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Implementation of standard erosion and sediment control best management practices • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) were implemented and this helped minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration 		

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Potentially could be located within buffer zones or water bodies		<ul style="list-style-type: none"> • Promotion of buffer zones along the local streams to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. • Farmers trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) • Farmers whose farms located along water bodies were provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Technical officers and farm inspectors sampled and visited farms to check compliance 	<ul style="list-style-type: none"> • Site observation • Training report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Use of fire during land preparation		<ul style="list-style-type: none"> • Fire was used only in situations where this was effective and least environmentally damaging • Most biomass generated was used as firewood and also as pegs • Minimized burning of biomass as much as possible • Workers wore suitable Personal Protective Equipment (PPE) as appropriate • A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate 	<ul style="list-style-type: none"> • Site observation • Records of PPEs provided • Training report • FGRM operationalized 	
	Over-use of agro-inputs such fertilizers and agro-chemicals		<ul style="list-style-type: none"> • The use of agrochemicals including inorganic fertilizers, weedicides and pesticides was reduced as much as possible. Where possible, mechanical weed control was considered instead of the use of weedicides. 	<ul style="list-style-type: none"> • Training report • List of approved and unapproved agrochemicals shared 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> Education and sensitization were done on the proper use and dosage of agro-inputs 		
	Limited and/or untimely supply of seedlings		<ul style="list-style-type: none"> Seedlings were supplied on time to meet onset of reliable rainfall Seedlings were sourced within close proximity/catchment area 	<ul style="list-style-type: none"> Records of seedlings supply 	
	Lead to the transportation of hazardous chemicals (herbicides, weedicides, and pesticides)		<ul style="list-style-type: none"> Mass sprayers who spray agro chemicals for farmers have been cautioned and educated on proper disposal of chemical containers after use Famers have been encouraged to report hazardous activities of neighbours to through the FGRM for correction remedy 	<ul style="list-style-type: none"> Training report Awareness creation materials displayed List of approved and unapproved agrochemicals shared 	
	Generation of hazardous waste such as herbicides, weedicides, and pesticides.		<ul style="list-style-type: none"> Training on safe chemical application was given 	<ul style="list-style-type: none"> FGRM operationalized 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Improper disposal of hazardous waste		<ul style="list-style-type: none"> Trained farmers on how to wear PPEs and the essence of PPEs. 		
	Improper storage of hazardous waste		<ul style="list-style-type: none"> Employment and other opportunities were given to local communities as much as possible. Proper records of workers are kept and updated as appropriate 	<ul style="list-style-type: none"> Records of workers 	
	Improper or poor records keeping of workers		<ul style="list-style-type: none"> A grievance mechanism was established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate Stakeholder consultations done to identify best practices and guide implementation in partnership with traditional authorities 	<ul style="list-style-type: none"> FGRM operationalized Forest Management plan Engagement/training Reports Records of admitted farms DA by-laws 	
	Potentially could cause or aggravate land-use conflicts				

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> • Forest Management plan was prepared for all sites to also reflect community expectations • District Assembly byelaws used to support the conservation of dedicated forests and to sanction encroachment • Admitted farmers that expanded beyond allowed limits and were made to return to the permitted areas only 		
	Low percentage of women in livelihood improvement activities		<ul style="list-style-type: none"> • Employment and other opportunities were given to local communities as much as possible. 	<ul style="list-style-type: none"> • Records of farmers • Training reports 	
	Prioritization of a few demographic in terms of labour		<ul style="list-style-type: none"> • Equal opportunity was given to all abled bodied persons who wanted to participate 		
	Unfair selection of beneficiaries		<ul style="list-style-type: none"> • Gender empowerment trainings were carried out for farmers 		

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
	Limited awareness creation of programs on health and safety issues		<ul style="list-style-type: none"> Design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical and equipment handling was done Workers wore suitable Personal Protective Equipment (PPE) as appropriate 	<ul style="list-style-type: none"> Training report On-site verification with farmers 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
Wildlife protection and management	Public health risks resulting from poor beekeeping management practices	4.01 Environmental Assessment 4.04 Habitats 4.36 Forests	<ul style="list-style-type: none"> Beehives sited in safe environment away from settlements and people Protective gears put on when performing operational activities on beehives Honey extraction equipment kept safe and professionally cleaned during and after use 	<ul style="list-style-type: none"> State of beekeeping protective gears and extraction equipment Field observation Report 	

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	REMARKS
			<ul style="list-style-type: none"> Community members sensitized on the locations of beehives Warning signals strategically placed in locations of beehives to turn off people 	<ul style="list-style-type: none"> Evidence of warning signals 	
	Elephant crop raiding		<ul style="list-style-type: none"> Fringe communities sensitized and educated on elephant behaviour Fringe communities trained on elephant crop raiding mitigation measures Supported farmers with pepper fence defence 	<ul style="list-style-type: none"> Reports Field observation Interviews 	

NB: With regards to Personal Protective Equipment (PPE), stakeholders are entreated to protect themselves as much as possible even in the absence of industrial grade PPE. That is, clothing that covers every inch of the body like PPE would (long sleeved shirts, jeans, boots/footwear, mask).

4.0 FEEDBACK AND GRIEVANCE REDRESS MECHANISM (FGRM)

NRS has made provisions for FGRM hotlines and stakeholders have been made aware of this through sensitization and awareness creation. While activities are being implemented within the Juaboso - Bia HIA, there have been a few reports on grievances, and feedback has been received.

Support is provided by private sector, NGOs/CSOs, and other stakeholders necessary for helping local actors submit their grievances.

The ERPD identified potential conflict sources for categorising grievances. The potential conflict sources are;

- Resource use and access
- Land and tree tenure
- Benefit Sharing
- Safeguards
- Participation and inclusiveness
- Capacity-Building

JUABOSO -BIA		
Grievance/Feedback	2023	
Resource use and access	1	M = 96 F = 28
Land and tree tenure		
Benefit Sharing		
Participation and inclusiveness		
Safeguards	123	
Capacity-Building		
Feedback		

5.0 CONSULTATIONS, TRAININGS AND CAPACITY BUILDING ACTIVITIES

In every engagement NRS has with stakeholders, the opportunity is taken to continuously build their capacities on REDD+ topics and provide updates on activities within the HIA and GCFRP as a whole. Partners also carry out trainings and capacity building activities within the landscape.

Table 3: Consultations, trainings and capacity building activities

INSTITUTION/ FACILITATOR	ACTIVITY	RECIPIENTS
NRS	Strengthening awareness on the benefits-sharing arrangement under the GCFRP. To ensure community led, transparent and participatory approach to the benefit-sharing arrangements, the need for safeguards adherence was emphasized to avoid or minimize any complaints or grievances that may arise during this process.	103 (73 M & 30 F) beneficiaries
	Community engagement on community and farmer benefits. The need for safeguards compliance was heavily addressed and the availability of the FGRM was communicated again	77 (41 M & 36 F) beneficiaries
Tropenbos	Training on forest offences and illegalities for deforestation-free steering committee for the Juaboso Bia HMB. This training was conducted to educate and refresh members of the deforestation-free forest monitoring task force on forest laws and forest offences in order to enhance their understanding and capacity to effectively monitor and protect the forests and natural resources in the Juaboso-Bia landscape	Juaboso – Bia HMB and members of the taskforce

	under the Juaboso-Bia HMB governance structure.	
	Additional livelihood training for project beneficiaries in the Juaboso-Bia landscape. The objective of this training program was to train selected smallholder farmers in beekeeping, piggery, and vegetable (cabbage and green pepper) production, under the Juaboso-Bia HMB governance structure. The workshop was also to equip beneficiaries with modern day innovative climate-smart strategies and technologies in apiculture, piggery and vegetable production for optimum profits.	26 beneficiaries
	Refresher training on additional livelihoods and monitoring of livelihood enterprises for project beneficiaries in the Juaboso-Bia landscape. The purpose of this training and field monitoring is to refresh beneficiaries on previous trainings given to them on setting up and managing their additional livelihood enterprises; beekeeping, piggery, and vegetable production. The training was also to equip beneficiaries with skills in honey harvesting and processing for trade, wax making, farm enterprise management, operationalization and safety	26 beneficiaries
ECOM	Livelihood improvement: Farmers trained on vegetable production and market linkage to enhance livelihood improvement	
	Women (economic) empowerment: Farmers trained on financial literacy (P&L)	

	Preserving Ecosystem: Farmers received training on Ecosystem Preservation and Climate Smart Agriculture (CSA)	
	Farmer Field School (FFS): Farmers received training on FFS such as GAP, GEP & GSP. Topics treated include but not limited to; Harvest and post harvest, IPM, soil health, safe disposal of empty agrochemicals containers	
	CLMRS: Awareness creation through training for staff and committees(100% target achieved) Training of farmers on discrimination, force labor, child labor, workplace violence and harassment	
	Gender & empowering youth: Farmers trained on gender policy and youth empowering. Youth farmers trained on financial and business skills	
COCOBOD	Sensitization of farmers on Gender Integration	1,985 (1,229 M & 756 F) farmers
	Education on Determinants of Child Labour in Cocoa production/industry	1,991 (1,225 M & 751 F) farmers
	Education of communities on Resource Depletion (Illegal logging, Deforestation, Clear cutting)	1,957 (1,232 M & 745 F) farmers

6.0 RECOMMENDATIONS AND NEXT STEPS

The proponents of GCFRP as well as implementing partners (from government, private sector and CSOs/NGOs) have exhibited strong dedication to sound environmental and social safeguards measures in the implementation of interventions/activities under GCFRP by demonstrating robust compliance to both national and the World Bank safeguards policies. By involving communities in methods that provide them with environmental and financial benefits, the programme has a strong potential to increase carbon stocks (achieve emissions reductions) in the High Forest Zones by reducing deforestation and forest degradation. Certain negative environmental and social effects (soils, water supplies, biodiversity, and some socioeconomic issues) that result from GCFRP implementation have been identified and mitigated against thereby maximizing the reputational, economic and social benefits of the programme

The recommended mitigation measures are sufficient to protect the environment and promote social growth.

Some recommendations to further enhance programme implementation were drawn based on monitoring of the safeguards implementation:

- There is a need to strengthen partnership and coordination with key stakeholders at the HIA level
- Regular and timely monitoring of activities/interventions undertaken by partners is encouraged
- Continuous stakeholder engagement with project proponents on safeguards implementation is recommended

ANNEXES

Annex 1: Lists of stakeholders consulted/engaged

S/W Jubaso




ATTENDANCE SHEET
SAFEGUARDS MONITORING

NAME	M/F	ORGANIZATION	LOCATION	CONTACT	SIGN
Nana Kwame Asante Sediako II	M	Trad Ruler	Asamporgye	0244757337	
Kwadwo Aboagye	M	Linguist	✓	0249039730	
Paul Gyabeng	m	HMB	Jubaso	0249106619	
Beh Mithony	m	HMB	Jubaso	055998145	
Osei Adwoop Tuntu	m	HMB	Sanku	0249310231	
Ladjet Kweku Francis	M	HMB	Asuo Bia	0244284217	
Prosper Oppong	M	Bia West District Assembly	ESSAM	0555422533	
Hon. Martin K. Fosu	M	Assembly member	ESSAM	0243565016	
Nana Adwoa Aky	F	Nana Ochama	ESSAM	0249980465	
Dominic Awulome	M	WID	ESSAM	0551251734	
Nana Ama Antwiwaa	F	Widows fm	ESSAM	0249882360	

S/W Jubaso




ATTENDANCE SHEET
SAFEGUARDS MONITORING

NAME	M/F	ORGANIZATION	LOCATION	CONTACT	SIGN
Pastor Kofi Mfeneb Okanteh	M	Clayfish conservation Alliance	Debiso	0245105915	
Sampson Derrick Mensah	M	conservation Alliance	Debiso	0244830541	
Banabas A. Akafo	M	BIAA	ESSAM	054425688	
Dwusi Christiana	F	HIA	Msinsem	0595564177	
Hawa Saah	F	HIA	Safo Mkwata	0556509596	
Sheila Ado Boa	F	HIA	Kojuba	0245299126	
Kweku Myimel	M	.	Yumawana	0206511785	
GODFRED ANDERSON	F	JSD JUBASO-BIA	DEBISO	054745272	
Amoako Christopher B	M	HMB	Tawmatoc	0244950320	



S/W Jumboro



ATTENDANCE SHEET
SAFEGUARDS MONITORING

NAME	M/F	ORGANIZATION	LOCATION	CONTACT	SIGN
GODFRED ANDERSON	M	F-S-D Anasoso-BIA	DEBSO	074952792	
Amoako Christopher Bine	M	AmB	Tammatoc	0244950320	
Daniel Kusi Gyabegah	M	Bia xlet Assembly	ESSAM	024528759	
Ayada Aderson	M	✓	ESAM	0244186351	
Ismael B. Anah	M	Hmg Coorcm	ESSAM	0248989130	
Albert Adewole	M	TSG	Kumasi	0542440614	



Jumboro



ATTENDANCE SHEET
SAFEGUARDS MONITORING EXERCISE

NAME	ORGANIZATION	LOCATION	CONTACT/ EMAIL	SIGN
PAPA KWAW QUANSAH	USD-FC	Kunkumso	0244772108 papakwaw@ghfc.com	



Twaboso



ATTENDANCE SHEET
SAFEGUARDS MONITORING

NAME	M/F	ORGANIZATION	LOCATION	CONTACT	SIGN
<i>Asamoah Bernard</i>	<i>M</i>	<i>CHED</i>	<i>Adjoafu</i>	<i>024481698</i>	<i>[Signature]</i>
<i>Michael Somuah</i>	<i>M</i>	<i>CHED</i>	<i>Adjoafu</i>	<i>0546655617</i>	<i>[Signature]</i>



Twaboso



ATTENDANCE SHEET
SAFEGUARDS MONITORING

NAME	M/F	ORGANIZATION	LOCATION	CONTACT	SIGN
<i>Benjamin Adjei Boateng</i>	<i>M</i>	<i>SNV</i>	<i>Essam</i>	<i>0546716121</i>	<i>[Signature]</i>



Juaboso



ATTENDANCE SHEET

SAFEGUARDS MONITORING EXERCISE

NAME	ORGANIZATION	LOCATION	CONTACT/EMAIL	SIGN
Aidoo Mark Gyameri	FED	Juaboso	0244617888	
Alex J. Kobina	FSD	Juaboso	0248540570	

Annex 2: Recorded FGRM

DATE	NAME OF FARMER	LOCATION	CONTACT	NATURE OF COMPLAINT	MEANS OF RESOLUTION	GENDER	STATUS
04/10/22	David Bosompem Enning	Addaekrom C	0599873256	Fungicide not Sprayed on Farm	Spraying team invited to office to work ^{inspect}	MALE	Solved
04/10/22	Kwame Nsiah	Addaekrom C	0247434568	Fungicide not Sprayed on Farm	✓	MALE	Solved
04/10/22	Opong Atta Jr	Magyewosikan	0241672829	Missing Spraying Machine	✓	MALE	Pending
11/12/22	John Twene	Dansokrom		Severe drought impact on planted Seedlings	Encouraged farmers to dig baseholes (hand dug)	MALE	Action taken
✓	Da-ara Dagame	Twepease		✓	✓	MALE	✓
11/12/22	Frank Mann Tawiah	Twepease		✓	✓	MALE	✓
✓	Osei Kwadwo	Twepease		✓	✓	MALE	✓
✓	Kwaku Asemiah	Osonokrom		✓	✓	MALE	✓
✓	Edward Yeboah	Dansokrom		✓	✓	MALE	✓
17/11/22	Nana Kwame Tawiah	K.T.C		Low pod load leading to low yield	Farmer encouraged to buy pruning saws	MALE	Action taken
19/11/22	Jonathan Tekeperfeh	Cannan		High mortality rate of Colan Seedlings	Weeding later to intensify watering and mulching	MALE	✓

DATE	NAME OF FARMER	LOCATION	CONTACT	NATURE OF COMPLAINT	MEANS OF RESOLUTION	GENDER	STATUS
19/11/22	Moses Niyame	Adjofua (Abusokrom)	0542571807	Low and poor Shade leading to Colan Seedlings wilt	Farmers tasked to plant glicidia	MALE	RESOLVED
12/11/22	David Bosompem	K.T.C		None receipt of Group Chemical from the office		MALE	
10/08/23	Akosua Atta	Adjofua	—	None approval of pruning in her farm but has been pruned		FEMALE	

Annex 3: Pictures

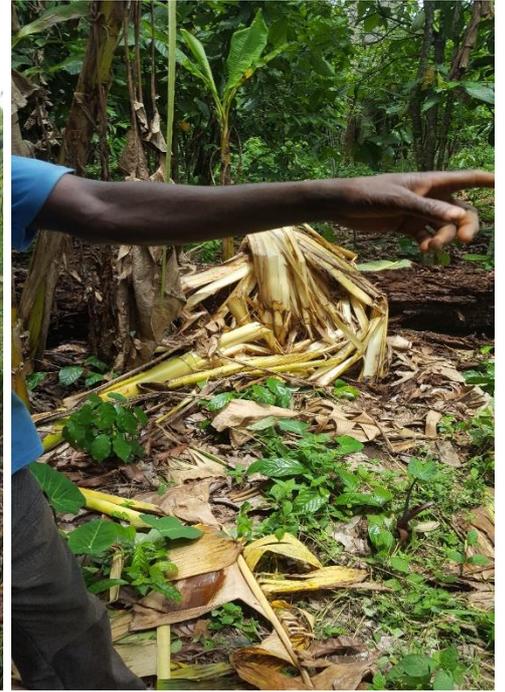
Community engagement with elephant crop raiding affected farmers to identify the appropriate mitigating method



Sensitization program on Human Elephant conflict. As part of the activities the park involved some women representative from the HMB and sub HIA to be part of the sensitization program



Inspection and monitoring of affected farms



Additional Livelihood Training and Enterprise Setup





Trainings on Safeguards



Taskforce and HMB members partaking in refresher training sessions on forest laws and offenses



Annex 4: Forest reserves condition scores and biodiversity assessment

Table 4: Description of Forest Condition score

Score	Designation	Description
1	Excellent	Few signs (<2%) human disturbance, with good canopy and virgin or late secondary forest throughout
2	Good	Less than 10% heavily disturbed. Logging damage restricted or light and well dispersed. Fire damage none or peripheral
3	Slightly degraded	Obviously disturbed or degraded and usually patchy, but with good forest predominant; maximum 25% with serious scars and poor regeneration; maximum 50% slightly disturbed, with broken upper canopy
4	Mostly degraded	Obviously disturbed and patchy, with poor quality forest predominant; 25-50% with serious scars; maximum 75% disrupted canopy or forest slightly burned throughout
5	Very poor	Forest with coherent canopy < 25% or more with half the forest with serious scars and poor regeneration; or almost all heavily burned with conspicuous pioneer species throughout
6	No significant forest left	Almost all deforested with savanna, plantation, or farm; <2% good forest; or 2-5% very disturbed forest remaining; or 5-10% left in extremely poor condition

Table 5: Star rating system for plant species in Ghana

Star Rating	Description
Black	Highly significant in context of global biodiversity; rare globally and not widespread in Ghana
Gold	Significant in context of global biodiversity; fairly rare globally/nationally
Blue	Mainly of national biodiversity interest, e.g., globally widespread, nationally rare; or globally rare but of no concern in Ghana due to commonness

Scarlet	Common and widespread commercial species with potential seriously threatened by overexploitation
Red	Common and widespread commercial species; under significant pressure from exploitation
Pink	Common and widespread commercial species; not currently under significant pressure from overexploitation
Green	Species common and widespread in tropical Africa; no conservation concern
Others	Unknown, or non-forest species

Table 6: Ten most important tree species identified in forest ecosystems

Species	Frequency
<i>Celtis mildbraedii</i>	182
<i>Broussonetia papyrifera</i>	107
<i>Triplochiton scleroxylon</i>	106
<i>Nesogordonia papaverifera</i>	77
<i>Ricinodendron heudelotii</i>	69
<i>Calpocalyx brevibracteatus</i>	64
<i>Hymenostegia afzelii</i>	64
<i>Diospyros canaliculata</i>	53
<i>Sterculia rhinopetala</i>	47
<i>Discoglyprena caloneura</i>	40

Table 7: Ten most important tree species identified on cocoa farms

Species	Frequency
<i>Morinda lucida</i>	77
<i>Persea americana</i>	57
<i>Citrus sinensis</i>	31
<i>Carica papaya</i>	20
<i>Terminalia superba</i>	18

<i>Milicia regia</i>	16
<i>Antiaris toxicaria</i>	15
<i>Ficus exasperata</i>	15
<i>Ficus vogeliana</i>	12
<i>Holarrhena floribunda</i>	12

Table 8: Red and Scarlet star rating of plant species recorded in cocoa farms

Species	Star rating
<i>Pycnanthus angolensis</i>	Red
<i>Albizia ferruginea</i>	Scarlet
<i>Antiaris toxicaria</i>	Scarlet
<i>Entandrophragma angolense</i>	Scarlet
<i>Khaya grandifoliola</i>	Scarlet
<i>Milicia excelsa</i>	Scarlet
<i>Milicia regia</i>	Scarlet
<i>Milicia regia</i>	Scarlet
<i>Pouteria aningeri</i>	Scarlet
<i>Pterygota macrocarpa</i>	Scarlet
<i>Triplochiton scleroxylon</i>	Scarlet

Table 9: Red and Scarlet star rating of plant species recorded in the cropland

Species	Star rating
<i>Afzelia bella</i>	Red
<i>Amphimas ptrecapioides</i>	Red
<i>Ceiba pentandra</i>	Red
<i>Celtis zenkeri</i>	Red
<i>Daniellia ogea</i>	Red
<i>Distemonanthus benthamianus</i>	Red
<i>Pouteria altissima</i>	Red

<i>Pycnanthus angolensis</i>	Red
<i>Terminalia ivorensis</i>	Red
<i>Terminalia superba</i>	Red
<i>Albizia ferruginea</i>	Scarlet
<i>Antiaris toxicaria</i>	Scarlet
<i>Entandrophragma angolense</i>	Scarlet
<i>Entandrophragma candollei</i>	Scarlet
<i>Milicia excelsa</i>	Scarlet
<i>Milicia regia</i>	Scarlet
<i>Pterygota macrocarpa</i>	Scarlet
<i>Triplochiton scleroxylon</i>	Scarlet

Large Mammals of Bia Conservation Area

37 medium to large mammal species of 27 genera were confirmed in the three areas during the surveys. Bia ranked highest with 36 recorded species, followed by Ankasa (34 + 3 possibles) and Draw (23). Classification follows Kingdon (1997).

		ANKASA	DRAW	BIA
PRIMATES				
Apes				
Chimpanzee	<i>Pan troglodytes</i>			X
Monkeys				
Lowe's Monkey (Mona)	<i>Cercopithecus campbelli lowei</i>	X		X
Spot-nosed Monkey	<i>Cercopithecus petaurista</i>	X		X
Olive colobus	<i>Procolobus verus</i>	X		X
Western black & white colobus	<i>Colobus vellerosus</i>			X
White-naped mangabey	<i>Cercocebus atys lunulatus</i>	X		
Prosimians				
Bosman's Potto	<i>Perodicticus potto</i>	X	X	X
Demidoff's Galago	<i>Galagoides demidoff</i>	X	X	X
RODENTS				
Squirrels				
Striped Ground Squirrel	<i>Euxerus erythropus</i>	X	X	X
Rope Squirrel	<i>Funisciurus pyrropus</i>	X	X	X
African Giant Squirrel	<i>Protoxerus stangeri</i>	X		X
Anomalures				
Pel's Anomalure	<i>Anomalurus peli</i>	X	X	X
Porcupines				
Brush-tailed Porcupine	<i>Atherurus africanus</i>	X	X	X
Cane-rats				
Marsh Cane Rat	<i>Thryonomys swinderianus</i>	X	X	X
Pouched Rats				
Giant Rat	<i>Cricetomys gambensis</i>	X	X	X
CARNIVORES				
Mongoose				
Slender Mongoose	<i>Herpestes sanguinea</i>	X	X	X
Cusimanse	<i>Crossarchus obscurus</i>	X	X	X

Marsh Mongoose	<i>Atilax paludinosus</i>	X	X	X
Otters				
African Clawless Otter	<i>Aonyx capensis</i>	X		X
Genets and Civets				
Blotched Genet	<i>Genetta tigrina</i>	X	X	X
African Civet	<i>Civettictis civetta</i>	X	X	X
African Palm Civet	<i>Nandinia binotata</i>	X		X
Cats				
Leopard	<i>Panthera pardus</i>			X
SCALY ANT-EATERS				
Pangolins				
Long tailed pangolin	<i>Uromanis tetradactyla</i>	X		X
Tree Pangolin	<i>Phataginus tricuspis</i>	X	X	X
Giant Pangolin	<i>Smutsia gigantea</i>			X
UNGULATES				
Hyraxes				
Tree Hyrax	<i>Dendrohyrax dorsalis</i>	X	X	X
Proboscids				
Forest Elephant	<i>Loxodonta africana cyclotis</i>	X	X	X
Pigs				
Red River Hog	<i>Potamochoerus porcus</i>	X	X	X
Chevrotains				
Water Chevrotain	<i>Hyemoschus aquaticus</i>	X		X
Bovids				
Bushbuck	<i>Tragelaphus scriptus</i>	X	X	X
Bongo	<i>Tragelaphus euryceros</i>	X	X	X
Antelopes				
Maxwell's Duiker	<i>Cephalophus maxwelli</i>	X	X	X
Black Duiker	<i>Cephalophus niger</i>	X	X	X
Yellow-backed Duiker	<i>Cephalophus silvicultor</i>	X		X
Bay Duiker	<i>Cephalophus dorsalis</i>	X	X	X
Royal Antelope	<i>Neotragus pygmaeus</i>	X	X	X
TOTAL SPECIES	37	34	23	36

PRIMATES IN BIA AND OTHER AREAS

Species, subspecies		Ankasa Cons. Area	Bia Cons. Area	Cape Three Point FR	Krokosua Hills FR
Bosman's potto	<i>Perodicticus potto</i>	C	C	C	C
Demidoff's dwarf galago	<i>Galagoides demidovii</i>	C	C	C	C
Olive colobus	<i>Procolobus verus</i>	C	C	DD	C
Miss Waldron's red colobus	<i>Procolobus badius waldroni</i>	Abs	Abs	Abs	Abs
Western black-and-white colobus	<i>Colobus vellerosus</i>	P	C	P	C
Lowe's monkey (Mona)	<i>Cercopithecus campbelli lowei</i>	C	C	C	C
Spot-nosed monkey	<i>Cercopithecus petaurista petaurista</i>	C	C	P	C
Roloway monkey	<i>Cercopithecus diana roloway</i>	P	Abs	DD	DD
White-naped mangabey	<i>Cercocebus atys lunulatus</i>	C	Abs	C	DD
Western chimpanzee	<i>Pan troglodytes verus</i>	P	C	Abs	C

C: Confirmed by direct sightings or acoustical clues;
P: presence Possible according to indirect evidence or unconfirmed reports
Abs: likely **Absence** supported by previous reports and surveys;
DD: **Data Deficient**, due to low abundance and lesser survey effort, the species have not been detected but interviews and previous surveys indicate a possibility of presence.

Annex 5: List of approved and banned agro chemicals

TRADE NAME	ACTIVE INGREDIENT	PRE-HARVEST INTERVAL	RE-ENTRY INTERVAL	DOSAGE
AKATE MASTER	<i>BIFENTRIN</i>	21 DAYS	48 HRS	100 ML/ 11L of water
AKATE STAR 3 EC	<i>BIFENTRIN</i>	21 DAYS	48 HRS	20 ML/ 11L of water
ACTARA	<i>Thiamethoxam</i>	21 DAYS	48 HRS	17ML/11L of water
ACETA STAR	<i>Acetamiprid&Bifenthrin</i>	21 DAYS	48 HRS	120ML/11L of water

ACATI POWER	<i>Thiamethoxam</i>	21 DAYS	48 HRS	20ML/11L of water
PRIDAPOD	<i>IMIDACLOPRID</i>	21 DAYS	48 HRS	20ML/11L of water
VIPER SUPER	<i>INDOXACARB AND ACETAMIPRID</i>	21 DAYS	48 HRS	105ML/11L of water
GALIL 300	<i>IMIDACLOPRID AND BIFENTRIN</i>	21 DAYS	48 HRS	13ML/11L of water
AF CONFIDENCE	<i>CAPSAICIN</i>	21 DAYS	48 HRS	200ML/11L of water
SIVANTO	<i>FLUPYRADIFURONE</i>	21 DAYS	48 HRS	40ML/11L OF WATER
NORMAX 150	<i>ALPHA-CYPERMETHRIN</i> <i>TEFLUBENZURON</i>	21 DAYS	48 HRS	52 ML/11L WATER
BUFFALO SUPER	<i>ACETAPRIMID</i>	21 DAYS	48 HRS	98ML/11L WATER

THODAN SUPER	<i>LAMBDAHALOTHHRIN+ACETAMIPRID</i>	21 DAYS	48 HRS	110ML/11L WATER
A1	<i>IMIDACLOPRID</i>	21 DAYS	48 HRS	20ML/11L WATER
CALLIFAN SUPER	<i>BIFENTHRIN+ACETAMIPRID</i>	21 DAYS	48 HRS	20ML/11L WATER
AKATE GLOBAL	<i>THIAMETHOXAM</i>	21 DAYS	48 HRS	20ML/11L WATER
RAGENT 200	<i>FIPRONIL</i>	21 DAYS	48 HRS	17ML/11L WATER

FUNGICIDES

TRADE NAME	ACTIVE INGREDIENT	PRE-HARVEST INTERVAL	RE-ENTRY INTERVAL	DOSAGE
<i>RidomilGold</i>	<i>CuprousOxide&Mefo noxam</i>	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
<i>Funguran-OH</i>	<i>CupricHydroxide</i>	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
<i>Metalm72WP</i>	<i>Metalxyl</i>	21 DAYS	12 HRS (0.5 DAY)	1 Sachet/ 16L of water
<i>Fungiki I 50WP</i>	<i>Metalxyl</i>	21 DAYS	12 HRS (0.5 DAY)	1 Sachet/ 16L of water
<i>Kocide2000</i>	<i>CupricHydroxide</i>	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
<i>CopperNordox75WG</i>	<i>CuprousOxide</i>	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water

<i>Champion</i>	<i>CupricHydroxide</i>	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
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<i>SidalcoDefender</i>	<i>DicopperChloride trihydroxide,SC</i>	21 DAYS	24 HRS (1 DAY)	150ML/ 16L of water
Fantic	Benalaxyl M+Copper(I)Oxide	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Forum R	homorph + 400 g/kg Co	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Vamos 500SC	500 g/L Fluazinam	21 DAYS	24 HRS (1 DAY)	75ML/ 16L of water
Banjo Forte 400 SC	methomorph + 200 g/L	21 DAYS	24 HRS (1 DAY)	75ML/ 16L of water
Royal Cop 50WP	50% Copper (II) hydroxide	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Delco 75WP	75 % Cupper (I) oxide	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water

FERTILIZERS GRANULAR (ORGANIC)

TRADE NAME	ACTIVE INGREDIENTS	DOSAGE
Asaasewura	NPK 0-22- 18+9CaO+75+MgO	3 Bags/ acre
Cocofeed	NPK 0-30-20	3 Bags/ acre
Cocoa Master	NPK-1-21- 19+9CaO+65+6MgO +18	3 Bags/ acre
Dua Pa	NPK 3-25-18- 7CaO+45+6MgO+0. 3(B+Zn)	3 Bags/ acre
Ferta Agra Cacao Sup	NPK 3-21e20+10CaO+55+5Mg O+0.5(B+Zn)	3 Bags/ acre

So Aba Pa	NPK 4-22- 18+4CaO+45+5MgO +0.5B+0.2Zn	3 Bags/ acre
Adom Cocoa Fertilizer	NPK2-23- 18+8 CaO+6SO3+6MGO +0.5ZN+0.5B	3 Bags/ acre
Adehye Cocoa Fertiliz	NPK2-23- 18+8 eCaO+6SO3+6MGO +0.5ZN+0.5B	3 Bags/ acre
Sidalco	NPK 6:0:20 + Trace elements (Mg, Fe, Mn,Cu,Zn)	21 DAYS
Lithovit	Urea+Carbonates of Ca and Mg+Trace elements	21 DAYS

List of banned agro-chemicals

GAMALIN 20 (DDT)

UNTENT

COCOSTAT

KABAMALT

PARAQUATS

Banned pesticides

1. 2,4,5-T and Its salts and esters

2. Aldrin

3. Binapaeryt

4. Cantalo

5. Chlordane

o Clordinciorn

7. Chlorobenzilate

8. Dichlorodiphenyltrichloroethane(DDT)

9. Dieldrin

10. Dinoseb and its salts and esters

11. Dinitro-orthocresol (DNOC) and its salts (such as ammonium salt, potassium salt and sodium salt)

12. Endria

13. HCH (mixed isomere)

14. Heptachlor

15. Hexachlorobenzene

16. Parathion

17. Pentachlorophenol and its salts and esters

18. Toxaphene

19. Mirex

20. Methamidophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/l)

21. Methyl-parathion (emulsifiable concentrates (EC) with at or above 19.5% active ingredient and dusts at or above 1.5% active ingredient)

22. Monocrotophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/D)

23. Parathion (all formulations - aerosols, dustable powder (DP), emulsifiable concentrate (EC), granules (CB) and wettable powders (WP) - of this substance are included, except capsule suspensions (CS))

24. Mosphamidon (Soluble liquid formulations of the substance that exceed 1000 1 active ingredient/l)

Annex 6: Awareness materials from project proponents

TROPENBOS GHANA
Making Knowledge work for Forests and People

COMMUNITY FIRE MANAGEMENT ACTIONS

Preventive Actions

- Do not cook with naked fires on the farm. (Red X)
- Create DAKOTA FIRE HOLE to prevent fire from spreading. (Green checkmark)
- Tapping palm wine with fire. (Red X)
- Tapping palm wine without fire. (Green checkmark)
- Children should not play with fire. (Red X)
- Educate family members on bushfire prevention. (Green checkmark)
- Educate people on bushfires. (Green checkmark)

Pre-Suppression Actions

- Select recommended green fire break species (*Khaya senegalensis*).
- Plant recommended fire resistance trees around your farm.
- Green fire break.
- Create bare ground firebreaks around your farm, plantation or homes.
- Fire belt must go down to the mineral.

Suppression Actions (Tactical Firefighting)

- Use SAND in the absence of water to extinguish small fires.
- Use WET blanket to cut off oxygen supply in small domestic fires.
- Determine the behaviour and direction of fire.
- Construct fire lines down to mineral soil to stop spread of fire.
- Observe and report fires out of control.
- Call the Ghana National Fire Service on 122 or 192 or the nearest forestry office.
- Use fire tender to fight bushfires.

Promoting sustainable land use, inclusive governance, responsible business, independent forest monitoring and degraded mined site rehabilitation

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