



<b>Forest Carbon Partnership Facility (FCPF) Carbon Fund</b>	
<b>ER Monitoring Report (ER-MR)</b>	
<b>ER Program Name and Country:</b>	Ghana Cocoa Forest REDD+ Programme (GCFRP), Ghana
<b>Reporting Period covered in this report:</b>	01-01-2020 to 31-12-2021
<b>Number of FCPF ERs:</b>	3,379,161
<b>Quantity of ERs allocated to the Uncertainty Buffer:</b>	529,648
<b>Quantity of ERs allocated to the Reversal Buffer:</b>	310,728
<b>Quantity of ERs allocated to the Reversal Pooled Reversal buffer:</b>	194,204
<b>Date of Submission:</b>	29-02-2024
<b>Version</b>	2.4

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## List of Acronyms

<b>ACRONYM</b>	<b>MEANING</b>
AD	Activity Data
AFOLU	Agriculture, Forestry and Other Land Uses
AGC	Above Ground Carbon
ASM	Artisanal Small-scale Mining
BGC	Below Ground Carbon
BUR	Biennial Update Report
CEA	Community Extension Agents
CFI	Cocoa and Forest Initiative
CIFOR	Centre for International Forestry Research
COCOBOD	Ghana Cocoa Board
CREMA	Community Resource Management Support Area
CSC	Climate Smart Cocoa
DBH	Diameter at Breast Height
DW	Dead Wood
EF	Emission Factor
EPA	Environmental Protection Agency
ER	Emission Reduction
ER-PD	Emission Reduction Program Document
ESMF	Environmental and Social Management Framework
EU	European Union
FAO	Food and Agricultural Organisation of the United Nations
FC	Forestry Commission
FCPF	Forest Carbon Partnership Facility
FPP	Forest Preservation Programme
FREL	Forest Reference Emissions Level

FSD	Forest Services Division
GCFRP	Ghana Cocoa Forest REDD+ Program
GFOI	Global Forest Observation Initiative
GHG	Greenhouse gas
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HIA	Hotspot Intervention Area
HMB	HIA Management Board
ICT	Information Communication Technology
IPCC	Intergovernmental Panel on Climate Change
L	Litter
LIDAR	Light Detection and Ranging
LMB	Landscape Management Board
MC	Monte Carlo
MMR	Measuring, Monitoring and Reporting
MRV	Measurement, Reporting and Verification
MTS	Modified Taungya System
NCRC	Nature Conservation Research Centre
NDC	Nationally Determined Contributions
NFI	National Forest Inventory
NFMS	National Forest Monitoring System
NFPDP	National Forest Plantation Development Programme
NRS	National REDD+ Secretariat
NW	NorthWest
PMU	Project Management Unit
QA/QC	Quality Assurance/Quality Control
RDA	REDD+ Dedicated Account

REDD+	Reducing Emissions from Deforestation and Forest Degradation plus the role of conservation, sustainable management and enhancement of forest carbon stocks
RMSC	Resource Management Support Centre
RPF	Resettlement and Policy Framework
SE	South East
SESA	Strategic Environmental and Social Assessment
SLMS	Satellite and Land Monitoring System
SOC	Soil Organic Carbon
SOP	Standard Operating Procedure
tCO <sub>2</sub> -e/yr	Tons of Carbon Dioxide equivalent per year
UNDP	United Nations Development Programme
USD	United States Dollar
WD	Wildlife Division



## 1 IMPLEMENTATION AND OPERATION OF THE ER PROGRAM DURING THE REPORTING PERIOD

### 1.1 Implementation status of the ER Program and changes compared to the ER-PD

The Ghana Cocoa Forest REDD+ Programme (GCFRP) is the first program to be developed under REDD+ in Ghana. It is jointly coordinated by the Climate Change Directorate of the Forestry Commission, which houses the National REDD+ Secretariat (NRS) of the Forestry Commission (FC) and the Ghana Cocoa Board (Cocobod). The FC is responsible for the regulation of the utilization of forest and wildlife resources, the conservation and management of those resources, and the coordination of policies related to them, while the Cocobod's mission is to regulate the production, processing, and marketing of good quality cocoa.

The GCFRP is centered on developing a sustainable commodity supply chain that hinges upon the non-carbon benefits that will be channeled to farmers because of significant private sector investments into the landscape and the supply chain.

The projected ER benefits from potential carbon payments of \$50 million (against performance over time), coupled with the cocoa industry's annual \$2 billion dollar investment into the sector, can together drive this transition to a more sustainable cocoa production landscape, while providing added incentives to farmers, traditional leaders, and communities that support landscape governance and management activities that reduce deforestation and support the adoption of climate-smart practices.

The program area covers 5.92 million ha and is in the southern third of the country (Fig. 1). Given the size of the programme, the GCFRP has been designed to adapt the well-established Community Resource Management Area (CREMA) model for landscape governance of cocoa farming areas. The adapted model is called a Hotspot Intervention Area (HIA) and envisages a multi-tiered, governance structure for the people in the landscape, including the cocoa farmers, communities, landowners, and traditional leaders that live within and preside over the HIA landscape. Further, the HIA institution represented by the HIA Management Board is expected to collaborate with a Consortium body of private sector, government and civil society stakeholders who work together to support the implementation of activities towards a common landscape vision, including climate-smart cocoa and reducing deforestation. Carbon accounting will happen at the program scale, but GCFRP implementation will target at least six Hotspot Intervention Areas (HIAs) (Fig. 1) spread across the entire landscape. The establishment of the HIA areas is further supported by land scape scale initiatives such as the Cocoa and Forests Initiative<sup>1</sup> which has adopted the HIAs as the implementation areas. In 2020, as part of the Emission Reductions payment Agreement, Ghana received an Upfront Advance Payment of USD1.3 million dollars.

Detailed progress updates on the UAP and other related activities within the various HIA can be found in the link below:

<https://reddsis.fcghana.org/admin/controller/publications/UPFRONT%20ADVANCE%20PAYMENT%20%20ACTIVITIES%20FOR%202020%20AND%202021.docx>

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<sup>11</sup> <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://cfighana.mlnr.gov.gh/wp-content/uploads/2021/05/CFI-2020-ANNUAL-PROGRESS-REPORT.pdf>; <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.idhsustainabletrade.com/uploaded/2022/07/Cocoa-Forests-Initiative-Ghana-2021-Annual-Report.pdf?x56932>

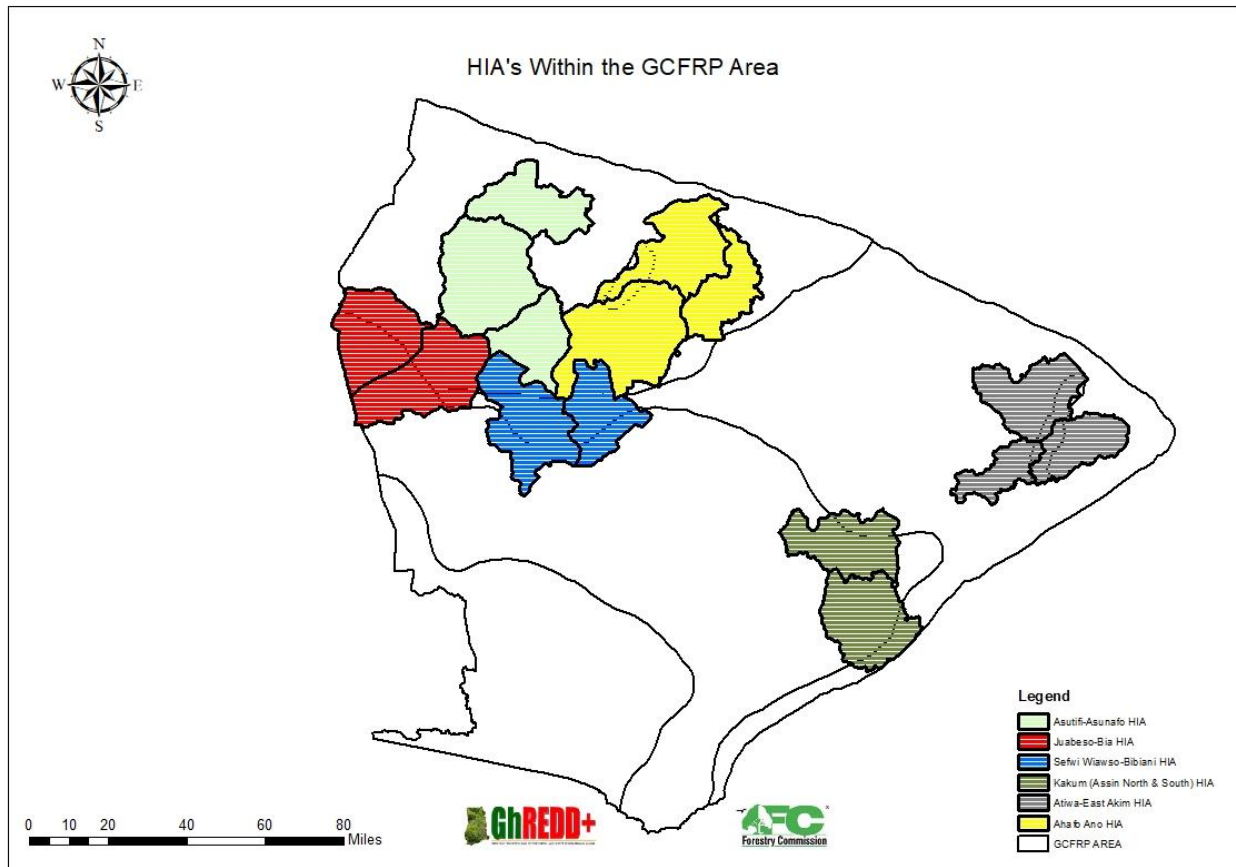


Figure 1: Map of the GCFRP with target HIA

The update of works in the six HIAs are however summarized in Table 1 below.

Table 1: Summary of update of work in the six HIAs as of 2022

Name	Area (ha)	Partners	Status	Main Activities
Juaboso/Bia	243,560	SNV Ghana, Touton, Agro-Eco Louis Bolk Institute, Touton SA, Tropenbos Ghana, Nature Conservation Research Center	The governance structures in this HIA have been fully developed. A framework Agreement between the Forestry Commission, Ghana Cocobod and the	Under the Upfront Advance Payment, 67,771 tree seedlings were used to establish 61 ha of forest plantation using the Modified Taungya System (MTS) approach. 126 farmers

Name	Area (ha)	Partners	Status	Main Activities
		(NCRC), Solidaridad West Africa	<p>Hotspot Management Board has been signed. Some Partners have signed an addendum to support the signed Framework Agreement.</p> <p>The HIA account has been opened for the receipt of future Carbon Payments</p>	<p>established the plantation with 45 of them being females. Also, 80,000 seedlings were supplied to farmers under the Trees on farms component. The tree species supplied were indigenous species which included Ofram, Mahogany, Emire. The purpose is to serve as shade trees within the cocoa farms. This is a CSC intervention to incorporate shade trees in cocoa farms to ensure sustainability and carbon stock enhancement within the cocoa forest landscape.</p> <p>Training of stakeholders on REDD+ safeguards instruments (ESMF, SESA).</p>
Kakum	212,863	NCRC, Hershey,	<p>The Hotspot Management Board has been set up</p> <p>The HIA account has been set up</p>	Under the Upfront Advance Payment, 51,000 tree seedlings were used to establish 40 ha of forest plantation using the Modified Taungya System

Name	Area (ha)	Partners	Status	Main Activities
				<p>(MTS) approach. 63 farmers established the plantation, with 10 of them being females.</p> <p>Also, 70,000 seedlings were supplied to farmers under the Trees of farms component.</p> <p>Training of stakeholders on REDD+ safeguards instruments (ESMF, SESA).</p>
Ahafo-Ano	365,673	Olam Ghana	<p>HMB set-up completed.</p> <p>HIA account for the receipt of Carbon Payments set up</p>	<p>Under the Upfront Advance Payment, 20,000 tree seedlings were used to enrich 2 compartments in the Tinte Bepo Forest Reserve.</p> <p>Also, 25,000 seedlings were supplied to farmers under the Trees on farm component. Training of stakeholders on REDD+ safeguards instruments (ESMF, SESA).</p>

Name	Area (ha)	Partners	Status	Main Activities
Asutifi/Asunafo	328,512	Mondelez Cocoa life (Ghana), UNDP, Proforest Ghana	<p>HMB has been set up.</p> <p>A framework Agreement has been signed with the HMB.</p> <p>HIA account has been set up.</p>	<p>Under the Upfront Advance Payment, 30,000 tree seedlings were used to enrich 2 compartments in the Goa Shelter Forest Reserve.</p> <p>Also, 120,000 seedlings were supplied to farmers under the Trees on farms component.</p> <p>Training of stakeholders on REDD+ safeguards instruments (ESMF, SESA).</p> <p>Mondelez Cocoa Life restored 100 ha of degraded forest plantation using the MTS approach</p>
Sefwi Wiawso/Bibiani	209,495	Olam Ghana, Rain Forest Alliance, Landscape Management Board (LMB)	<p>HMB has been set up.</p> <p>Framework Agreement signed with HMB.</p> <p>HIA account for the receipt of Carbon Payments set up</p>	<p>Under the Upfront Advance Payment, 23,000 tree seedlings were used to enrich 2 compartments in the Sui River Forest Reserve.</p> <p>Also, 20,000 seedlings were supplied to farmers</p>

Name	Area (ha)	Partners	Status	Main Activities
				under the Trees on farm  Training of stakeholders on REDD+ safeguards instruments (ESMF, SESA).
Atewa	216,964	Proposed Partners are Arocha Ghana, CIFOR (as part of their on-going research on governance structures for small-holders in Cocoa and Oil palm).	Continuous engagements with key stakeholders to collectively develop the governance structures for the HIA	Engaged community members on the type of additional livelihood options they may be interested in. The provision of additional livelihood will serve as entry points for future development of governance arrangements

Additional details for activities within the HIAs can be found here: <https://reddsis.fcghana.org/admin/controller/publications/UPFRONT%20ADVANCE%20PAYMENT%20%20ACTIVITIES%20FOR%202020%20AND%202021.docx> Furthermore, the links below give further details on restoration activities by the Government of Ghana within the regions where the HIAs is found here; (<https://fcghana.org/?p=3362>, <https://fcghana.org/?p=3501>)

On June 11, 2019, Ghana signed Emission Reductions Payment Agreements (ERPAs) (Tranches A and B) with the World Bank as a Trustee for the Carbon Fund. On April 14 2020, the World Bank declared all conditions of effectiveness to the ERPAs to have been fulfilled. Subsequently, 1.3 million USD as Upfront Advance Payment as negotiated under the ERPAs was released on September 3, 2020 to support Program implementation. The Benefit Sharing Plan, which gives guidance on the sharing of Carbon Benefits that would be generated under the GCFRP has been finalized and disclosed. The REDD+ Dedicated Account (RDA) has been opened to receive all the Carbon

Payments. The RDA Steering Committee to provide transparency backstopping to the disbursement of Carbon Payments has been set up, in line with the Benefit Sharing Plan. The GCFRP has also developed the right Safeguard architecture to tackle and report on all social and environmental safeguards issues (details in annex 1).

In addition, under the auspices of the Cocoa & Forests initiative, the government of Ghana through the World Cocoa Foundation signed an agreement with 27 global cocoa companies and chocolate producers in 2017. They jointly agreed to transform the Cocoa sector from a major driver of deforestation to one that is enhancing the protection and reforestation of the High Forest Zone as well as the sustainable production of cocoa at the landscape level. Subsequently, in developing the implementation plan for the CFI, the HIAs have been adopted by companies as the implementation areas. This has therefore enhanced the level of engagements and companies see the GCFRP as the main program and vehicle to achieve their commitments.

Table 2: Updates on displacement risks associated with different drivers of deforestation

Cocoa Farming	
Risk of displacement	Low
Progress of the strategy in Place	<p>In the first place, Cocoa production in Ghana is central to the GCFRP landscape. Limited or no cocoa production happens outside this landscape with some minimal cocoa production within the transition zone.</p> <p>. Again, the threat from a changing climate and its impacts on cocoa production outside the recommended growing areas further reduces the likelihood of displacement.</p> <p>However, with recent threats of displacement due to small scale mining in cocoa growing areas, though, the Transition area falls outside the GCFRP area, capacity building, training and extension services by both FC and Cocobod extend to the Transition areas to ensure that farmers implement CSC practices.</p> <p>For instance, FC through the NRS is implementing a project in collaboration with FAO dubbed Forest and Farm Facility Phase II within the Forest, Transition and Savannah Zones, which aims to help forest farm producer organizations become stronger, amplify their potential and connect with each other whilst helping to promote sustainable development through management of farmland and forests that produce food, livelihoods, medicine. In 2022 training workshops on Climate Change Mitigation and Adaptation, and Access to Finance were organized for 46 farmers in the transition zone.</p> <p>Generally, the strategy employed by Ghana to mitigate the potential for displacement of deforestation associated with Cocoa farming is anchored in the initiatives focused in the HIA areas. With an ageing population of Cocoa farms leading to a decrease in farm yield, communities are most likely to shift their activities to forested areas within the GCFRP. Several initiatives underway within the HIA areas are mitigating this potential displacement. In this regard, the Ghana Cocoa Board is currently rehabilitating all diseased and old cocoa</p>

	<p>farms to reverse the trend of decreases cocoa yield. As at 2020, 4199 hectares had been rehabilitated. In addition to this, other efforts in the form of projects are also complementing the efforts.</p> <p>For instance, in the Juaboso Bia HIA, a consortium of stakeholders from both the private and public sectors are involved in the Partnership for Productivity, Protection and Resilience in Cocoa Landscapes (3PRCL). These partners are the Touton, SNV Netherlands, NCRC, Forestry Commission (FC), Ghana Cocoa Board (Cocobod) and have signed addendum to the Juaboso Bia Framework Agreement. The project has established landscape governance and forest protection mechanisms and enhanced Cocoa productivity at the farm level while also providing incentives and income diversification options for farmers as conditions for forest protection and sustainable land management.</p> <p>In the Asutifi/Asunafo HIA, the Environmental Sustainability project (Public and Private Partnership; Mondelez, United Nations Development Program (UNDP), FC, Cocobod ) has established community-level governance structures while also providing incentives and income diversification options for farmers as conditions for forest protection and sustainable land management In addition, through the partnership established under this project, Mondelez has reforested a total area of 167.5 ha using the Modified Taungya System approach. The first of its kind by any Chocolate Brand in Ghana.</p> <p>COCOBOD in collaboration with Forestry Commission and other private sector participants have developed Climate Smart Cocoa (CSC) Standard, which is undergoing series of stakeholder engagements, and expected to be finalized by the third quarter of 2023. The document is a working document to be used in all cocoa-growing regions to ensure sustainability in the face of climate change. The CSC standard document would guide Community Extension Agents (CEAs) in the provision of extension services to farmers to promote on-farm best agricultural practices.</p> <p>These initiatives and more have and will continue to reduce the potential for displacement in the program area.</p>
Subsistence farming	
Risk of displacement	Low
Progress of the strategy in Place	While clearing forests for Cocoa production is considered one of the main drivers of deforestation in the program area, subsistence farming has also been shown to contribute to displacement. As outlined in the ERPD, shifting subsistence agriculture is constrained by the same ecological limits placed on Cocoa, and therefore farmers are unlikely to shift their cultivation outside their farms. Cocoa farmers typically establish their subsistence agricultural fields adjacent to their Cocoa trees and typically engage in diversified farming practices. These practices have been enhanced and incentivized through the



	<p>initiatives (as indicated above) which seek to reward good forest governance within the area. These incentives include the provision of additional livelihood for the farmers, using the MTS approach to reforest degraded forest reserves, where farmers have access to additional lands to cultivate their food crops provision of free extension services for cocoa farmers, the supply of tree seedlings for planting on farm, provision of farm inputs and farm services as well as protective clothing etc. Farmers are now less likely to engage in the clearing of forested environments as there are specific mechanisms established to identify and sanction those engaging in clearing activities.</p> <p>In addition to the above, community governance structures have been developed for five out of the six HIAs. The Framework Agreements, which indicate the roles and responsibilities of farmers have also been signed with the HIA Management Boards (HMBs). The roles of farmers/communities include the protection of the forests and undertaking sustainable agriculture practices. Through series of engagements and capacity building programs, and the announcement of the receipt of the first ER payment by Ghana, farmers are more encouraged to undertake their roles in the Framework Agreements. (<a href="https://www.graphic.com.gh/news/general-news/emission-reduction-programme-dividends-cocoa-farmers-tell-success-stories.html">https://www.graphic.com.gh/news/general-news/emission-reduction-programme-dividends-cocoa-farmers-tell-success-stories.html</a>)</p> <p>Going forward, the Ghana Cocoa Board has begun the process to establish the Cocoa Management System in anticipation of implementing several new, farmer-focused initiatives including pension schemes, This system would help provide tailor-made extension services to farmers. ( further details on the system would be given in subsequent ERs)</p>
Illegal logging	
Risk of displacement	Medium
Progress of the strategy in Place	<p>Illegal logging within the GCFRP was identified as a risk in the ERPD, however this risk is being mitigated as described below:</p> <p>Improved landscape governance and planning (HIA governance structures development) along with enhanced skills mainly through sensitization on monitoring allow both communities and government entities to collaboratively respond to identified acts of illegal logging.</p> <p>Enhanced monitoring capabilities partnered with improved agricultural production have and will continue to reduce the likelihood of displacement related to illegal logging activities. Further, the establishment of the Trees in</p>

	<p>Agroforestry program (a major component of ERPD) will in the future provide a sustainable source of timber to meet local needs.</p> <p>Again, Ghana has ratified a Voluntary Partnership Agreement with the EU and has developed the Ghana Wood Tracking System systems to control, verify and license legal timber. In line with this, a new legislative Instrument (LI 2254) has been developed to guide the value chain of timber from the forest gate to processing. All Timber Permits need to be ratified by Parliament. So far, the first batch of 19 have been laid before Parliament for ratification.</p> <p>The Forestry Commission has been undertaking forest protection including forest reserve patrol to detect and apprehend illegal offences including illegal logging, farming, mining sand/gravel wining, charcoal production, hunting, cattle grazing, carving of canoe, setting of forest fire and infrastructure development. This exercise is undertaken by staff of FC at National, Regional and District levels with the support of the Rapid Response Unit.</p> <p>Arrested culprits are arraigned before court of Law and punitive measures are meted against them to serve as deterrent for others. The table below provides details of forest related number of prosecutions for 2020 and 2021.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Prosecutions</th> </tr> </thead> <tbody> <tr> <td>2020</td> <td>55</td> </tr> <tr> <td>2021</td> <td>20</td> </tr> <tr> <td><b>Total</b></td> <td><b>75</b></td> </tr> </tbody> </table>	Year	Prosecutions	2020	55	2021	20	<b>Total</b>	<b>75</b>
Year	Prosecutions								
2020	55								
2021	20								
<b>Total</b>	<b>75</b>								
Illegal small-scale mining									
Risk of displacement	Medium								
Progress of the strategy in Place	<p>The displacement of illegal small-scale Gold mining in the GCFRP project area was recognized as a medium risk in the original ERPD</p> <p>Since then Ghana has made significant progress with regards to mitigating this risk.</p>								

With a new government in place, in 2017, the government launched a new program (artisanal mining) to enforce the law by putting up measures to stop the menace, this helped to reduce the menace.

Some reports do indicate that the practice has returned however, in the project landscape.

In response, Government has introduced some policies to help mitigate illegal mining. These include the following:

- All eighty-three (83) Small Scale Mining Committees in the various mining districts, in accordance with section 92 of the Minerals and Mining Act, 2006 (Act 703), to assist the District Offices of the Minerals Commission to effectively monitor, promote and develop mining operations in their jurisdictions. This is the first time, since the passage of Act 703, that Small Scale Mining Committees have been established in all mining districts in the country. Under the Ghana Landscape Restoration and Small Scale Mining Project, members of these Committees to build their capacity efficiently perform their functions.
- Establishment of Community Mining Schemes, which allows mining to be undertaken in a sustainable manner
- Implementation of the National Alternative Livelihood Program (NALEP) carry out its mandate, This program which has an objective of creating jobs as alternative to illegal mining was launched on 25 October 2021.

In addition to the above, through the Forest Investment Programme and GCFRP, additional livelihood schemes are being provided to farmers to increase their income levels. Again, the logic of intensification of good farm practices and other climate smart interventions is to help increase the cocoa yields. Through this, farmers are motivated not to give up their cocoa farms to illegal mining persuasions.

Furthermore, Cocobod, in October 2022 announced the start of a Cocoa Farmers Pension Scheme<sup>2</sup> to assure farmers of earning income in their old ages. The scheme has just been rolled after piloting in the Ashanti Region. Subsequent MRs would give details.

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<sup>2</sup> <https://cocobod.gh/news/full-rollout-of-cocoa-farmer-pension-scheme-begins-in-october>

### **1.1.1 Effectiveness of the organizational arrangements and involvement of partner agencies**

The successful implementation of the ER Program is dependent on the effective organization arrangements, especially at the Programs Management Unit (PMU) as in Ghana's instance, so many institutions are involved in the implementation process. Therefore, key stakeholder engagements were undertaken in 2020 and 2021. The key milestones achieved are:

- Governance and Safeguards officers were recruited to augment the staff strength of the PMU. The Governance Officer coordinated the development of functional governance structures within the Asunafo/Asutifi and Ahafo Ano HIAs.
- The GCFRP Implementation Committee was also formed to coordinate the operational activities of the GCFRP, especially activities under the Upfront Advance Payment. The Committee is made up of members from the Forest Services Division, the Wildlife Division of the Forestry Commission, The World Cocoa Foundation, The Resource Management Support Center and the Environmental Protection Agency.
- The GCFRP Implementation Committee engaged the Regional and District Forestry Commission/Cocobod Managers to identify, pre-screen and select potential sites for reforestation activities.
- Forestry Commission and the World Cocoa Foundation signed a Memorandum of Understanding<sup>3</sup> to collaboratively implement the GCFRP.
- Series of stakeholder engagements with key stakeholders led to the development the governance structures in Asunafo/Asutifi, and Ahafo Ano HIAs
- The safeguards officer coordinated FGRM trainings within the Kakum, Ahafo Ano, Asutifi/Asunafo and Sefwi Wiawso/Bibiani HIAs
- Engaged FAO to support the development of Ghana's first Monitoring Report, which was subsequently validated and verified

### **1.1.2 Updates on the assumptions in the financial plan and any changes in circumstances that positively or negatively affect the financial plan and the implementation of the ER Program.**

In page 85 of the ERPD submitted to the Carbon Fund, Ghana indicated that the funding for the Program will be from REDD+ Funding (Carbon Payments), Private Sector, Grants and Government. This assumption has not changed over the Monitoring period. This is evident from the ability of the Program to report Emission reductions for two successive monitoring Periods, which are even more than the target in the ERPA with the World Bank.

## **1.2 Update on major drivers and lessons learned**

In 2017 Ghana submitted its ERPD to the FCPF in which it identified the following four drivers of deforestation:

1. Uncontrolled agricultural expansion at the expense of forests.
2. Overharvesting and illegal harvesting of wood.
3. Population and development pressure.

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<sup>3</sup> <https://www.worldcocoafoundation.org/press-release/ghana-and-cocoa-chocolate-companies-forge-partnership-to-protect-and-restore-forests/>

#### 4. Mining and mineral exploitation

The drivers of deforestation and forest degradation are believed to remain the same comparing the reference period to the monitoring period. The underlying causes of this deforestation were identified at the time the ERPD was drafted as forest industry over-capacity, policy and market failures, population growth, increasing demand for agriculture and wood products, low-tech farming systems which relied on slash and burn farming methods as well as a growing mining sector (including illegal mining). Clearing for new Cocoa farms was seen as the most significant driver of deforestation. Initial quantitative estimates of the impacts, these drivers were having in the GCFRP area were captured as part of Ghana's initial ERPD submission.

However, for the monitoring period 2020 and 2021, the land use disturbance and land use replacing forest was recorded which provides information on the drivers of deforestation and degradation. The largest driver of deforestation remains agriculture as 60% of forest land in the monitoring period was converted to Cropland, with all converted to perennial cropland, followed by mining (20%) activities. For degradation the largest driver recorded is logging (72%).

With the disbursement of the first carbon Payments, communities are very much encouraged to continue and implement activities being promoted by the Program.

## **2 SYSTEM FOR MEASUREMENT, MONITORING AND REPORTING EMISSIONS AND REMOVALS OCCURRING WITHIN THE MONITORING PERIOD**

### **2.1 Forest Monitoring System**

The management of GHG related data and information is performed by Ghana's Forestry Commission, with data collected through the National Forest Monitoring System (NFMS). The data necessary to estimate emissions and removals from enhancements, deforestation and degradation are collected at the national level and are continuously improved on a stepwise basis. These data serve as the basis of Ghana's National Forest Monitoring System (NFMS), which is consistent with IPCC guidelines for forest monitoring, and were used to estimate the reference level for the ER Programme.

In line with the NFMS, and specifically, for Ghana's Measuring, Monitoring and Reporting (MMR) system, the following institutions are directly involved:

- The Forestry Commission's Climate Change Unit (CCU) / NRS
- Ghana Cocoa Board
- The Forestry Commission's Resource Management Support Center (RMSC)
- The Forestry Commission's Forest Services Division (FSD)
- ICT Department of the Forestry Commission
- The Environmental Protection Agency (EPA)
- Private Sector, NGOs and Research Institutions
- HIA Consortium/ Governance Body
- Academia

Many of these institutions have clear mandates that effectively allow them to undertake their specified roles during MMR of programme performance. For instance, RMSC, FSD, ICT and the NRS play significant roles in the collection, analysis, and storage of data during the MMR phase. The detailed roles of all the institutions are described in Ghana's first monitoring report. To ensure proper coordination of the institutional activities, the MRV sub-working group has been formed, to include the institutions listed above. The MRV sub-working group primarily undertake assessment of outputs received from the various institutions whilst supporting efforts towards information sharing with relevant agencies.

Ghana produced Standard Operating Procedures (SOPs) in 2014 to guide the production of Emission Factors, Activity Data, Quality Control and Quality Assurance. However to reflect the amendment in the Reference Level as proposed, updated SOPs were also developed in 2019/2020, (details of the first and updated SOPs are found here:

<http://www.ghanaredddatahub.org/doclibrary/sops/>

The 2019/2020 SOPs covered the following areas:

NO	NAME
1	Sampling Design
2	Response Design
3	Data Collection
4	Training
5	Data Analysis

The NFMS has several data collection components as indicated here below:

- Satellite land monitoring system (SLMS) (providing AD on deforestation and forest degradation)
- Field inventory data from the Forest Preservation Programme (providing EF for deforestation and forest degradation through a field inventory exercise with data collected in 2012)
- National Forest Plantation Development Programme (NFPDP) (providing statistics on planted areas, including details on species and whether planting was in- or outside reserve areas. Removals factors for enhancement through the conversion of non-forest land into forest land through plantation establishment are obtained from IPCC)

The responsibility of reporting the GHG data and information are divided between Forestry Commission Environmental Protection Agency (EPA) and the Forestry Commission as follows:

- Forest reference level – Ghana’s Forestry Commission
- GHG inventory (national communication / BUR) – Environmental Protection Agency
- Technical annex to the BUR in case REDD+ results are reported –Environmental Protection Agency / Ghana’s Forestry Commission

## INSTITUTIONAL FRAMEWORK FOR GHANA'S FMS

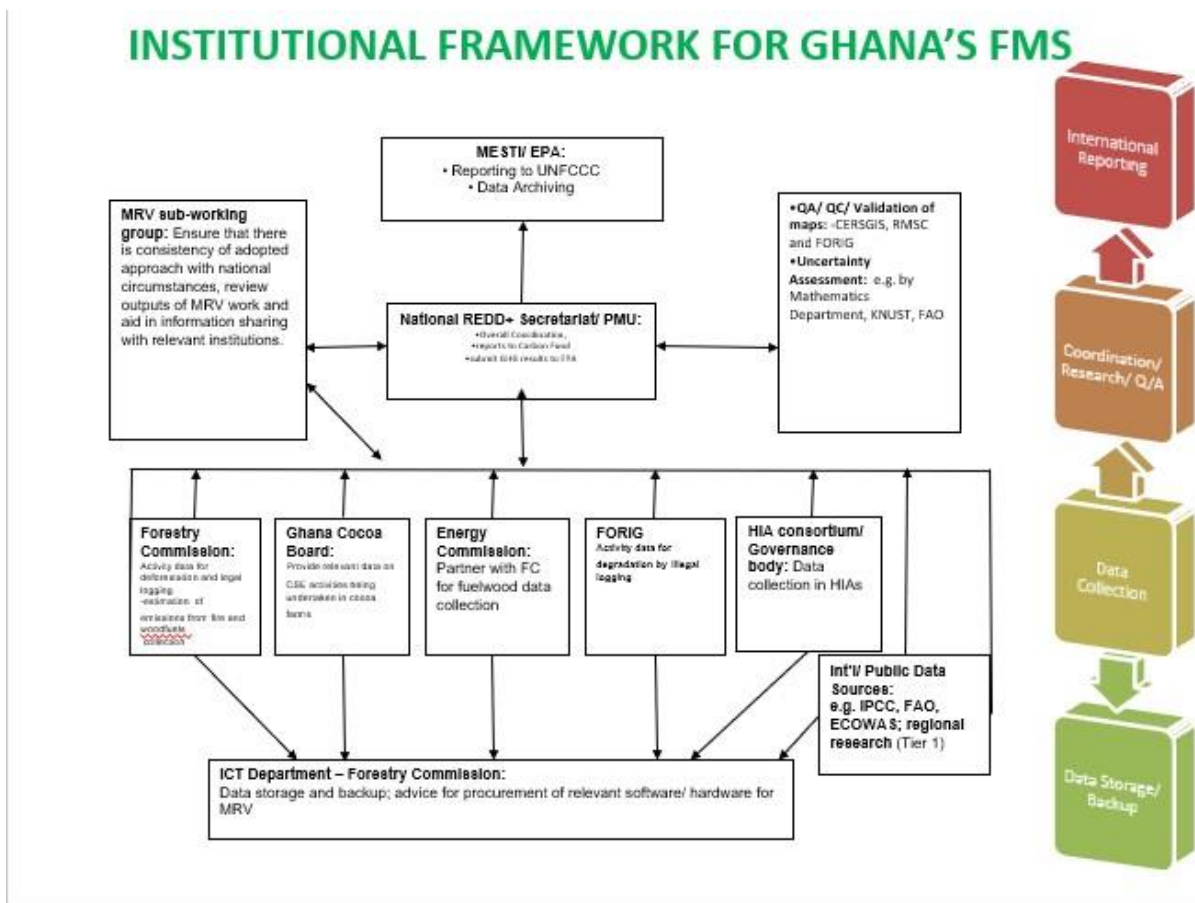


Figure 2: Overall institutional framework for FMS

Table 3: Institutions Involved in Ghana's Forest Monitoring System

MMR Institutions	Main Roles and Responsibilities
Ministry of Lands and Natural Resources (MLNR)	The sector ministry to which the Forestry Commission reports. Responsible for Ghana's Forest Investment Programme(FIP) and will serve as the programme's Coordination and Management Committee to ensure integration with FIP projects and related activities.The MLNR will also provide financial support for operationalizing the MRV
Forestry Commission (FC)	Allocate funding to support monitoring activities
Districts and Regions of the Forest Services Division FSD, of the FC)	Provide data on on-reserve CSE activities and legal timber harvest to RMSC; Support RMSC to collect field data for classification and accuracy assessment.
National REDD+ Secretariat	Overall coordination of the MMR processes - Reports to the Carbon Fund - Reports to the EPA



Resource Management Support Centre (RMSC, of the FC)	Technical lead for collection of field data and analysis of spatial data to generate emissions estimates
Forestry Research Institute of Ghana (FORIG)	Support with collection of data on illegally harvested timber; Develop/ refine allometric equations for carbon stocks estimation in various strata/ forest types.
Soil Research Institute (SRI)	Estimation of forest carbon
Center for Remote Sensing & Geographic Information Services (CERSGIS), University of Ghana	QA/ QC of maps
Environmental Protection Agency (EPA, under MESTI)	The National Focal Point for Climate Change and is responsible for the National Communications to the UNFCCC
Ghana Energy Commission (under MOE)	Collection of woodfuel data
Ghana Cocoa Board (COCOBOD)	Provide relevant data on CSE activities being undertaken in cocoa farms
HIA Consortium/ Governance Board	The HIA Consortium and Governance Board will constitute the

Table 4: The following GHG related data and information is selected

GHG flux	Gases included	Parameter	Elements included	Source	Responsible Institutions
Net emissions from deforestation	CO <sub>2</sub>	Emission factor deforestation	Carbon pool measurements at plot level: <ul style="list-style-type: none"> <li>• Above Ground Carbon</li> <li>• Below Ground Carbon</li> <li>• Litter</li> <li>• Deadwood Soil Organic Carbon</li> </ul>	NFMS: FPP	NRS, FSD, RMSC, National REDD+ Working Group, FAO
			Post-deforestation carbon (measurements at plot level)	NFMS: FPP	RMSC, NRS, FAO
		Activity data deforestation	Deforestation assessments at plot level	NFMS: SLMS	FSD, RMSC, NRS, CERSGIS, MRV Sub

					Working Group
Net emissions from forest degradation	CO <sub>2</sub>	Emission factor degradation	Carbon pool measurements at plot level: <ul style="list-style-type: none"> <li>• Above Ground Carbon</li> <li>• Below Ground Carbon</li> <li>• Deadwood</li> </ul>	NFMS: FPP	NRS, FAO, RMSC, MRV Sub Working Group
		Activity data degradation	Canopy cover reduction assessments at plot level	NFMS: SLMS	NRS, FAO, RMSC, MRV Sub Working Group
Net removals from enhancement (afforestation/reforestation)	CO <sub>2</sub>	AD enhancement	Planted area assessment	NFMS: NFPDP	NRS, FSD
			Survival rate assessment		FSD
		Removal factor enhancement	Teak	Adu-Bredu et al. (2008)	Publication
			Other broadleaf species	IPCC 2006 (Vol 4, Chapter 4, Table 4.8)	

Forest Monitoring for the ER Program

The above institutional arrangement is adapted with respect to the implementation and updating of the MRV and RL for the ER program and the operation of the data management system., This responsibility falls under the NRS, which houses the Program Management Unit (PMU) with technical support led by RMSC. The PMU is responsible for the activities at both national and programme(s) levels. In this regard, the PMU is responsible for coordinating the accounting and monitoring procedures to clearly demonstrate the performance of the GCFRP against its FRL, annual monitoring and oversight of impacts and changing trends, and maintaining data management systems for

housing key information related to REDD+ and Climate Smart Cocoa operations in the programme landscape. The PMU also monitors and records the implementation status of activities in each Hotspot Intervention Area (HIA), by verifying with communities what institutions in HIAs have reported and guarantees that the annual planning of activities is being followed and implemented. The PMU is therefore developing a system to comprehensively monitor activities at full scale. Details of the output would be reported in the next MR

In addition, communities within the implementation area are involved during field data collection through participatory dialogues to verify information provided by other stakeholders within their landscapes who are implementing emission reductions activities. Members within communities also support as field assistants during field data collection. Their knowledge of the landscapes contributes to the appreciation/description of the landuse dynamics of the landscapes. In the development of this report, however, Food and Agriculture Organisation (FAO), provided quality assurance for all the data collected, and the corresponding analysis of data.

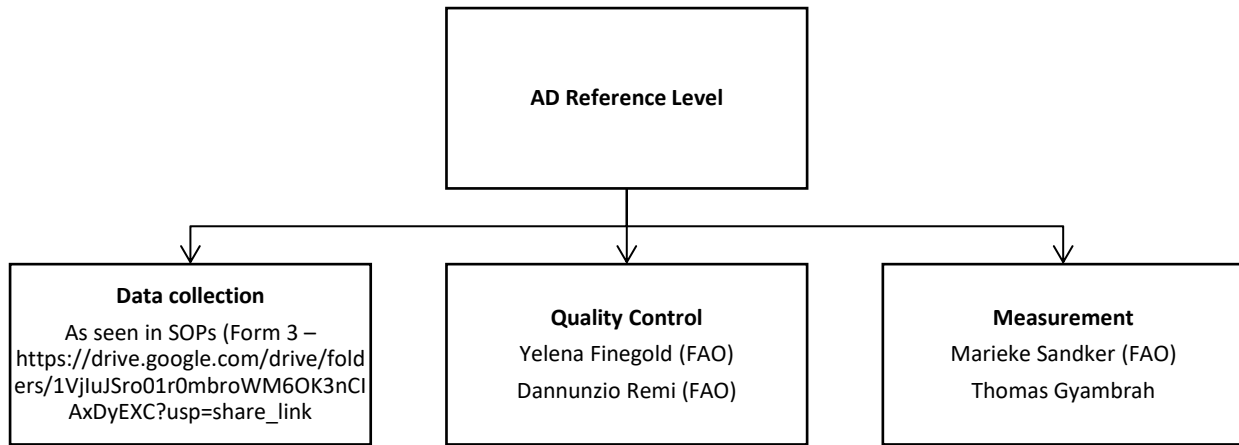


Figure 3: Organizational structure for Reference level development

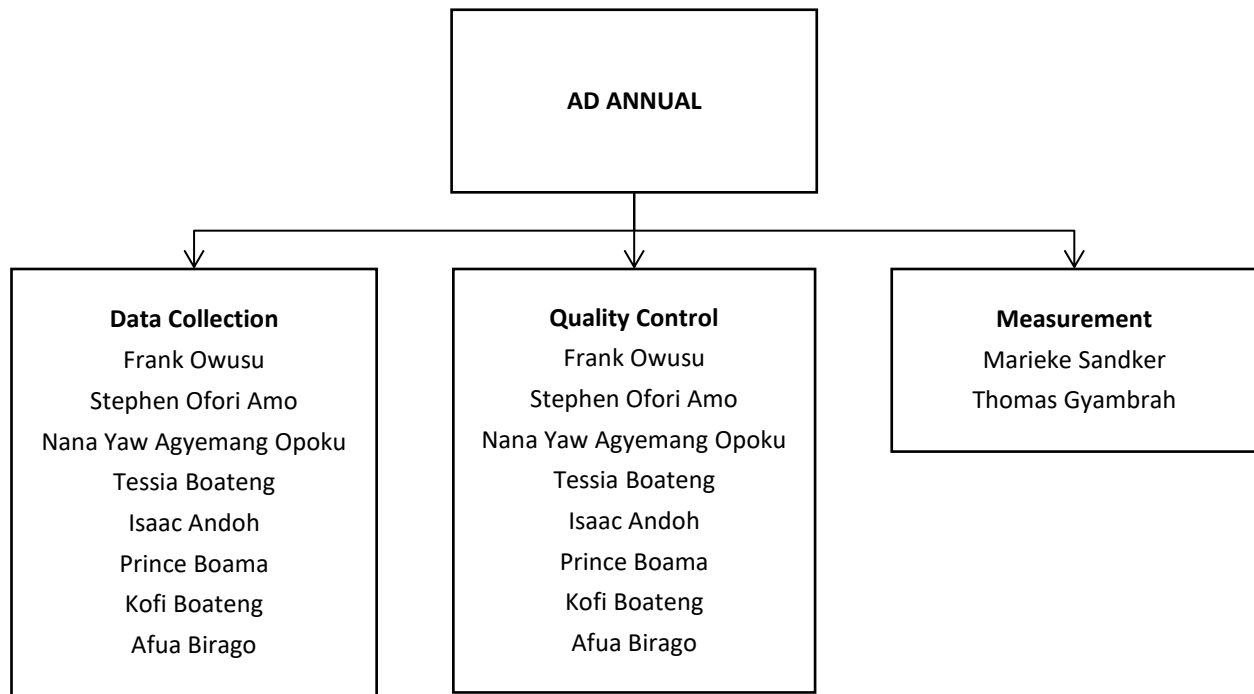


Figure 4: Organizational structure for Activity Data for monitoring period (2020/2021)

In 2012/3, Ghana implemented the Forest Preservation Programme (FPP). The objective of this programme was to map forest cover and estimate carbon stocks for all the ecological zones in the country. The emission factors developed for deforestation analyses under the FPP incorporated all the carbon pools including those that were identified as significant based on the IPCC recommended thresholds (i.e. the aboveground, belowground and soil carbon) and the other pools (litter, deadwood and herbaceous). The emission factors for deforestation analyses under the ER programme were sourced from the FPP and consequently included all the carbon pools.

In summary, for the estimation of emission factors, as described in the first monitoring report, 168 plots within the GCFRP landscape were visited in 2012 and field measurements were undertaken. Ghana has not yet put in place a National Forest Inventory with repeating cycles of data collection and putting this in place will be dependent on available funding as implementing an NFI on a regular basis is extremely costly.

For the estimation of activity data, 7711 spatial plots have been assessed in 2022 by a team of remote sensing experts. The spatial design used was based on several quality assessment exercises. The spatial design, response design and quality management aspects are described in the first monitoring report. Data collections exercises are organized in 'residential' format, meaning all interpreters sit together during the assessment such that plots where the application of the hierarchical key is not straightforward can be jointly assessed through consensus among the experts.

Ghana changed its sample plot size from 0.5ha used in calculating the reference level and the first monitoring period to 1ha in order to align with in country definition of forest (minimum area of 1ha, minimum crown cover of 15% and a minimum height of 5m)

Therefore, to assess the impact of the plot size change, the forest land use change samples from the reference level assessment were assessed for any changes between a plot size of 0.5 ha and 1 ha. A total of 257 sample were assessed, 255 out of 257 or 99.2% of the samples were assessed to have the same classification for the 0.5 plot size and 1 ha plot size. Which leads us to the conclusion that changing the plot size from 0.5 ha to 1 ha does not have a significant impact on the sample interpretation.

This screen shot shows an example of the 0.5 ha plot area outlined in red and the 1 ha plot area outlined in yellow. Effectively the difference between the 0.5 ha plot and the 1 ha plot is a 15meter buffer around the original plot.



Figure 5: plot showing a 0.5ha(red shaped) and 1ha(yellow shaped) on Google Earth

Systems and processes that ensure the accuracy of the data and information are described in detail in Annex 4 of the Emission Reductions-Monitoring Report of first reporting period. In summary, for the field inventory, QA/QC measures consisted of random blind re-measurements. For the SLMS data, QA/QC measures were applied as follows: before the data collection started, experts jointly revised the classification hierarchy and reviewed a number of sampling plots together to enhance internal consistency; to improve the quality of the plot interpretation. A random selection of plots was re-assessed.

Systems and processes that supports the Forest Monitoring System, including Standard Operating Procedures and QA/QC procedures

The developed SOPs are:

- Sample Design – SOP 1
- Response Design – SOP 2

- Data Collection/QA/QC – SOP 3
- Data Analysis – SOP 4

## 2.2 Measurement, monitoring and reporting approach

### Line Diagram

To address conditions raised by the Carbon Fund participants in 2017, Ghana applied technical corrections to the reference level (see Annex 4 of the first monitoring report). The measurement, monitoring and reporting approach used by Ghana to develop the corrected reference level is the same approach used for quantifying the emissions reductions reported.

This section visualizes the overview of the different steps that lead up to the Emission Reductions.

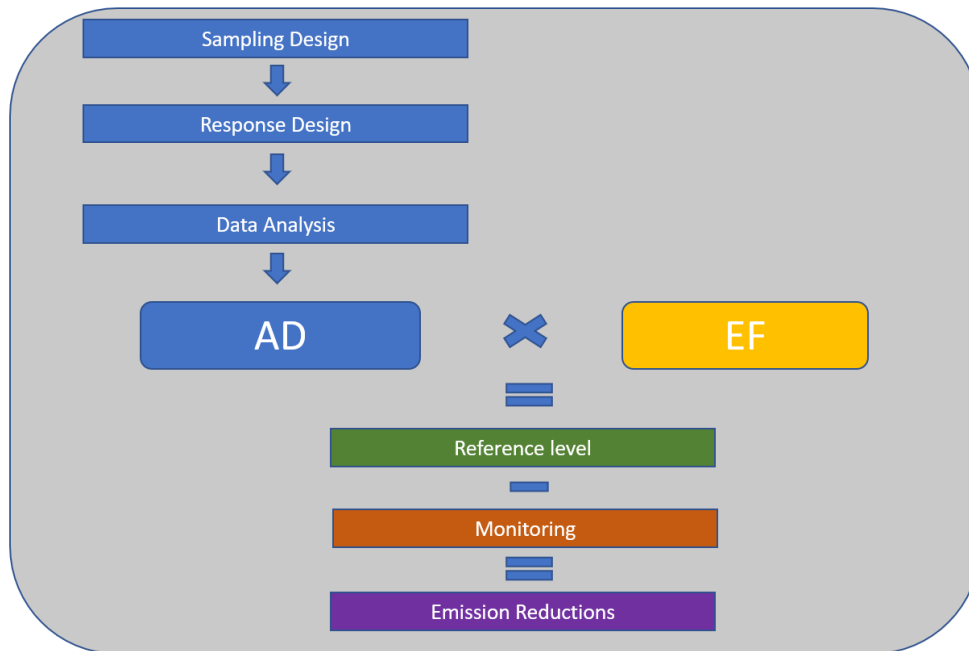


Figure 6: Overview of different steps

### Activity Data

The SLMS is a sub-system of the National Forest Monitoring system and is used to produce activity data (Figures 7) required for both the reference level and the monitoring period. Ghana’s SLMS primarily produces activity data estimates which are used to determine the overall forest loss estimates as well as deforestation rates for the periods of interest. The SLMS team is located in the Resource Management Support Centre (RMSC) of the Forestry Commission of Ghana.

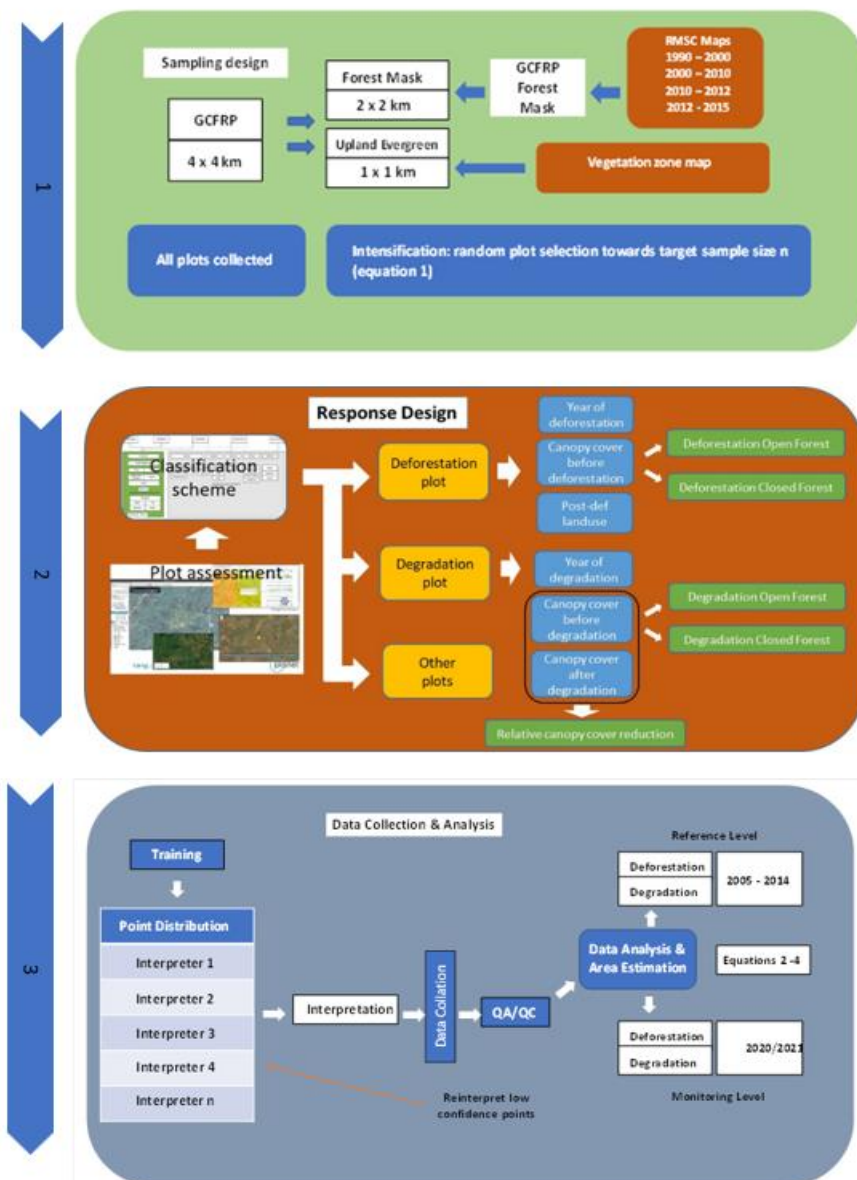


Figure 7: AD Data collection & analysis

**Emission factors**

The Forestry Inventory has not been revised from the first monitoring report.

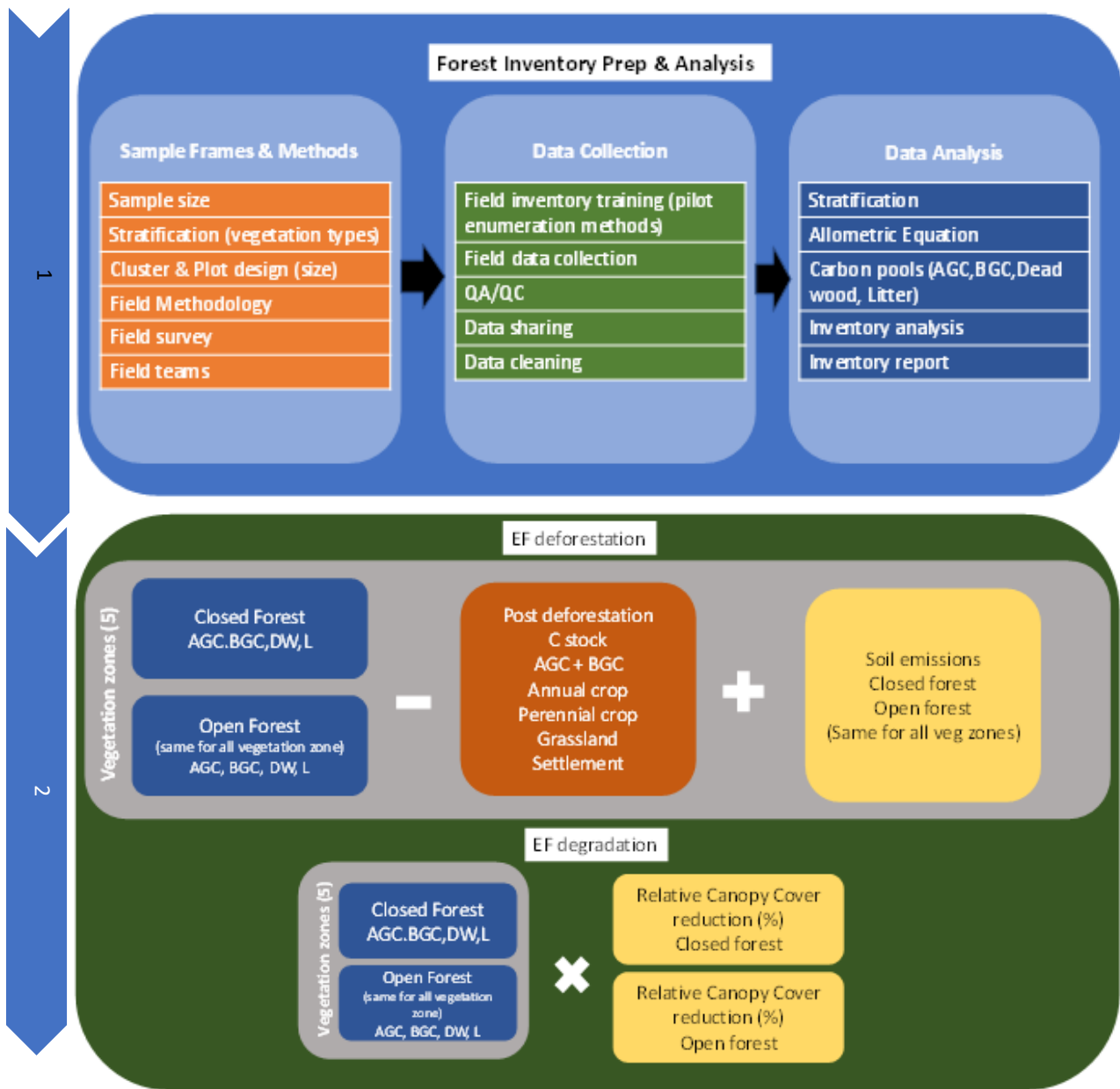


Figure 8: GCFRP Emission Factors for deforestation and forest degradation

The following line diagrams (figures 9-10) provide a systematic representation of the different steps on how the analysis were done after the AD and EFs were derived.



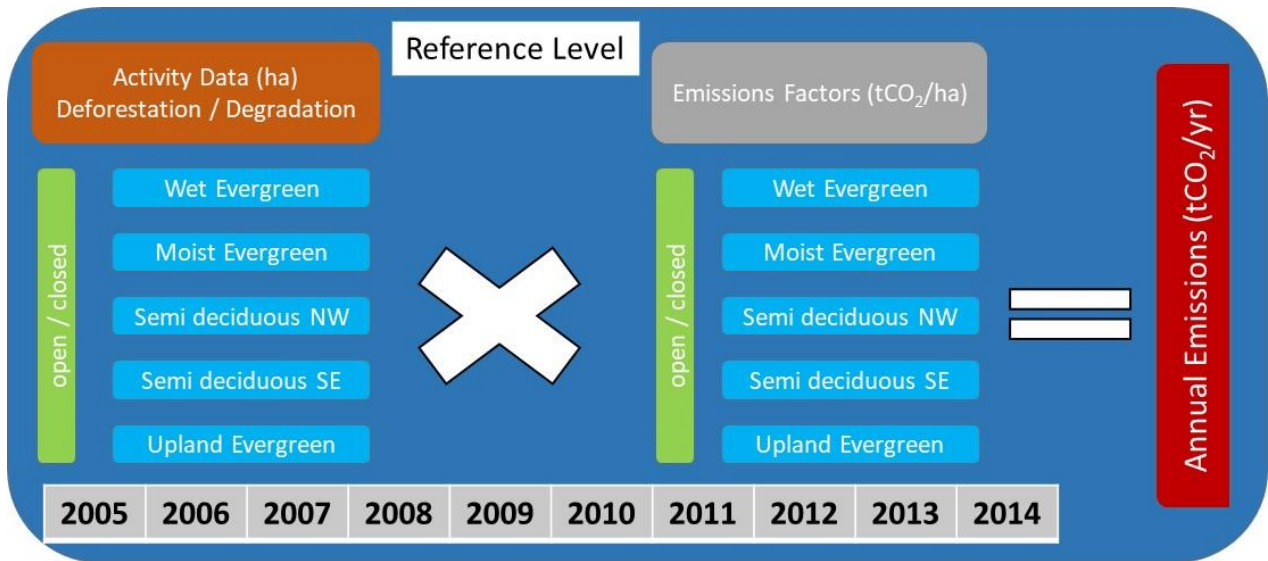


Figure 9: Ghana GCFRP Reference Level

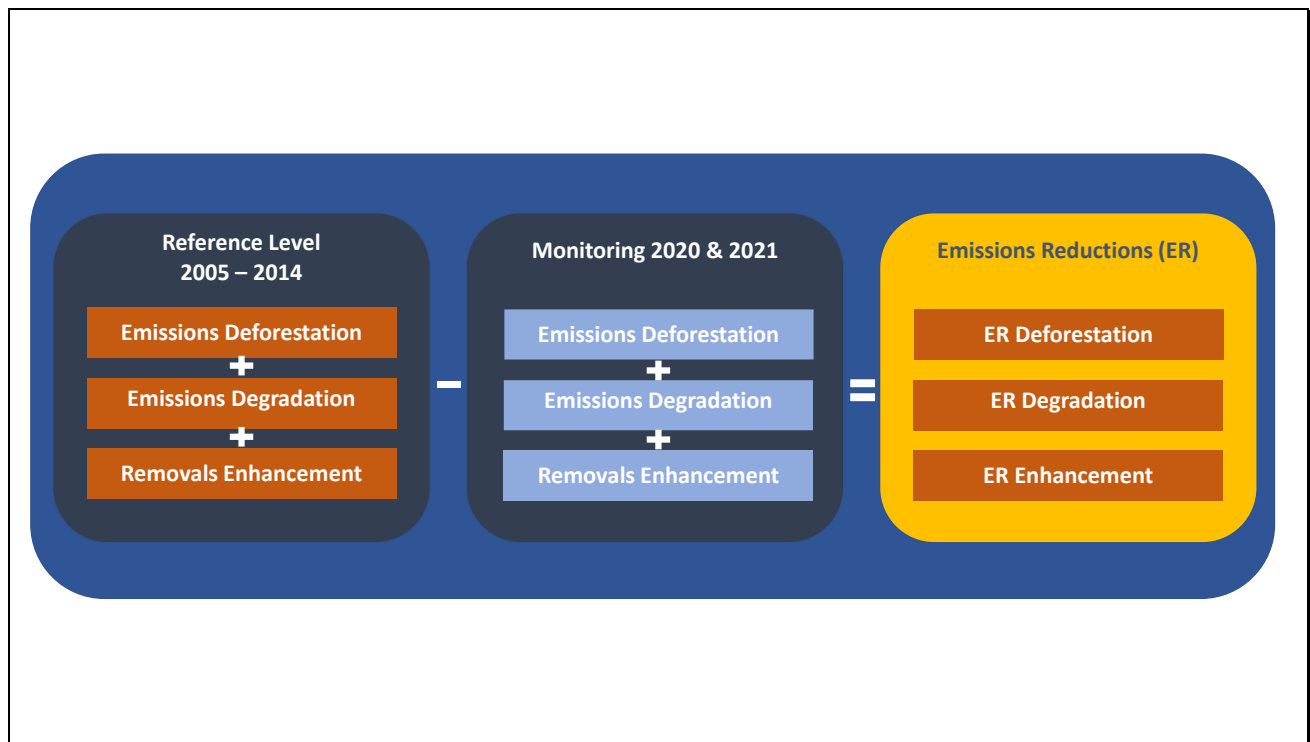


Figure 10: Ghana GCFRP Emission Reductions

## Calculation

### GCFRP emission reductions

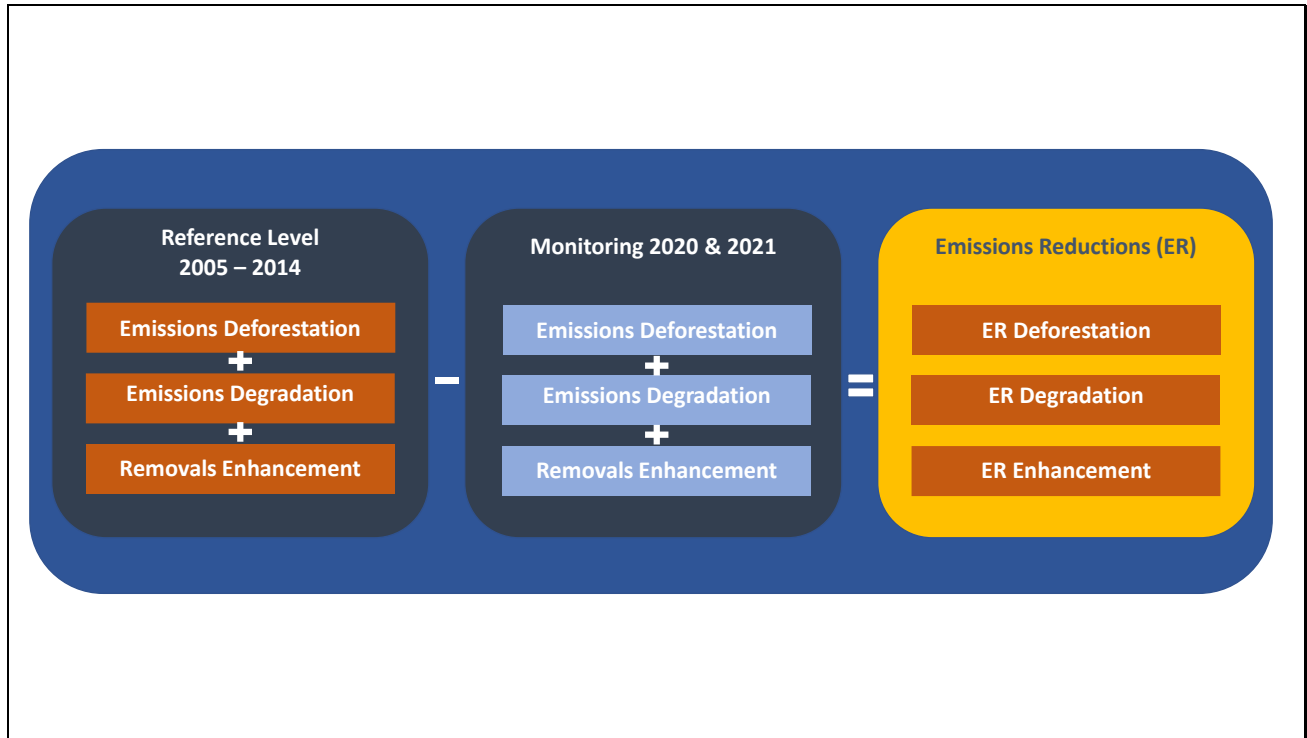


Figure 10: Ghana GCFRP Emission Reductions

Figure 11 presents the final line diagram used for describing the methods used for calculating the final emissions reductions for the monitoring period. Both the Reference Level and the Monitoring period make use of the same approach whereby emissions from both degradation and deforestation are combined on an annual basis with removals/enhancements to calculate annual gross emissions. Gross annual emissions are subtracted from the annual reference level to give the final annual emissions reductions for the Ghana Cocoa Forest REDD+ program. See equation 1 below. The equation calculates emission reductions by deducting monitored emissions from historical average emissions over the reference period. Emissions reductions are calculated for the GCFRP landscape only.

**Equation 1** Equation for emission reductions in year 2020 and 2021

$$ER_{GCFRP,t} = RL_{GCFRP} - GHG_{GCFRP,t} \quad (1)$$

where:

$$ER_{GCFRP,t} = \text{Emissions Reductions under the ER program in year } t ; \underline{tCO_2e*year^{-1}}$$

- $RL_{GCFRP}$  = Annual reference level emissions for the Ghana Cocoa Forest REDD+ Program area;  
 $tCO_2e*year^{-1}$
- $GHG_{GCFRP, t}$  GHG emissions over monitoring period for the Ghana Cocoa Forest REDD+ Program area ;  
 $tCO_2e*year^{-1}$
- $t$  = Number of years in the monitoring period

**Equation 2 Annual Reference level emissions for the GCFRP landscape (tCO<sub>2</sub>/year)**

$$RL_{GCFRP} = \sum_{e=1,5} \frac{(A_{def,e,s}(rp) \times EF_{def,e,s} + A_{degr,e,s}(rp) \times EF_{degr,e,s})}{t} + removals_{RL} \quad (2)$$

where

- $A_{def,e,s}(rp)$  = Area of deforestation, in vegetation zone  $e$ , in forest structure  $s$  during the reference period
- $EF_{def,e,s}$  = Emissions factor for deforestation for vegetation zone  $e$  for forest structure  $s$  during both the reference and monitoring period
- $A_{degr,e,s}(rp)$  = Area of degradation, in vegetation zone  $e$ , in forest structure  $s$  during the reference period
- $EF_{degr,e,s}$  = Emissions factor for degradation for vegetation zone  $e$  for forest structure  $s$  during both the reference and monitoring period
- $t$  = Reference period, year 2005-2014
- $removals_{RL}$  = This is the reference level value for removals calculated as the projected annual removals during the monitoring period from the average planted area over the period 2005-2014 ( First Monitoring report)

**Equation 3 Monitored GHG emissions for the GCFRP landscape (tCO<sub>2</sub>/year)**

$$GHG_{GCFRP} = \sum_{e=1,5} \sum_{s=1,2} \frac{(A_{def,e,s}(mp) \times EF_{def,e,s} + A_{degr,e,s}(mp) \times EF_{degr,e,s})}{t} + removals_{MP} \quad (3)$$

where

- $A_{def,e,s}(mp)$  = Area of deforestation, in vegetation zone  $e$ , in forest structure  $s$  during monitoring period
- $EF_{def,e,s}$  = Emissions factor for deforestation for vegetation zone  $e$  for forest structure  $s$  during both the reference and monitoring period
- $A_{degr,e,s}(mp)$  = Area of degradation, in vegetation zone  $e$ , in forest structure  $s$  during monitoring period
- $EF_{degr,e,s}$  = Emissions factor for degradation for vegetation zone  $e$  for forest structure  $s$  during both the reference and monitoring period

$t$  = Years in the monitoring period, 2020, 2021

$Removals_{SMP}$  = This is the monitored value for removals calculated as the actual removals from the crediting period occurring during the monitoring period 2020-2021 ( Annex 4 First Monitoring report)

### Area of Deforestation and degradation

To calculate the deforestation and degradation area by vegetation zone the sample plots receive equal weights per vegetation zone and sampling density as shown in equation 4 and 5.

The area of deforestation, in vegetation zone  $e$ , in forest structure  $s$  is calculated as follows:

$$A_{def,e,s} = \sum_{i=1,2} p_{def,e,s,i} \times A_{e,s,i} \quad (4)$$

where

$p_{def,e,s,i}$  = the estimated probability of deforestation in vegetation zone  $e$ , forest structure  $s$ , falling in stratum  $i$ , calculated as  $n_{v,e,s,i}/n_{e,s,i}$  where  $n_{v,e,s,i}$  is the number of sample plots of deforestation in vegetation zone  $e$ , forest structure  $s$ , falling in stratum  $i$  and  $n_{e,s,i}$  is the number of sample plots in vegetation zone  $e$ , forest structure  $s$ , falling in stratum  $i$

$A_{e,s,i}$  = the area of stratum  $i$  in vegetation zone  $e$  and forest structure  $s$

The area of degradation, in vegetation zone  $e$ , in forest structure  $s$  is calculated as follows:

$$A_{degr,e,s} = \sum_{i=1,2} p_{degr,e,s,i} \times A_{e,s,i} \quad (5)$$

where

$p_{degr,e,s,i}$  = the estimated probability of degradation in vegetation zone  $e$  forest structure  $s$  falling in stratum  $i$ , calculated as  $n_{v,e,s,i}/n_{e,s,i}$  where  $n_{v,e,s,i}$  is the number of sample plots of degradation in vegetation zone  $e$  forest structure  $s$  falling in stratum  $i$  and  $n_{e,s,i}$  is the number of sample plots in vegetation zone  $e$  forest structure  $s$  falling in stratum  $i$

$A_{e,s,i}$  = the area of stratum  $i$  in vegetation zone  $e$  and forest structure  $s$

Equations 4 and 5 perform area-based weighting. This means that each plot receives the same weight for the stratum where it belongs, and the weight is calculated by dividing the area per stratum by the total number of plots in the stratum. This is the equivalent of equation 8 in Olofsson et al (2014)<sup>4</sup>. Equations 4 and 5 are applied for

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<sup>4</sup> Olofsson, P.; Foody, G.M.; Herold, M.; Stehman, S.V.; Woodcock, C.E.; Wulder, M.A. Good practices for estimating area and assessing accuracy of land change. Remote Sens. Environ. 2014, 148, 42–57.

the forest types Wet Evergreen, Moist Evergreen, Moist Semi-Deciduous South-East and Moist Semi-Deciduous North-West. For the vegetation zone Upland Evergreen the same equation is applied only it has one single grid spacing (1 x 1 km) meaning  $i = 1$  in this case.

*For deforestation (Equation 4) the following conversions are possible:*

- *Wet Evergreen closed forest to Non Forest type;*
- *Moist Evergreen closed forest to Non forest type;*
- *Moist Semi Deciduous North East closed forest to Non Forest type;*
- *Moist Semi Deciduous South West closed forest to non forest type ;*
- *Upland Evergreen closed forest to Non-forest type; and*
- *Open forest to Non-forest type*

*For degradation (Equation 5) the following subpopulations are possible:*

- *Degradation in Wet Evergreen closed forest;*
- *Degradation in Moist Evergreen closed forest;*
- *Degradation in Moist Semi Deciduous North East closed forest;*
- *Degradation in Moist Semi Deciduous South West closed forest;*
- *Degradation in Upland Evergreen closed forest; and*
- *Degradation in Open forest*

#### Emission factors for deforestation and forest degradation

The EF for deforestation was calculated as the difference between average pre-and post- deforestation carbon contents, with pre deforestation biomass estimates per vegetation type estimated based on data collected as part of the FPP. Post deforestation estimates are based on both data from the FPP as well as data collected by the team undertaking the activity data analyses. Emissions factors used for both the Reference period and the Monitoring period have been calculated following guidance provided by the 2006 IPCC guidelines<sup>5</sup> where post deforestation biomass (tC/ha) is subtracted from pre deforestation biomass estimates. This step is outlined in equation 7 below. This equation approximates emissions per hectare deforestation as the difference between the carbon (AGC, BGC, DW, L) in the forest before the deforestation event and the average carbon (AGB, BGB) in the land use following deforestation, plus the change in the soil carbon pool (where the change in soil carbon is calculated with equation 2.25 in IPCC, 2019).

*Equation 6 Emissions factor for deforestation for vegetation zone  $e$  and forest structure  $s$  during both the reference and monitoring period:*

$$EF_{def_{e,s}} = (B_{before_{e,s}} - B_{after_e} + \delta S_e/20) \times \frac{44}{12} \quad (6)$$

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<sup>5</sup> Intergovernmental Panel on Climate Change (IPCC) (2006). IPCC Guidelines for National Greenhouse Gas Inventories. Volume 1: General Guidance and Reporting. Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds). Published: IGES, Hayama, Japan

where

- $B_{before, e, s}$  = Total carbon of vegetation zone  $e$  for forest structure  $s$  (open or closed) before conversion, which is equal to the sum of AGC, BGC, deadwood and litter. For open forest a single  $B_{before}$  value is used for all different vegetation zones.
- $B_{after, e}$  = see equation 7, total weighted carbon biomass (AGC + BGC) in land uses after conversion (deforestation) per vegetation zone  $e$ .
- $\delta S_e/20$  = Change in soil carbon as a result of deforestation, calculated with different soil reference values per vegetation zone  $e$  from FPP where the change in soil contents after conversion is calculated with IPCC Equation 2.25 (IPCC 2019, volume 4, chapter 2). The Tier 1 stock change factors are provided in Table 5). Accordingly, the emissions are projected over 20 years following the FCPF Guidance Note on accounting of legacy emissions/removals, v1 (2021).
- $44/12$  = Conversion of carbon to carbon dioxide

Table 5: Stock change factors for change in organic carbon in mineral soils

	Cropland	Grassland	Settlements
$F_{LU} \times F_{MG} \times F_I$	0.81	1.00	0.68

Equation 7 Equation used for the weighted post-deforestation carbon contents ( $B_{after_e}$ )

$$B_{after_e} = \sum_{lu=1,4} \left( \frac{A_{def_{lu,e}}}{A_{def_e}} \times B_{after_{lu}} \right) \quad (7)$$

where

- $A_{def_{lu,e}}$  = the total area of deforestation with post-deforestation landuse  $lu$  (either annual cropland, perennial cropland, grassland or settlement) in vegetation zone  $e$
- $A_{def_e}$  = the total area of deforestation in vegetation zone  $e$
- $B_{after_{lu}}$  = biomass in the land use replacing forest (either annual cropland, perennial cropland, grassland or settlement)

#### Calculation EF forest degradation

Emissions factors for forest degradation were derived based on the relative plot level canopy cover reduction captured for degraded plots during the activity data analysis (see Figure 7 in section 2.2). The remote sensing

interpreters assessed the average tree cover prior to and after a degradation event, after which for each plot the relative percentage reduction of canopy cover was calculated. Accordingly, the average relative canopy cover reduction was calculated for open and closed forest for all vegetation zones combined. The relative percentage tree cover reduction was applied to the forest carbon stock (AGC, BGC, DW) to approximate the carbon loss associated with degradation. The pools AGC, BGC and DW were selected in the ERPD as associated with logging. Since this is the largest cause of degradation and since DW is a significant pool, this selection was applied here. The calculation of the EF for degradation is provided in equation 9. Reduction in canopy cover can be taken as a proxy for degradation according to FAO (2000)<sup>6</sup>.

*Equation 8 Emissions factor for forest degradation for vegetation zone e during both the reference and monitoring period*

$$EF_{degr,e,s} = C_{before,e,s} \times reduction\ rate_s \times \frac{44}{12} \quad (8)$$

where

- $C_{before,e,s}$  = The pre-degradation carbon contents (AGC + BGC + DW) in vegetation zone *e* for forest structure *s* (open or closed). For open forest a single B before value is used for all different vegetation zones
- $Reduction\ rate_s$  = Average relative canopy cover reduction in forest structure *s* (open or closed) as a result of forest degradation, which was identified as part of the activity data analyses
- $44/12$  = Conversion of carbon to carbon dioxide

Of the detailed information collected through the sample unit assessment, the proportion of post-deforestation land-use (annual cropland, perennial cropland, grassland, settlement) is used to calculate the weighted post-deforestation carbon contents. Equation 8 shows how the weighted post-deforestation carbon contents is calculated: Post-deforestation biomass is estimated from weighted post-deforestation land use per vegetation class, where the biomass in the post-deforestation land use is assessed through field measurements from the FPP. The principle of estimating emissions from each land use change stratum as the difference between the forest carbon stocks per unit area before conversion and the forest carbon stocks per unit area for the new land use

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<sup>6</sup> FAO (2000). FRA 2000 – On definitions of forest and forest cover change. FRA programme, Working paper 33, Rome, Italy.

afterconversion is in line with GFOI (2016, page 59)<sup>7</sup> and IPCC (2003)<sup>8</sup>. The same weighted post-deforestation carbon content is applied to deforestation in open and closed forest.

Equation 9. Removals associated with average net area planted over the reference period projected over the crediting period

$$Removals_{RL} = (A_{RL,teak,on/off} \times RF_{teak} + A_{RL,nteak,on/off} \times RF_{nteak}) \times t_1 + (A_{RL,teak,on/off} \times RF_{teak} + A_{RL,nteak,on/off} \times RF_{nteak}) \times (t_1 + t_2) + (A_{RL,teak,on/off} \times RF_{teak} + A_{RL,nteak,on/off} \times RF_{nteak}) \times (t_1 + t_2 + \dots)$$

Where:

$A_{RL,teak,on/off}$	=	Average net annual area teak planted (ha/year) on- and off-reserve during the reference period, where net means the area has been discounted with the assessed survival rate
$RF_{teak}$	=	Removal factor teak, mean annual increment of teak plantations (tCO <sub>2</sub> /ha/year)
$A_{RL,nteak,on/off}$	=	Average net annual area non-teak planted (ha/year) on- and off-reserve during the reference period, where net means the area has been discounted with the assessed survival rate
$RF_{nteak}$	=	Removal factor non teak, mean annual increment of non-teak plantations (tCO <sub>2</sub> /ha/year)
$t_1, t_2, \dots$	=	Year 1 of the crediting period, year 2 of the crediting period, etc.

Equation 10. Removals associated with average net area planted over the reference period projected over the crediting period

$$Removals_{MP} = (A_{t1,teak,on/off} \times RF_{teak} + A_{t1,nteak,on/off} \times RF_{nteak}) + [(A_{t1,teak,on/off} \times RF_{teak} + A_{t1,nteak,on/off} \times RF_{nteak}) + (A_{t2,teak,on/off} \times RF_{teak} + A_{t2,nteak,on/off} \times RF_{nteak})] + \dots$$

Where:

$A_{t1,teak,on/off}$	=	Net annual area teak planted (ha/year) on- and off-reserve during year 1 of the crediting period, where net means the area has been discounted with the assessed survival rate
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<sup>7</sup> GFOI (2016) Integration of remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative, Edition 2.0, Food and Agriculture Organization, Rome.

<sup>8</sup> Intergovernmental Panel on Climate Change (IPCC) (2003). Good Practice Guidance for Land Use, Land-Use Change and Forestry. Penman J., Gytarsky M., Hiraishi T., Krug, T., Kruger D., Pipatti R., Buendia L., Miwa K., Ngara T., Tanabe K., and Wagner F (Eds). IPCC/IGES, Hayama, Japan.



$A_{t2,teak,on/off}$	=	Net annual area teak planted (ha/year) on- and off-reserve during year 2 of the crediting period, where net means the area has been discounted with the assessed survival rate
$RF_{teak}$	=	Removal factor teak, mean annual increment of teak plantations (tCO <sub>2</sub> /ha/year)
$A_{t1,nteak,on/off}$	=	Average net annual area non-teak planted (ha/year) on- and off-reserve during year 1 of the crediting period, where net means the area has been discounted with the assessed survival rate
$A_{t2,nteak,on/off}$	=	Average net annual area non-teak planted (ha/year) on- and off-reserve during year 2 of the crediting period, where net means the area has been discounted with the assessed survival rate
$RF_{nteak}$	=	Removal factor non-teak, mean annual increment of non-teak plantations (tCO <sub>2</sub> /ha/year)
....	=	Continued cumulative removals for subsequent years following the same calculation

## UNCERTAINTY PROPAGATION

To obtain the CI around the deforestation and degradation areas per vegetation zone ( $A_{v,e}$ ) and for the entire GCFRP landscape ( $A_v$ ), the errors are propagated using equation 4 (which is the equivalent of equation 3.2 of IPCC 2019)<sup>9</sup>.

Equation 11 Propagation of errors for summation

$$U_{total} = \sqrt{(U_1)^2 + \dots + (U_n)^2} \quad (11)$$

where

$U_{total}$  = the absolute uncertainty in the sum of the quantities (half the 90 percent confidence interval), e.g.  $CI (\pm)$  of  $A_{v,e}$  or  $CI (\pm)$  of  $A_v$

$U_j$  = the absolute uncertainty associated with each of the quantities  $j=1,\dots,n$ , e.g.  $CI (\pm)$  of  $A_{v,e,i}$

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<sup>9</sup> IPCC 2019, 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Calvo Buendia, E., Tanabe, K., Kranjc, A., Baasansuren, J., Fukuda, M., Ngarize, S., Osako, A., Pyrozhenko, Y., Shermanau, P. and Federici, S. (eds). Published: IPCC, Switzerland.

### Uncertainty calculation EF

The uncertainty of the average carbon contents in the individual pools was calculated based on the sampling error (Snedecor and Cochran 1989<sup>10</sup>).

Equation 12 Confidence interval ( $\pm$ ) around carbon contents in the different pools

$$CI \text{ of } C_{p,e,s} = t_{0.05} \times \sqrt{\frac{StDev C_{p,e,s}}{(n_{p,e,s}-1)}} \quad (12)$$

where

$t_{0.05}$  = the t-value for the 90% confidence level; given the relatively small sample size for some of the plot data this value is calculated

$C_{p,e,s}$  = the carbon contents in pool  $p$  (AGB, BGB, DW, L, SOC<sub>REF</sub>) from plot level FPP data, in vegetation zone  $e$  for forest structure  $s$  ( $s$  being open or closed)

$n_{p,e,s}$  = the total number of sample plot measurements for pool  $p$  in vegetation zone  $e$  and forest structure  $s$

For the EF calculation, the errors of the individual pools are aggregated using equation 6 (simple error propagation).

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<sup>10</sup> Ridgman WJ. Statistical Methods, 8th edn, by G. W. Snedecor & W. G. Cochran. xx + 503 pp. Ames: Iowa State University Press (1989). ISBN 0 8138 1561 6. *The Journal of Agricultural Science*. 1990;115(1):153-153. doi:10.1017/S0021859600074104

### 3. DATA AND PARAMETERS

#### 3.1 Fixed Data and Parameters

<b>Parameter:</b>	Emissions factor for deforestation for vegetation zone $e$ and forest structure $s$ , $EF_{def,e,s}$
<b>Description:</b>	<p>Ghana uses 10 different emissions factors for deforestation. These emission factors do not change between the reference period and monitoring period assessments.</p> <p>The different EFs are as follows:</p> <p>Deforestation in open forest<sup>11</sup> in Wet Evergreen, Moist Evergreen, Moist Semi-Deciduous South-East, Moist Semi-Deciduous North-West and Upland Evergreen vegetation zones.</p> <p>Deforestation in closed forest in Wet Evergreen, Moist Evergreen, Moist Semi-Deciduous South-East, Moist Semi-Deciduous North-West and Upland Evergreen vegetation zones</p> <p>Though the above mentioned 10 EFs for deforestation remain fixed, the average EF per deforested hectare over the reference and monitoring period will differ since deforestation may target forest structure (open or closed) and vegetation zones differently over both periods (see area of deforestation monitoring below).</p> <p>The EFs in open forest are calculated using the same forest carbon contents per vegetation zone but different post-deforestation carbon contents (see <math>Bafer_e</math> in next parameter description) per vegetation zone resulting in factors that differ slightly.</p>
<b>Data unit:</b>	tons of CO <sub>2</sub> equivalent per ha
<b>Source of data or description of the method for developing the</b>	<p>The forest inventory data is used for the EF calculation.</p> <p>Forest inventory data was collected as part of the Forest Preservation Programme (FPP) in Ghana, under a Japanese Aid Grant and with technical support from Arbonaut. Therefore, this is a country level data. This study performed field measurements in 252 plots in the year 2012, of this sample, 168 plots fell within the GCFRP landscape. Full details of the inventory are available in the FPP Report on Mapping of Forest Cover and Carbon Stock in Ghana (2013)<sup>12</sup>. The Annex 4 of the first monitoring report provides additional details on the processing of the forest inventory plot level data. Figure 5,6 &amp; 7 provides the line diagram of the forest inventory preparation, data collection</p>

<sup>11</sup> Note that a single EF was used for open forest. Details are in annex 4 of the first monitoring report.

<sup>12</sup> <https://drive.google.com/drive/u/4/my-drive>

<p><b>data including the spatial level of the data (local, regional, national, international):</b></p>	<p>and analysis. This work was undertaken in 2012 and forms the basis for the derivation of Emissions Factors used for both the Reference Level and the Monitoring Report. The available dataset used contained per hectare average aboveground carbon (AGC), belowground carbon (BGC), deadwood (standing and downed) carbon (DW), and litter (L), non-tree and soil carbon (SOC) at plot level.</p> <p>The number of plot measurements underlying the average estimates of the carbon contents of the different pools were as follows:</p> <ul style="list-style-type: none"> <li>➤ 97 plot measurements were available for AGC,</li> <li>➤ 80 plot measurements were available for BGC,</li> <li>➤ 88 plot measurements were available for DW,</li> <li>➤ 89 plot measurements were available for litter,</li> <li>➤ 96 plot measurements were available for SOC.</li> </ul> <p>For post-deforestation carbon contents, the number of measurements available were as follows:</p> <ul style="list-style-type: none"> <li>➤ 11 plot measurements were available for annual cropland,</li> <li>➤ 34 plot measurements were available for perennial cropland,</li> <li>➤ 3 plot measurements were available for grassland,</li> <li>➤ 2 plot measurements were available for settlements.</li> </ul> <p>The emission factor for deforestation considers emissions from all five carbon pools. The gross EF is calculated as the sum of above-ground carbon (AGC), below-ground carbon (BGC), dead wood (DW), litter (L) and emissions from soil organic carbon (SOC). The net EF is obtained by subtracting from the gross EF the carbon stock in the post-deforestation land-use. The carbon contents in the replacing landuses are also obtained from plot measurements and a single weighted value is established per vegetation zone (so the same post-deforestation carbon contents are applied to open and closed forest), which varies between 29.0 – 64.6 tCO<sub>2</sub>/ha (depending on the vegetation zone <i>details found in 'ADxEF-MR2-clean-harmonised;sheet postDef C-content cells B2toF2' </i>).</p> <p>Soil emissions are estimated using GCFRP specific values for soil carbon in forest land (i.e., SOC<sub>REF</sub> in IPCC equation 2.25 is provided through the FPP inventory) applying to this the IPCC equation and Tier 1 stock change factors. The assumptions and values used are elaborated in above section “Soil emissions from deforestation”. Ghana accounts for committed emissions, meaning the SOC emissions are not projected over 20 years but accounted as emission in the year of deforestation for the sake of transparency.</p> <p><i>Average carbon contents per pool in the different strata were derived from inventory measurements (Refer to “EFs deforestation and forest degradation” in the Annex 4 of the first monitoring report</i></p>
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<b>Value applied:</b>	<i>Net Emission Factors deforestation</i>				
			<i>tCO<sub>2</sub>/ha</i>	<i>±90% CI (tCO<sub>2</sub>/ha)</i>	<i>±90% CI (in percentage)</i>
	<i>Closed Forest</i>	<i>Wet Evergreen</i>	<i>401.3</i>	<i>502.3</i>	<i>125%</i>
		<i>Moist Evergreen</i>	<i>862.3</i>	<i>280.0</i>	<i>32%</i>
		<i>Moist Semi-deciduous NW</i>	<i>435.9</i>	<i>76.3</i>	<i>18%</i>
		<i>Moist Semi-deciduous SE</i>	<i>665.7</i>	<i>312.4</i>	<i>47%</i>
		<i>Upland Evergreen</i>	<i>494.9</i>	<i>141.8</i>	<i>29%</i>
	<i>Open Forest</i>	<i>Wet Evergreen</i>	<i>169.3</i>	<i>102.4</i>	<i>61%</i>
		<i>Moist Evergreen</i>	<i>162.8</i>	<i>59.8</i>	<i>37%</i>
		<i>Moist Semi-deciduous NW</i>	<i>160.3</i>	<i>54.3</i>	<i>34%</i>
		<i>Moist Semi-deciduous SE</i>	<i>174.3</i>	<i>52.9</i>	<i>30%</i>
		<i>Upland Evergreen</i>	<i>196.0</i>	<i>64.0</i>	<i>33%</i>

Carbon stocks with associated half-width 90% confidence intervals for four pools

		<b>AGC</b>			<b>BGC</b>			<b>DW</b>		
		tC/ha	±CI (tC/ha)	±CI (in perc)	tC/ha <sup>a</sup>	±CI (tC/ha <sup>a</sup> )	±CI (in perc)	tC/ha <sup>a</sup>	±CI (tC/ha <sup>a</sup> )	±CI (in perc)
Close d fores t	Wet Evergreen	81.3	115.9	143%	10.5	17.44	166%	29.0	66.15	228%
	Moist Evergreen	202.9	73.3	36%	26.8	9.86	37%	18.3	14.90	81%
	Moist Semi-deciduous NW	75.9	13.6	18%	19.0	1.67	9%	38.6	12.75	33%
	Moist Semi-deciduous SE	100.5	68.5	68%	25.8	5.31	21%	65.8	49.66	75%
	Upland Evergreen	74.6	21.7	29%	24.1	1.81	8%	41.9	29.25	70%

Open forest	All vegetation zones	27.4	8.0	29%	10.4	2.8	27%	20.5	8.15	40%	2.6	0.75
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Single year legacy emissions soil organic carbon (tC/ha) with associated half-width 90% confidence intervals

		SOC (single year legacy)		
		tC/ha	±CI (tC/ha)	±CI (in perc)
Closed forest	Wet Evergreen	0.90	0.59	66%
	Moist Evergreen	0.59	0.34	58%
	Moist Semi-deciduous NW	0.33	0.20	61%
	Moist Semi-deciduous SE	0.86	0.43	49%
	Upland Evergreen	0.91	0.73	80%
Open forest	All vegetation zones	0.53	0.24	46%

*NB: This table presents the values for a single year SOC legacy. Ghana followed the FCPF Guidance Note on accounting of legacy emissions/removals (2021). As such, for year 2020 one additional legacy is added (from 2019) and for year 2021 two additional legacies are added (from year 2019 and 2020)*

<b>QA/QC procedures applied</b>	<p>The inventory data management workflow includes Quality Assurance and Quality Control procedures. 15 randomly selected plots were selected as quality control plots. However, 12 out of these plots were visited in the field for quality control, representing 4.1 per cents of the plots with measured data, details in Section 4 of FPP Report 2013.</p> <p>The average differences between the original and quality control measurements are found statistically insignificant (t-test), the maximum average diameter and height differences are found to be up to 11.5 cm and 8.5 meter based on the field measurements excluding the outlier plots. For 75 percent of the plots AGC and BGC values deviate less than 30 percent between two measurement</p>
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	<p>times. There are two outlier plots where the large deviation compared to the original measurements suggests that the plot locations are not matching precisely. Some of the differences can be attributed to harvesting activities. Source: section 4.1.4 of The FPP Report on Mapping of Forest Cover and Carbon Stock in Ghana (2013),</p> <p><a href="http://www.ghanaredddatahub.org/home/downloadreport/?docName=Ghana_Final_Report_Main.pdf&amp;mime=application%2Fpdf">http://www.ghanaredddatahub.org/home/downloadreport/?docName=Ghana_Final_Report_Main.pdf&amp;mime=application%2Fpdf</a></p> <p>Finally, the average carbon stock values per forest structure/vegetation zone have been compared against the IPCC default ranges available showing the values are within the expected ranges.</p>
<b>Uncertainty associated with this parameter:</b>	<p>The table above provides the 90% confidence interval for all fixed variables reported.</p> <p>The uncertainty of the individual pools was calculated with equation 8 (see section 2.2.2) and the uncertainties are aggregated through simple error propagation (see equation 4)</p>
<b>Any comment:</b>	<p>Ghana does not have access to multiple inventory assessments over time. As such, the only component of the EF calculation that could change is the calculation of post-deforestation carbon contents since this is based on the AD observations of the LU replacing forest over the 2005-2014 period. Post-deforestation carbon contents are discussed in the following parameter box.</p>

<b>Parameter:</b>	Weighted post-deforestation carbon contents, $Ba_{fter_e}$ (interim in EF calculation)
<b>Description:</b>	<p>This is the average weighted carbon contents in the landuse replacing forest in case of deforestation. This value is subtracted from the forest carbon stock to get the net per hectare emission factor associated with deforestation. The post-deforestation carbon contents are averaged at the vegetation zone level and the same average value is used when open- or closed forest is deforested. The same values are used for the reference and monitoring periods (see Comment below)</p>
<b>Data unit:</b>	<i>tons of CO<sub>2</sub> equivalent per ha</i>
<b>Source of data or description of the method for developing the data including the spatial level of</b>	<p>This is a country level data.</p> <p>This information is a combination of the SLMS and FPP.</p> <p>In the SLMS's sample unit assessment, the land use after deforestation is assessed for each plot. Accordingly, the proportion of post-deforestation land use (annual cropland, perennial cropland, grassland, settlement) is calculated, and these proportions are used to calculate the weighted post-deforestation carbon contents.</p> <p>In analyzing the FPP inventory data, the value of perennial and annual cropland is recalculated using only plots for which field observations were available. The analysis suggests an average carbon contents of 5 tC/ha for annual cropland and 27.3 tC/ha for perennial cropland.</p>

<b>the data (local, regional, national, international):</b>																														
<b>Value applied:</b>	<table border="1"> <thead> <tr> <th></th> <th>Wet Evergreen</th> <th>Moist Evergreen</th> <th>Moist Semideciduous NW</th> <th>Moist Semideciduous SE</th> <th>Upland Evergreen</th> </tr> </thead> <tbody> <tr> <td>Post-deforestation C contents (tCO<sub>2</sub>/ha)</td> <td>55.7</td> <td>62.2</td> <td>64.6</td> <td>50.7</td> <td>29.0</td> </tr> <tr> <td>(CI in tCO<sub>2</sub>/ha)</td> <td>92.9</td> <td>41.3</td> <td>33</td> <td>30.6</td> <td>47.3</td> </tr> <tr> <td>±90% CI</td> <td>167%</td> <td>66%</td> <td>51%</td> <td>60%</td> <td>163%</td> </tr> </tbody> </table> <p style="text-align: right;"><i>NB</i></p> <p><i>CI's in the table are actual CI's, in the calculations this values is doubled (see comment under uncertainty associated with the parameter)</i></p>							Wet Evergreen	Moist Evergreen	Moist Semideciduous NW	Moist Semideciduous SE	Upland Evergreen	Post-deforestation C contents (tCO <sub>2</sub> /ha)	55.7	62.2	64.6	50.7	29.0	(CI in tCO <sub>2</sub> /ha)	92.9	41.3	33	30.6	47.3	±90% CI	167%	66%	51%	60%	163%
	Wet Evergreen	Moist Evergreen	Moist Semideciduous NW	Moist Semideciduous SE	Upland Evergreen																									
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<b>QA/QC procedures applied</b>	<p>The inventory data management workflow includes Quality Assurance and Quality Control procedures. 15 randomly selected plots were selected as quality control plots. However, 12 out of these plots were visited in the field for quality control, representing 4.1 per cents of the plots with measured data, details in Section 4 of FPP Report 2013.</p> <p>The average differences between the original and quality control measurements are found statistically insignificant (t-test), the maximum average diameter and height differences are found to be up to 11.5 cm and 8.5 meter based on the field measurements excluding the outlier plots. For 75 percent of the plots AGC and BGC values deviate less than 30 percent between two measurement times. There are two outlier plots where the large deviation compared to the original measurements suggests that the plot locations are not matching precisely. Some of the differences can be attributed to harvesting activities. Source: section 4.1.4 of The FPP Report on Mapping of Forest Cover and Carbon Stock in Ghana (2013)</p> <p><a href="http://www.ghanaredddatahub.org/home/downloadreport/?docName=Ghana_Final_Report_Main.pdf&amp;mime=application%2Fpdf">http://www.ghanaredddatahub.org/home/downloadreport/?docName=Ghana_Final_Report_Main.pdf&amp;mime=application%2Fpdf</a></p>																													
<b>Uncertainty associated with this parameter:</b>	<p>The tables above provide the 90% confidence interval for all fixed variables reported. However, the calculation of the confidence interval is simplified as it does not consider the proper weights of the different strata. To avoid under-estimating the uncertainty through this simplification, the confidence interval is doubled and its impact is assessed and evaluated as insignificant.</p>																													



<b>Any comment:</b>	In the ERPD many different values are proposed for the post-deforestation carbon contents, originating from a mix of the FPP inventory, Kongsager et al 2013 and IPCC. The cropland estimates from the FPP inventory range between 30-51 tC/ha. The new analysis of the FPP inventory discussed above finds an average for open forest carbon stock in biomass at 37,7 tC/ha. Considering the description of cropland in the ERPD being “herbaceous and slash-and-burn”, the values between 30-51 tC/ha seem therefore too high. The newly calculated weighted average post deforestation carbon contents range between 29.0-64.6 tCO <sub>2</sub> /ha for the five different vegetation zones for the period 2005-2014. There is however a lot of uncertainty in the determination of the post-deforestation landuse, especially for the more recent years where a time series of the post-deforestation landuse is not yet available and it may be challenging to distinguish between annual and perennial cropland. Also, for annual or biennial estimates (monitoring period) the uncertainty is much larger than for 10-year estimates (reference period) since the observations will be much fewer. Given the high uncertainties around the estimation of post-deforestation landuse over the monitoring period, it was opted to keep this variable stable such that it will not impact the ER calculation.
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<b>Parameter:</b>	Emissions factor for forest degradation for vegetation zone <i>e</i> , forest structure <i>s</i> $EF_{degr,e,s}$
<b>Description:</b>	<p>Ghana uses 6 different emission factors for forest degradation. These emission factors will not change between the reference period and monitoring period assessments.</p> <p>Different EFs have been used for degradation in closed forest in Wet Evergreen, Moist Evergreen, Moist Semi-Deciduous South-East, Moist Semi-Deciduous North-West and Upland Evergreen vegetation zones, and one EF for degradation in open forest (all vegetation zones)</p>
<b>Data unit:</b>	tons of CO <sub>2</sub> equivalent per ha
<b>Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):</b>	<p>This is a country level data.</p> <p>This information is a combination of the SLMS and FPP.</p> <p>Emissions factors were derived from inventory measurements multiplied by the relative percentage canopy cover reduction observed in all degradation plots over the reference period. Total forest carbon stock by vegetation zone for open and closed forest was collected under the Forest Preservation Programme (FPP), as explained in detail in the parameter description of EF for deforestation.</p> <p>To make sure that the estimated amount of CO<sub>2</sub> emitted per hectare forest that is degraded corresponds to the assessed hectares of forest degradation, the remote sensing interpreters assessed the average tree cover prior to and after a degradation event. The underlying assumption is that canopy cover reduction is a good approximation of biomass reduction in a plot. This way, the average canopy cover reduction in open forest and closed forest is assessed.</p> <p>In the data set, 64 points for which forest degradation was assessed over the years 2005-2014 fall in the GCFRP landscape. For 55% of the forest degradation points the cause of degradation</p>

	<p>was assessed to be logging. The majority of forest degradation emissions were assessed to originate from logging though representing <i>a much higher share (95%)</i>.</p> <p>The average relative canopy cover reduction in closed forest was 29.9 %, while the average relative canopy cover reduction in open forest was 48.0 %. The carbon pools affected by forest degradation are AGC, BGC and DW. The percentage reductions assessed (using activity data) are applied to these pools to calculate the change in AGC, BGC and DW pools resulting from degradation. The emission factors for degradation are calculated by multiplying the percentage reductions with the pre-degradation carbon contents in the pools provided.</p>																															
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<p><b>QA/QC procedures applied</b></p>	<p>Data are taken from SLMS and FPP project. See the FPP Report on Mapping of Forest Cover and Carbon Stock in Ghana (2013), section 4.1.4</p> <p>SLMS: It is good practice to implement Quality Assurance / Quality Control (QA/QC) procedures in the phases of design, implementation and analysis. QA/QC procedures contribute to improve transparency, consistency, comparability, and accuracy (IPCC, 2006). Experts in forestry and remote sensing with knowledge of the landscape were engaged to collect the sample data that was used to derive activity data. Training and calibration took place before the data collection, as well as during the data collection exercise to ensure consistency, comparability and accuracy. Before the data collection, a 6 day training<sup>13</sup> was carried out where experts jointly revised the classification hierarchy and reviewed several sampling plots together to enhance internal consistency.</p>																															

<sup>13</sup> <http://www.ghanaredddatahub.org/settings/uploadreports/>

	<p>Experts documented examples of different land use and land use change classes in different sources of imagery in the SOP<sup>14</sup> to achieve a mutual understanding of the classification system and how to identify stable land use, land use change and degraded land use classes. The data collection efforts were conducted in a group setting, where experts gathered and interpreted the sample data in the same room. If an expert had any doubt in the sample classification, the plot was displayed on a projector and all experts intervened to accurately classify the sample.</p> <p>QA/QC measures were built into the response design, to avoid mistakes or inconsistencies in data collection. Errors such as inconsistencies according to the classification hierarchy, land cover classes adding up to more than 100% cover and missing information or incomplete responses are flagged with error messages and the expert must correct the errors before continuing to the next sample.</p> <p>To assess the level of interpreter agreement, 1052 plots (14%) were blindly re-assessed by a different interpreter. The overall agreement of this double-blind assessment was 87%, i.e. an improvement compared to the 2020 assessment, which saw an overall agreement of 82%.</p> <p>FPP project: The inventory data management workflow includes Quality Assurance and Quality Control procedures. 15 randomly selected plots were selected as quality control plots. However, 12 out of these plots were visited in the field for quality control, representing 4.1 per cents of the plots with measured data, details in Section 4 of FPP Report 2013.</p> <p>The average differences between the original and quality control measurements are found statistically insignificant (t-test), the maximum average diameter and height differences are found to be up to 11.5 cm and 8.5 meter based on the field measurements excluding the outlier plots. For 75 percent of the plots AGC and BGC values deviate less than 30 percent between two measurement times. There are two outlier plots where the large deviation compared to the original measurements suggests that the plot locations are not matching precisely. Some of the differences can be attributed to harvesting activities.</p>
<p><b>Uncertainty associated with this parameter:</b></p>	<p>The table above provides the 90% confidence interval for all fixed variables reported. These intervals were calculated propagating the errors around the pre-degradation carbon contents and the error around the average relative canopy cover reduction (Table 35 in Annex 4 of the first monitoring report, section 8.3).</p>
<p><b>Any comment:</b></p>	

<p><b>Parameter:</b></p>	<p>Area of deforestation, in vegetation zone <i>e</i>, in forest structure <i>s</i>, <math>A_{def,e,s}(rp)</math></p>
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<sup>14</sup> <http://www.ghanaredddatahub.org/settings/uploadreports/>

<b>Description:</b>	Area of forest converted to non-forest and area of forest experiencing deforestation during the reference period						
<b>Data unit:</b>	Hectares per annum						
<b>Source of data and description of measurement/calculation methods and procedures applied:</b>	<p><i>This is a program area specific data.</i></p> <p><i>Activity data estimates reflecting deforestation were derived from sample-point interpretation. The sample point data set consisted of 7689 samples points systematically located across the GCFRP region on a nested, multi-scale grid with random gaps. Deforestation was estimated per vegetation zone. For each sample unit labeled as deforestation, the pre-deforestation canopy cover has been assessed. If the pre-deforestation canopy cover was 60% or higher it means closed forest was deforested. If instead, the canopy cover was between 15-59% it means open forest was deforested. Details can be found in section 2.22 of Ghana's first MR.</i></p>						
<b>Value applied</b>		<b>Deforestation open forest</b>			<b>Deforestation closed forest</b>		
		<b>in ha/yr</b>	<b>±90% CI (ha/yr)</b>	<b>±90% CI (perc.)</b>	<b>in ha/yr</b>	<b>±90% CI (ha/yr)</b>	<b>±90% CI (perc.)</b>
	Wet evergreen	182	223	122%	304	264	87%
	Moist evergreen	768	491	64%	1 728	730	42%
	Moist Semideciduous NW	1 840	661	36%	1 171	482	41%
	Moist Semideciduous SE	1 950	667	34%	1 078	472	44%
	Upland evergreen	16	26	164%	160	82	51%
		4 756	1 083	23%	4 440	1 031	23%
<b>QA/QC procedures applied:</b>	<p><i>It is good practice to implement Quality Assurance / Quality Control (QA/QC) procedures in the phases of design, implementation and analysis. QA/QC procedures contribute to improve transparency, consistency, comparability, and accuracy (IPCC, 2006). Before the data collection started, experts jointly revised the classification hierarchy and reviewed a number of sampling plots together to enhance internal consistency.</i></p> <p><i>To assess the level of interpreter agreement, 598 sample plots were blindly re-assessed by a different interpreter. This corresponds to approximately 8% of the entire sample. The exercise</i></p>						

	<p>resulted in an interpreter agreement of 82%, which in comparison to interpreter agreement assessments in other countries is a fair level of agreement.</p> <p>To improve the quality of the plot interpretation, all sample plots that were labeled by the interpreter as “low confidence” were re-assessed and all forest or deforestation sample plots assessed in June 2019 were re-assessed in 2020 since June 2019 the interpreters did not have access to Planet data and they could not have assessed deforestation events in the second half of 2019.</p>
<b>Uncertainty for this parameter:</b>	The single phase, stratified special case of the Horvitz-Thompson estimator (the generalized estimator for unequal probability sampling) was used for estimating the associated uncertainty, and where areas were added. The half-width 90% confidence interval around the areas of variable deforestation was calculated using equations 3 and 4 in section 2.2.2 of the first MR
<b>Any comment:</b>	

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<b>Source of data and description of measurement/calculation methods and procedures applied:</b>	<p>This is a program area specific data.</p> <p>Activity data estimates reflecting forest degradation were derived from sample-point interpretation. The sample point data set consisted of 7689 samples points systematically located across the GCFRP region on a nested, multi-scale grid with random gaps. Degradation was estimated per vegetation zone. For each sample unit labeled as degradation, the pre-and post-degradation canopy cover has been assessed. If the pre-degradation canopy cover was 60% or higher it means closed forest was degraded. If instead, the canopy cover was between 15-59% it means open forest was degraded. The pre- and post-degradation canopy cover was converted into relative canopy cover reduction, used to approximate the degradation EF.</p>																																			
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	Moist Semideciduous NW	245	245	100%	1 293	521	40%
	Moist Semideciduous SE	64	105	164%	1 270	505	40%
	Upland evergreen	0	0		80	58	73%
		<b>437</b>	<b>339</b>	<b>78%</b>	<b>4 099</b>	<b>929</b>	<b>23%</b>
<b>QA/QC procedures applied:</b>	<p><i>It is good practice to implement Quality Assurance / Quality Control (QA/QC) procedures in the phases of design, implementation and analysis. QA/QC procedures contribute to improve transparency, consistency, comparability, and accuracy (IPCC, 2006). Before the data collection started, experts jointly revised the classification hierarchy and reviewed a number of sampling plots together to enhance internal consistency.</i></p> <p><i>To assess the level of interpreter agreement, 598 sample plots were blindly re-assessed by a different interpreter. This corresponds to approximately 8% of the entire sample. The exercise resulted in an interpreter agreement of 82%, which in comparison to interpreter agreement assessments in other countries is a fair level of agreement.</i></p> <p><i>To improve the quality of the plot interpretation, all sample plots that were labeled by the interpreter as “low confidence” were re-assessed and all forest or deforestation sample plots assessed in June 2019 were re-assessed since at that time the interpreters did not have access to Planet data.</i></p>						
<b>Uncertainty for this parameter:</b>	<p><i>The single phase, stratified special case of the Horvitz-Thompson estimator (the generalized estimator for unequal probability sampling) was used for estimating the associated uncertainty, and where areas were added. The half-width 90% confidence interval around the areas of variable degradation was calculated using equations 3 and 4 mentioned above under the header sampling design.</i></p>						
<b>Any comment:</b>							

<b>Parameter:</b>	Removal factor for teak ( $RF_{teak}$ )
<b>Description:</b>	Calculated removal factor for carbon stock enhancement through plantation of teak in forest reserves (AGB and BGB)
<b>Data unit:</b>	$t\ CO_2\ ha^{-1}\ yr^{-1}$

<b>Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):</b>	<p>This is a country level data</p> <p>Published literature (Adu-Bredu S., et al. 2008 , <a href="https://doi.org/10.1016/j.foreco.2007.12.052">https://doi.org/10.1016/j.foreco.2007.12.052</a>) on total tree carbon stocks in teak stands in Moist Evergreen forest in Ghana (98 Mg C/ ha) (included both aboveground and belowground carbon stocks).</p> <p>98 Mg C/ ha = 358 t CO<sub>2</sub>/ha</p> <p>Annual removals: 358 t CO<sub>2</sub>ha<sup>-1</sup> / 25 yr =14 t CO<sub>2</sub>ha<sup>-1</sup> yr<sup>-1</sup></p>
<b>Value applied:</b>	14 t CO <sub>2</sub> ha <sup>-1</sup> yr <sup>-1</sup>
<b>QA/QC procedures applied</b>	N/A
<b>Uncertainty associated with this parameter:</b>	<p>Adu-Bredu et al. (2008) was completed using temporary sample plots following standard operating procedures for the measurement of terrestrial carbon.</p> <p>While only the total tree carbon stocks were used for the development of removal factors, an estimation of statistical accuracy was offered in the form of the mean, minimum, and maximum carbon values for the total carbon stocks of the teak stands studied in the Moist Evergreen Forest strata, as well as the standard deviation:</p> <p>Mean: 138</p> <p>Minimum: 133</p> <p>Maximum: 144</p> <p>Based on these values, uncertainty could be 6% of the mean. However, to be more conservative, uncertainties in the removal factors are approximated using an average standard error value for teak from Bombelli and Valentini 2011<sup>15</sup> and a standard error value from IPCC 2019<sup>16</sup> for the root-to-shoot ratio.</p>
<b>Any comment:</b>	

<b>Parameter:</b>	Removal factor for other broadleaf species (RF <sub>n-teak</sub> )
<b>Description:</b>	Calculated removal factor for carbon stock enhancement through plantation of trees (non-teak) in forest reserves (AGB and BGB)
<b>Data unit:</b>	t CO <sub>2</sub> ha <sup>-1</sup> yr <sup>-1</sup>
<b>Source of data or description of the method for developing the data</b>	Country specific data was not available therefore, IPCC AFOLU Vol. 4 table 4.8 above-ground biomass in forest plantations was used. Values for 'Africa broadleaf >20 years' for three ecological zones in the GCFRP Accounting Area (tropical rain forest, tropical moist deciduous forest, and tropical dry forest) were averaged, and converted to carbon (81 t

<sup>15</sup> Bombelli A., Valentini R. (Eds.), 2011. Africa and Carbon Cycle. World Soil Resources Reports No. 105. FAO, Rome. <http://www.fao.org/3/i2240e/i2240e.pdf#page=108>

<sup>16</sup> [https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4\\_Volume4/19R\\_V4\\_Ch04\\_Forest%20Land.pdf#page=26](https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch04_Forest%20Land.pdf#page=26)

<b>including the spatial level of the data (local, regional, national, international):</b>	<p>C/ha) using a carbon-to-biomass ratio of 0.47. The belowground biomass value was generated by applying a root-to-shoot ratio of 0.24 for tropical/subtropical moist forest/plantations &gt;125 Mg ha<sup>-1</sup> (Mokany et al.2006). This rendered a total stock of 101 t C/ha.</p> <p>101 Mg C ha<sup>-1</sup>= 370 t CO<sub>2</sub> ha<sup>-1</sup></p> <p>Annual removals: 370 t CO<sub>2</sub> ha<sup>-1</sup> / 40 yr =9 t CO<sub>2</sub> ha<sup>-1</sup> yr<sup>-1</sup></p>
<b>Value applied:</b>	9 t CO <sub>2</sub> ha <sup>-1</sup> yr <sup>-1</sup>
<b>QA/QC procedures applied</b>	N/A
<b>Uncertainty associated with this parameter:</b>	<p>For the development of this parameter, IPCC defaults for aboveground biomass in forest plantations in Africa were applied. Given they are continental averages for all broadleaf species, uncertainty can be assumed to be high.</p> <p>Belowground biomass stocks are produced using a root-to-shoot ratio (Mokany et al., 2006), and therefore values are tied to the estimates for aboveground biomass</p> <p>Uncertainties are approximated using a standard error value from IPCC 2019<sup>17</sup> for the biomass values and root-to-shoot ratios.</p>
<b>Any comment:</b>	

### 3.2 Monitored Data and Parameters

<b>Parameter:</b>	<p>Area of deforestation, in vegetation zone <i>e</i>, in forest structure <i>s</i>, <math>A_{def,e,smp}</math></p> <p>Area of degradation, in vegetation zone <i>e</i>, in forest structure <i>s</i>, <math>A_{degr,e,smp}</math></p>
<b>Description:</b>	Area of forest converted to non-forest and area of forest experiencing forest degradation during the monitoring period respectively
<b>Data unit:</b>	Hectares per annum
<b>Value monitored during this Monitoring / Reporting Period:</b>	<p><u>Sampling design</u></p> <p>Following extensive analyses of various maps, land use change products and combinations of land use change products, Ghana updated its SLMS to make use of a nested multi-scale systematic sampling grid, where the sampling intensities were as follows: outside the forest mask (and outside upland evergreen vegetation zone) the sampling intensity was 4 x 4 km, inside the forest mask (and outside upland evergreen vegetation zone) the sampling intensity was 2 x 2 km, and inside the upland evergreen vegetation zone the sampling intensity was 1 x 1 km. The forest mask is a combination of the four Landsat maps. The intensification on the forest mask was done to increase efficiency of the AD assessment since the expectation was to find more deforestation and forest degradation within the forest mask. The intensification</p>

<sup>17</sup> [https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4\\_Volume4/19R\\_V4\\_Ch04\\_Forest%20Land.pdf#page=26](https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch04_Forest%20Land.pdf#page=26)



in the upland evergreen was done since the upland evergreen constitutes a very small area, therefore a high plot intensity was needed for a statistically meaningful estimate. Not all plots on the 2 x 2 km and 1 x 1 km grids have been collected, instead a random selection of plots have been collected on this intensified grid until the overall sample size target was met, i.e. the intensified grid has random gaps. There are no gaps in the 4 x 4 km grid . Given the confidence level (i.e., 90%), the significance level is  $\alpha=1-\text{confidence level}$ , an approximate estimated total sample size  $n$  is assessed by equation 1 (Cochran 1977<sup>18</sup>).

Equation 1 Formula to determine overall sample size:

$$n \approx \frac{z_{\alpha/2}^2 \cdot \hat{O} \cdot (1-\hat{O})}{d^2} \quad (3)$$

where

$\hat{O}$  = expected overall feature area expressed as a fraction

$z$  = percentile from the standard normal distribution ( $z = 1.645$  for a 90% confidence in 1.64 is used in the simple error propagation)

$d$  = the allowable margin of error. This is the maximum half-width of the confidence towards in our estimate. It is given as area fraction, not as percentage. It should be taken as a confidence interval, required for the feature to measure.

Following a national data collection campaign as part of the “National Land Monitoring and Information System for a transparent NDC reporting” project, which made use of an 8 x 8 km grid, Ghana used equation 1 above to intensify the sampling grid using a nested multi-scale approach guided by a consolidated forest cover mask of the GCFRP area. Table 4 provides the sample size for each grid.

Table 6: Sample plot size and distribution in GCFRP

	# plots	Area (ha)	Proportion

<sup>18</sup> Cochran, W. G. (1977). Sampling techniques (3rd ed.). New York: John Wiley & Sons.

Deforestation	Open Forest			Closed Forest		
	2020 (ha/yr)	Def	2020 CI (ha)	2020 (ha/yr)	Def	2020 CI (ha)
Wet Evergreen	-		-	-		-
Moist Evergreen				1,271		2,084
Moist Semideciduous NW	-		-			
Moist Semideciduous SE	-		-	640		1,050
Upland Evergreen	-		-	-		-
Outside forest mask (4 x 4 km grid)				2,072	2 555 905	0.4321
On forest mask (2 x 2 km grid)				5,246	3 295 919	0.5573
In upland evergreen ecozone (1 x 1 km grid)				393	62 601	0.0106
<b>Total</b>				<b>7 711</b>	<b>5 914 425</b>	<b>1.0000</b>

This sampling intensity will also be used for future monitoring periods (2020,2021).

*Response design*

The response design used for the collection of land use change data using the sampling grid mentioned above. A more detailed discussion regarding the decisions made by Ghana can be found in the FREL amendment document contained in Annex 4 to the first monitoring report. The same response design was used for both the Reference Level analysis and the Monitoring activities documented in this report.

Deforestation	Open Forest		Closed Forest			
	2021 (ha/yr)	Def	2021 CI (ha)	2021 (ha/yr)	Def	2021 CI (ha)
Wet Evergreen						
Moist Evergreen	638		1,046			
Moist Semideciduous NW				3,094		2,266
Moist Semideciduous SE				640		1,050
Upland Evergreen				159		261

Degradation	Open Forest		Closed Forest			
	2020 (ha/yr)	Deg	2020 CI (ha)	2020 (ha/yr)	Deg	2020 CI (ha)
Wet Evergreen						
Moist Evergreen				638		1,046
Moist Semideciduous NW				619		1,015
Moist Semideciduous SE				1,280		1,484
Upland Evergreen						

Degradation	Open Forest		Closed Forest			
	2021 (ha/yr)	Deg	2021 CI (ha)	2021 (ha/yr)	Deg	2021 CI (ha)
Wet Evergreen				606		994
Moist Evergreen				638		1,046

	Moist Semideciduous NW			3,688	2,840
	Moist Semideciduous SE	1,283	1,487	2,491	2,479
	Upland Evergreen			319	369
<b>Source of data and description of measurement /calculation methods and procedures applied:</b>	<p>Activity data estimates reflecting deforestation and forest degradation were derived from sample-point interpretation. The sample point data set consisted of 7711 samples points systematically located across the GCFRP region on a nested, multi-scale grid with random gaps. During the preparation of the ERPD as well as the amendment to the ERPD, Ghana explored the use of several different data sets and analysis methods for stratifying the area into suitable land cover change classes. Post stratification did not appear to improve the reported confidence intervals and as such, no change maps were used to stratify the area. A detailed description of the establishment of the sample size, sample design and response design is provided in Section 2.2 and Annex 4 of the first monitoring report (section 8.3).</p>				
<b>QA/QC procedures applied:</b>	<p>It is good practice to implement Quality Assurance / Quality Control (QA/QC) procedures in the phases of design, implementation and analysis. QA/QC procedures contribute to improve transparency, consistency, comparability, and accuracy (IPCC, 2006). In line with the SOP, before the data collection, experts in forestry and remote sensing with knowledge of the landscape were engaged to collect the sample data that was used to generate the activity data. With the training report from the 2019 data collection as an additional reference document, refresher training and calibration took place before the data collection, as well as during the data collection exercise to ensure consistency, comparability and accuracy.</p> <p>Experts documented examples of different land use and land use change classes in different sources of imagery in the SOP to achieve a mutual understanding of the classification system and how to identify stable land use, land use change and degraded land use classes.</p> <p>QA/QC measures were built into the response design, to avoid mistakes or inconsistencies in data collection. Errors such as inconsistencies according to the classification hierarchy, land cover classes adding up to more than 100% cover and missing information or incomplete responses are flagged with error messages and the expert must correct the errors before continuing to the next sample.</p> <p>To assess the level of interpreter agreement, 1052 plots (14%) were blindly re-assessed by a different interpreter. The overall agreement of this double-blind assessment was 87%, i.e. an improvement compared to the 2020 assessment, which saw an overall agreement of 82%.</p>				

<b>Uncertainty for this parameter:</b>	The uncertainty estimates (90% confidence intervals in hectares) are provided in the table above. The uncertainty around the areas of deforestation and forest degradation is calculated using equation 3 in section 2.2.2 and propagated using equation 4 in section 2.2.2 (simple error propagation).
<b>Any comment:</b>	The data collection efforts were conducted in a group setting, where experts gathered and interpreted the sample data in the same room and resolve sub-tile difference in the landuse and associated changes. If an expert had any doubt in the sample classification, the plot was displayed on a projector and all experts intervened to accurately classify the sample.

<b>Parameter:</b>	Teak and broadleaf areas of on- and off-reserve planting for the reference level and monitoring period, discounted with failure rate ( $A_{RL,teak,on}$ , $A_{RL,teak,off}$ , $A_{RL,nteak,on}$ , $A_{RL,nteak,off}$ , $A_{MP,teak,on}$ , $A_{MP,teak,off}$ , $A_{MP,nteak,on}$ , $A_{MP,nteak,off}$ )				
<b>Description:</b>	Area of non-forest converted to forest area (enhancement)				
<b>Data unit:</b>	Hectares per annum				
<b>Value monitored during this Monitoring / Reporting Period:</b>		<b>NFPDP data</b>			
		Off-reserve planted area (ha)	Survival Rate	On-reserve planted area (ha)	Survival Rate
	2020	487	55%	10,585	55%
	2021	35,747	55%	10,826	55%
<b>Source of data and description of measurement /calculation methods and procedures applied:</b>	<p>National Forest Plantation Development Programme official statistics.</p> <p>The activity data used for the estimation of removals was derived from national census data, reported by the National Forest Plantation Development Programme. Plantation's Department of Forestry Commission undertakes an annual survival survey of all planted sites from which the survival rates were derived.</p>				
<b>QA/QC procedures applied:</b>	<p>Data from National Forest Plantation Development Program (NFPDP).</p> <p>The plantation statistics are first collected at the Forest District Levels. These are then sent to the National through the Regional Levels. In the succeeding year of data collection. Teams are sent from the national level to verify the survival rate of each area planted. These are then used in annual plantation reports. The links to the annual plantation reports are indicated below:</p> <p>2020 plantation annual report</p> <p><a href="https://fcghana.org/?p=3362">https://fcghana.org/?p=3362</a></p>				

	2021 plantation annual report  <a href="https://fcghana.org/?p=3501">https://fcghana.org/?p=3501</a>																																											
<b>Uncertainty for this parameter:</b>	Being national statistics, no sampling error can be calculated to approximate an associated confidence intervals around the area statistics. As such, no uncertainty is assumed around AD.  Moreover, neither the FCPF Methodological Framework nor the 2020 guidelines on uncertainty analysis speak to plantation data, no guidance is provided on how to treat national census data																																											
<b>Any comment:</b>	<table border="1"> <thead> <tr> <th>Reference level projected reforestation in 2020</th> <th></th> <th>Average ha/year</th> <th>Projected removals in 2020 &amp; 2021 (tCO<sub>2</sub>)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Reference level projected reforestation in 2020</td> <td>Teak</td> <td>1,340</td> <td>-19,203</td> </tr> <tr> <td>Non-Teak</td> <td>574</td> <td>-5,318</td> </tr> <tr> <td>Teak</td> <td>1,340</td> <td>-19203</td> </tr> <tr> <td>Non-Teak</td> <td>574</td> <td>-5318</td> </tr> <tr> <td> <b>Total carbon stocks changes (tCO<sub>2</sub>)</b> </td> <td colspan="2"></td> <td> <b>-49,041</b> </td> </tr> <tr> <td rowspan="6">Reference level projected reforestation in 2021</td> <td>Teak</td> <td>1,340</td> <td>-19,203</td> </tr> <tr> <td>Non-Teak</td> <td>574</td> <td>-5,318</td> </tr> <tr> <td>Teak</td> <td>1,340</td> <td>-19,203</td> </tr> <tr> <td>Non-Teak</td> <td>574</td> <td>-5,318</td> </tr> <tr> <td>Teak</td> <td>1,340</td> <td>-19,203</td> </tr> <tr> <td>Non-Teak</td> <td>574</td> <td>-5,318</td> </tr> </tbody> </table>	Reference level projected reforestation in 2020		Average ha/year	Projected removals in 2020 & 2021 (tCO <sub>2</sub> )	Reference level projected reforestation in 2020	Teak	1,340	-19,203	Non-Teak	574	-5,318	Teak	1,340	-19203	Non-Teak	574	-5318	<b>Total carbon stocks changes (tCO<sub>2</sub>)</b>			<b>-49,041</b>	Reference level projected reforestation in 2021	Teak	1,340	-19,203	Non-Teak	574	-5,318	Teak	1,340	-19,203	Non-Teak	574	-5,318	Teak	1,340	-19,203	Non-Teak	574	-5,318			
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	<b>Total carbon stocks changes (tCO<sub>2</sub>)</b>			<b>-73,561</b>
	<b>Monitoring period</b>		<b>ha/yea r</b>	<b>Actual removals in 2020 &amp; 2021</b>
	Actual reforestation in 2020	Teak	<b>9,505</b>	<b>-136,181</b>
		Non-Teak	<b>4,073</b>	<b>-37,713</b>
		Teak	4,263	-61,076
		Non-Teak	1,827	-16,914
	<b>Total carbon stock changes (tCO<sub>2</sub>)</b>			251,883
	Actual reforestation in 2021	Teak	9,505	-136,181
		Non-Teak	4,073	-37,713
		Teak	4,263	-61,076
		Non-Teak	1,827	-16,914
		Teak	17,931	256,907
Non-Teak		7,685	71,146	
<b>Total carbon stock changes (tCO<sub>2</sub>)</b>			<b>-579,936</b>	

#### 4 QUANTIFICATION OF EMISSION REDUCTIONS

##### 4.1 ER Program Reference level for the Monitoring / Reporting Period covered in this report

Year of Monitoring/Reporting period t	Average annual historical emissions from deforestation over the Reference Period (tCO <sub>2</sub> -e/yr)	If applicable, average annual historical emissions from forest degradation over the Reference Period (tCO <sub>2</sub> -e/yr)	If applicable, average annual historical removals by sinks over the Reference Period (tCO <sub>2</sub> -e/yr)	Adjustment, if applicable (tCO <sub>2</sub> -e/yr)	Reference level (tCO <sub>2</sub> -e/yr)
2020	3,737,815	867,069	-49,041		4,555,843
2021	3,758,091	867,069	-73,561		4,551,598
Total	7,495,906	1,734,138	-122,602		<b>9,107,441</b>

##### 4.2 Estimation of emissions by sources and removals by sinks included in the ER Program's scope

Section 2.2 provides all explanations, data and equations used for the quantification of the emissions

Year of Monitoring/Reporting Period	Emissions from deforestation (tCO <sub>2</sub> -e/yr)	If applicable, emissions from forest degradation (tCO <sub>2</sub> -e/yr)*	If applicable, removals by sinks (tCO <sub>2</sub> -e/yr)	Net emissions and removals (tCO <sub>2</sub> -e/yr)
2020	1,526,956	533,350	-251,883	1,808,423
2021	1,967,315	1,497,898	-579,936	2,885,277
Total	3,494,271	2,031,248	-831,819	4,693,700



#### 4.3 Calculation of emission reductions

The Reporting Period concerns the period 01-01-2020 to 31-12-2021

<b>Total Reference Level emissions during the Monitoring Period (tCO<sub>2</sub>-e)</b>	9,107,441
<b>Net emissions and removals under the ER Program during the Monitoring Period (tCO<sub>2</sub>-e)</b>	4,693,700
<b>Emission Reductions during the Monitoring Period (tCO<sub>2</sub>-e)</b>	4,413,741
<b>Length of the Reporting period / Length of the Monitoring Period (# days/# days)</b>	731/731
<b>Emission Reductions during the Reporting Period (tCO<sub>2</sub>-e)</b>	4,413,741

## 5 UNCERTAINTY OF THE ESTIMATE OF EMISSION REDUCTIONS

### 5.1 Identification, assessment and addressing sources of uncertainty

As per the requirements in criterion 7 of the methodological framework, a Monte Carlo simulation was undertaken.

The “Guideline on the application of the Methodological Framework Number 4 On Uncertainty Analysis of Emission Reductions” lays out the following sources of (residual) uncertainty (details in table 6 below) that must be included in this analysis:

- Activity data:
  - Measurement
  - Representativeness
  - Sampling
  - Extrapolation
  - Approach 3
- Emission factors:
  - DBH measurement
  - H measurement
  - Plot delineation
  - Wood density estimation
  - Biomass allometric model
  - Sampling
  - Other parameters (e.g., carbon fraction, root-to-shoot ratios)
  - Representativeness
- Integration:
  - Model
  - Integration

These sources of uncertainty were considered as follows.

- Activity data sampling uncertainty was taken into account by estimating the mean area change and its standard error from the systematic sampling of land-use change. The means and standard errors were estimated separately on a per forest stratum basis.
- Emission factor sampling uncertainty was taken into account by estimating the mean biomass and its standard error from the forest inventory plots. The means and standard errors were estimated separately for each forest stratum and separately for the carbon pools.
- The uncertainty related to the biomass allometric equations was not taken into account (see below)
- Other parameters related to emission factors that were modelled include the biomass of post-deforestation land use, the Carbon Fraction of biomass in tree plantations, the root-shoot ratio in tree plantations, the average carbon stock in tree plantations, the relative biomass reduction upon forest degradation. Where relevant, these parameters were modelled separately for carbon pools and for forest strata. Regarding the deforestation and forest degradation emission factors, the carbon fraction and the root-shoot ratio could not be separately modelled because biomass was calculated at the plot level and plot-level measurements were not available. Hence both are used as fixed parameters.

The absence of reliable tree level data in the 168 plots used for the emission factor estimation in the area, together with a lack of some basic error parameters in the allometric equations used, such as mean squared errors at the very least, make the calculation of errors at the tree scale impossible. Even counting on the original tree level data (as opposed to the current plot-level aggregates) the number of assumptions necessary to derive model errors might involve undesirable levels of risk.

Correlation between the input parameters was handled by ensuring that each parameter appears only once in the model. For example, the forest AGB of a given stratum is only simulated once and all other instances of forest AGB refer to it. This made the use of covariance matrices unnecessary.

- Probability density functions for the modelled parameters were defined following the decision tree provided in the guidance. Accordingly, a goodness-of-fit test was undertaken where raw data were available, and an expert elicitation was undertaken where raw data were not available. Most PDFs chosen were based on Gaussian curves. Although in some cases with very low figures a Gaussian fit with a large standard error may give rise to unrealistic negative numbers, truncated normal approaches were discarded since they would be only useful for a handful of cases and, if correlations are to be taken, the computational complexity of choosing multivariate truncated normal becomes cumbersome. For degradation, a natural beta distribution<sup>19</sup> of canopy cover reduction as an indicator of biomass reduction was used for the fraction of plots that underwent degradation. The choice of a beta model distribution encompasses the quantity of cover reduction. The choice may introduce some degree of bias. However since it is such a rare event, its contribution to overall uncertainty is small. Although the parallels are not clear, the beta distribution can ease the propagation of random errors, although biases are likely to appear because of the more than possible non-linear relationship between canopy cover and biomass reductions, (Ferrari, S. & Cribari-Neto, F. 2004) ; <https://doi.org/10.1080/0266476042000214501>

Table 7: Sources of Uncertainty to be considered under the FCPF Methodological Framework

Source of uncertainty	Systematic/Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Address through QA/QC	Residual uncertainty estimated?
Activity Data					
Measurement	S/R	Source of error still being subject of academic research. It is potentially subject to both bias and random error and may also potentially contribute significantly to overall	H (bias/random)	YES	NO

<sup>19</sup> Ferrari, S. & Cribari-Neto, F. 2004; <https://doi.org/10.1080/0266476042000214501>

		<p>uncertainty. It was addressed through QA/QC protocols by :</p> <ol style="list-style-type: none"> <li>1. Developing specific manuals (SOPs) and through several capacity building workshops. These materials were used as guidance for refresher training for data collectors.</li> </ol> <p><i>Link to the specific SOP and training workshop reports and presentations indicated in the link below</i></p> <p><a href="http://www.ghanaredddatahub.org/doclibrary/sops/">http://www.ghanaredddatahub.org/doclibrary/sops/</a></p> <p><a href="https://drive.google.com/drive/folders/1ViluJSro01r0mbroWM6OK3nCIAXDyEXC?usp=share_link">https://drive.google.com/drive/folders/1ViluJSro01r0mbroWM6OK3nCIAXDyEXC?usp=share link</a></p> <ol style="list-style-type: none"> <li>2. Dubiously identified sampling plots were discussed through consensus among interpreters.</li> <li>3. Use of high resolution imagery (through different sources) that minimizes possible interpretation errors</li> <li>4. Data collectors have gained experience in interpretations due to consistency in the personeel who collect the data</li> </ol> <p>Other measurement errors may potentially be applicable, such as those associated to remote sensors and their spectral and spatial resolutions. However these are almost never applied beyond some academic exercises.</p> <p>The contribution of measurement error to the overall uncertainty is potentially high (both through random and systematic error) but the QA/QC (refer to points 1 -4 above) applied should have minimized this as much as practicable. No residual uncertainty is included in the estimate.</p>			
Representativeness	S	<p>The sampling design followed strict procedures through the use of systematic grids (refer to SOPs), with the aim to produce proper allocation according to strata. As such, only possible errors in the definition of strata from satellite imagery seem plausible in regard to producing potential biases. However, the sampling methodology within the strata was robust.</p> <p>The expected impact from representativeness on the overall uncertainty is low (through systematic error) but</p>	L (bias)	YES	NO

		the QA/QC applied within the strata should have minimized the remaining error in as much as practicable. No residual uncertainty is included in the estimate.			
Sampling	S/R	<p>The choice of estimator was based on a ratio-based approach, which in principle tend to provide higher biases, but the high number of samples in the stratified scheme is expected to minimize that bias. Random error has been shown to be lower than with the use of purely regression-based estimators or simple means. Yet, sampling errors in AD are in practical large-scale applications always high overall. QA/QC procedures (<a href="http://www.ghanaredddatahub.org/settings/uploadreports/">http://www.ghanaredddatahub.org/settings/uploadreports/</a>) led to intensification and an increase in sampling size to minimize sampling errors, including revision of sample allocation through the strata.</p> <p>The contribution of sampling error to the overall uncertainty is high (both through random and systematic error) but the QA/QC applied should have minimized this as much as practicable. Residual uncertainty is included in the estimate.</p>	H (bias/random)	YES	YES
Extrapolation	S	<p>This source of error has been minimized due to the alignment between forest types as reporting domains with strata in the design. Hence, for example deforestation is calculated independently for each stratum that is also a certain forest type reported.</p> <p>The expected impact from extrapolation on the overall uncertainty is low (through systematic error) but the QA/QC applied within the strata should have minimized the remaining error this as much as practicable. No residual uncertainty is included in the estimate.</p>	L(bias)	YES	NO
Approach 3		The approach taken is a sampling approach that allows land-use conversions to be tracked on a spatially explicit basis			
<b>Emission factor</b>					
DBH measurement error	R	Absence of tree-level data. Errors in DBH measurements are usually small (Picard 2015) and considered to cancel out when aggregation from tree to plots take place (Yanai et al. 2010, Holdaway et al. 2014).	L(random)	YES	NO

		The expected impact from DBH measurement on the overall uncertainty is low (through random error). QA/QC (SOP 1.1 and 1.2 prescribes the use of combining uncertainties) has been applied and should have minimized the remaining error as much as practicable. No residual uncertainty is included in the estimate.			
H measurement error	S/R	<p>Absence of tree-level data. Tree height tends to present lower precisions, and it is highly variable and site-dependent. Clinometer-measured heights have also shown to present consistent biases of approx. 1 m. for trees &gt; 20 m. As a consequence per ha scale, it has been reported to give AGB uncertainties of 5-6% that can also present high biases. Although precision is reduced when aggregating at large scales due to cancelling out random errors, biases do propagate, in some cases reportedly showing 4% overestimation in AGB (Hunter et al. 2013). Field trainings took places with Arbonaut, linked to LIDAR measurements.</p> <p>( Refer to manuals 5.1.2, 5.3 and 5.4, link same as above)</p> <p>This linkage implicitly helps quality assurance through contrasting tree height measurements with those from LIDAR. As an add-on, risk for height measurement errors was already taken into account in the AGB model selection, minimizing even more this source of error.</p> <p>The expected impact from H measurement on the overall uncertainty is high where this concerns systematic error and low where this concerns random error. QA/QC has been applied and should have minimized the errors as much as practicable. No residual uncertainty is included in the estimate.</p>	H (bias) & L(random)	YES	NO
Plot delineation	S/R	<p>No analysis took place regarding plot delineation, which can also be considered a measurement error on its own. Systematic bias can be expected because crews in the field might aim to avoid large obstacles and deviate slightly from the originally designed plot boundaries.</p> <p>The expected impact from plot delineation on the overall uncertainty is low (through random and systematic error). As part of QA/QC, Systematic plots of 3 plots per cluster with 500 m distance among plots and 1,000 m between clusters. Within an inventory team there was navigational team and field measurement team. The two teams worked together but were independent. The navigational team extracted the center coordinate of each plot from the LIDAR strip in Arcmap, uploaded to handheld GPS and use that to locate the field plot. This was to ensure that the location of the plot remained unchanged. However,</p>	L(bias/random)	NO	NO

		<p>inaccessible plots such as flooded areas, mangroves were abandoned.</p> <p>Furthermore, when a plot laid the GNSS was used to pick the center coordinate and the four corners of the plot. The essence was to crosscheck the coordinates from the field and the ones extracted from the LIDAR image; details in FPP Report: section 2.5<sup>20</sup> . Ground control points (GCP) with their associated coordinates were supplied by the Survey and Mapping Division. These were used to coordinate the survey of the plots.</p> <p>No residual uncertainty is included in the estimate.</p>			
Wood density measurement error	S/R	<p>Wood density was not considered for live trees, since AGB models developed did not take it into account. However it had to be used to estimate AGB of dead standing trees. For that, species identity is needed. Lacking tree-level data, this source cannot currently be used in this exercise. However it is known that taxonomies were used (hence QA/QC was ensured), although average WD estimates per plot were produced. This may have masked some of the taxon WD variability, which can often be high. However, because deadwood carbon is very low compared live carbon, very low errors would be expected from WD.</p> <p>(The expected impact from wood density estimation on the overall uncertainty is low (through random and systematic error). Information on QA/QC is found in manual 5.3 and 5.4. (<i>all manuals in link provided above</i>) No residual uncertainty is included in the estimate.</p>	L(bias/random)	YES	NO
Biomass allometric model	S/R	<p>The absence of tree-level data makes extremely difficult to provide a quantitative estimation of the level of uncertainty at plot-scale due to this source of uncertainty. While RMSE exists for all models used, there is presently no information of the abundance of the different species in a plot. Hence the tree-based biomass model uncertainties cannot be properly propagated at plot level. Thus, neither the model choice error nor the model coefficients uncertainty can be used. As a counterargument and possible justification, the use of local BGB models like the ones used for this report has been shown to reduce possible biases as opposed to</p>	L(bias), H/L (random)	YES (local models)	NO

<sup>20</sup> <http://www.ghanaredddatahub.org/doclibrary/sops/>

		<p>pantropical models (van Breugel et al. 2011), although pantropical models, such as Chave (2014) can significantly reduce precision. Thus we expect this source of uncertainty to have a low contribution to bias but possibly high to random error in a static estimation. In the case of emission reductions, the full correlation assumption will point to minimal effects of this source of error.</p> <p>The expected impact from the biomass allometric models (AGB and BGB) on the overall uncertainty is low (for systematic error) to medium (for random and systematic error) but the QA/QC (manuals 5.3 and 5.4) applied should have minimized this as much as practicable. No residual uncertainty is included in the estimate.</p>			
Sampling	S/R	<p>Plots were distributed along LIDAR transects and randomly located along the lines, stratified by vegetation types. Estimators were SRS (over a systematic configuration of plots along LIDAR transects, by ecological zone) within each stratum, and carbon stock was expanded to a per ha. basis. The plots can be considered as a quasi-transect sample of the forests. The field plots have a square shape of 40 m by 40 m (Chen et al. 2015)</p> <p>Sampling could result in both systematic and random errors. Information is missing on the QA/QC applied. No residual uncertainty is included in the estimate. The within plot uncertainty should be low, the between plot uncertainty should be high.</p>	L (bias/random)	NO	YES
Carbon fraction	S/R	<p>Value taken from the literature. Hence it could lead to both random and systematic errors. The random error is usually considered to be low but the aggregated effect might be high. Different carbon fractions were applied to different parts of the tree in the plot measurements for the different pools so the expectation is that the aggregated value is as representative as possible.</p> <p>The carbon fraction could result in both systematic and random errors but by using different fractions for different pool components this error is expected to have been minimized. No residual uncertainty is included in the estimate.</p>	H (bias/random)	NO	NO
Decomposition values	S/R	<p>Uncertainty from decomposition values is assumed to have a low contribution because of the very small fraction of deadwood usually present in the forest. However in the specific case of this study some doubts were raised</p>	H/L(random)	YES	NO



		<p>because of extremely high values of deadwood in some cocoa areas. This was raised during the QA/QC revision and alternative default values were instead used. Yet we cannot calculate quantitatively the uncertainty because of the absence of within-plot data.</p> <p>The expected impact from the decomposition value on the overall uncertainty is medium (through random error) but the QA/QC (refer to SOPs) applied should have minimized this as much as practicable. No residual uncertainty is included in the estimate.</p>			
Removal aboveground biomass	S/R	<p>Plantation AGB estimates are obtained from local documentation (for teak plantations) or IPCC default values (for other species) and are subject to random variation whose origins are difficult to identify and were given as a range. As such, they may increase total uncertainty. However, they are going to represent a small fraction of the overall uncertainty.</p> <p>The expected impact from the removal aboveground biomass estimates on the overall uncertainty is low (through both random and systematic error). No QA/QC was applied since these values were taken from literature and IPCC.</p>	L (bias/random)	NO	YES
Root-to-shoot for removal factors	R	<p>Root-to-shoot ratios tend to follow lognormal distributions. The mean value was taken from the refined IPCC (2019) default tables, which take them from Mokany et al. (2006). The IPCC tables take a SE value with asymmetric extreme values due to the lognormality of residuals stated by Mokany et al. (2006). Both mean and SE are used to calculate the lognormal distribution, after which values are back-transformed to natural (antilog) scales.</p> <p>Given the low contribution of removals overall to final emission reductions, they represent a very small contribution to overall uncertainty. The expected impact from the root-to-shoot values on the overall uncertainty is low (through random error). No QA/QC was applied since these values were taken from IPCC. No residual uncertainty is included in the estimate.</p>	L (random)	NO	YES
Relative canopy	S/R	Degradation is based on detected canopy cover reduction in a very small set of plots where it was detected. The variation is likely to be due mostly from sampling error	L(random/bias)	NO	YES

cover reduction for degradation		<p>over rare events. Since it is such a rare event, its contribution to overall uncertainty is small.</p> <p>The expected impact from the relative canopy cover reduction estimates on the overall uncertainty is low (through both random and systematic error) but the QA/QC (refer to SOPs) applied should have minimized this as much as practicable. No residual uncertainty is included in the estimate.</p>			
Representativeness error	S	<p>LIDAR transects lines were parallel. Hence, a systematic approach relies over the overlapping of plots on these transect lines. As such we expect the possible bias due to representativeness to be minimized. Out of a total area of 15,153 km<sup>2</sup> of the study area, LiDAR scanning was required for only 770 km<sup>2</sup> (sampling intensity being 5.1%) (Sah et al. 2012)</p> <p>The expected impact from representativeness on the overall uncertainty is low (through systematic error). Information is missing on the QA/QC applied. No residual uncertainty is included in the estimate.</p>	L (bias)	YES	NO
<b>Integration</b>					
Model	S/R	<p>Integration of AD and EF through Monte Carlo can present potential biases and the random errors are naturally propagated. The combination of AD &amp; EF does not necessarily need to result in additional uncertainty. Usually, sources of both random and systematic error are the calculations themselves and model errors in integration may arise because of the implicit simplifications in the actual multiplication of AD x EF. Currently no correlations are considered in the calculations. While this may increase the random and systematic errors, it is a conservative approach. QA/QC processes in the preparation of the tool involved several revision processes and consultations in regard to the best PDFs to apply for every component of the simulation.</p> <p>The expected impact from the model (AD x EF) on the overall uncertainty is high (through both systematic and random error) but the QA/QC applied to the AD and EF calculations as described above should have minimized this as much as practicable. No residual uncertainty is included in the estimate.</p>	H(bias/random)	YES	NO

Probability Density Functions	S/R	<p>The model followed a parametric MC approach given the unreliability of a bootstrap for those rare cases which are present due to the relatively low sample size of the ground plots. The choice of PDF's may be a source of uncertainties. Most of the variables were fitted as Gaussian distributions and relative canopy cover reduction was fitted with a beta distribution. While ideally both should be truncated to avoid either rare negative numbers or fractions of canopy cover reduction above those permitted by the forest definitions, the lack of within-plot mean and standard error estimates considering truncated distributions makes the task impossible. However, overall these small deviations are likely representing very small errors, probably slightly biasing the overall median result.</p> <p>Hence the expected impact is likely to be overall low regarding both bias and random error. No residual uncertainty regarding the choice of PDF was included.</p>	H (bias/random)	YES	NO
Integration	S	<p>This source of uncertainty is related to the lack of comparability between the transition classes of the AD and those of the EF. AD is estimated through remote-sensing observations, whereas EFs for a specific ecological zone were based on ground-based observations of the ecological zone. These may not be comparable, and it may represent a source of bias. QA/QC involved the fine tuning coordinates alignment of LIDAR transects and field plots (Chen et al. 2015). Furthermore, the assessment of forest degradation is as harmonized as possible since information on relative canopy cover reduction is used to approximate biomass loss. The difference between open and closed forest average biomass contents to approximate the degradation EF is a much poorer estimate since the observed plots show that in many cases of degradation in closed forest, the post-degradation canopy cover is not below 60%.</p> <p>The expected impact from integration on the overall uncertainty is high (through systematic error) but the QA/QC applied should have minimized this as much as practicable. No residual uncertainty is included in the estimate.</p>	H (bias)	YES	NO

The following references are used in above table:

- Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., Colgan, M. S., Delitti, W. B., ... & Vieilledent, G. (2014). Improved allometric models to estimate the aboveground biomass of tropical trees. *Global Change Biology*, 20(10), 3177-3190.
- Chen, Q., Laurin, G. V., & Valentini, R. (2015). Uncertainty of remotely sensed aboveground biomass over an African tropical forest: Propagating errors from trees to plots to pixels. *Remote Sensing of Environment*, 160, 134-143
- Holdaway, R. J., McNeill, S. J., Mason, N. W., & Carswell, F. E. (2014). Propagating uncertainty in plot-based estimates of forest carbon stock and carbon stock change. *Ecosystems*, 17(4), 627-640.
- Hunter, M. O., Keller, M., Victoria, D., and Morton, D. C..(2013) Tree height and tropical forest biomass estimation, *Biogeosciences*, 10, 8385–8399, <https://doi.org/10.5194/bg-10-8385-2013>, 2013.
- Picard, N., Bosela, F. B., & Rossi, V. (2015). Reducing the error in biomass estimates strongly depends on model selection. *Annals of forest Science*, 72(6), 811-823.
- Sah, B. P., Hämäläinen, J. M., Sah, A. K., Honji, K., Foli, E. G., & Awudi, C. (2012). The use of satellite imagery to guide field plot sampling scheme for biomass estimation in Ghanaian forest. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 4, 221.
- Van Breugel, M., Ransijn, J., Craven, D., Bongers, F., & Hall, J. S. (2011). Estimating carbon stock in secondary forests: decisions and uncertainties associated with allometric biomass models. *Forest ecology and management*, 262(8), 1648-1657.
- Yanai, R. D., Battles, J. J., Richardson, A. D., Blodgett, C. A., Wood, D. M., & Rastetter, E. B. (2010). Estimating uncertainty in ecosystem budget calculations. *Ecosystems*, 13(2), 239-248

## 5.2 Uncertainty of the estimate of Emission Reductions

### Parameters and assumptions used in the Monte Carlo method

Monte Carlo simulations were generated using Excel. Including all the parameters highlighted in the section below and the probability density functions justified in the table, 16,000 random values for each parameter were generated. While often MC simulations involve 10,000 values, we forced the number of values to the maximum limit allowed by Excel, to reduce the small deviations coming out from different runs. Although full stability of estimates was still not achieved, final ER uncertainties were seen to deviate with maximum values 0.2% every time random values are refreshed, which was considered precise enough for the uncertainty reporting, given that these deviations are always far from crossing the resulting uncertainty discount threshold for 12%. Following IPCC (2006) chapter 3, Ghana deemed that only two parameters needed non-Gaussian (i.e., non-normal) PDF's (see table below): those regarding root-to-shoot ratios, and those regarding canopy cover reduction for the detection of forest degradation. Since non-normal PDFs are used, the Monte Carlo approach is justified. Correlations in EFs were not considered, due to a lack of within-plot uncertainty data availability. Following the guidelines, the MC approach generated trend estimates through simulation of activity data each year, while maintaining constant EFs due to assumed full correlations of EFs between years.

Table 8: Parameters in Monte Carlo

Parameter included in the model	Parameter values	Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Assumptions
<b>General factors</b>				
Ratio of molecular weights	3.667	Not applicable	Fixed	
Carbon fraction	0.470	Uncertainty ranges as provided in sources	Normal	IPCC (2006). Chapter 4. Table 4.3. Normality assumption following Chabi et al. (2019)
<b>Biomass measurements</b>				
AGB (tC /ha) Open All forest	27.4	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Chave et al. (2004)
AGB (tC /ha) Closed Wet Evergreen	81.3	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Chave et al. (2004)
AGB (tC /ha) Closed Moist Evergreen	202.9	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Chave et al. (2004)
AGB (tC /ha) Closed Moist Semideciduous SE	100.5	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Chave et al. (2004)
AGB (tC /ha) Closed Moist Semideciduous NW	75.9	Sampling error	Normal	Representative, raw data not available. Normality

				assumption as in Chave et al. (2004)
AGB (tC /ha) Closed Upland Evergreen	74.6	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Chave et al. (2004)
BGB (tC /ha) Open All forest	10.4	Sampling error	Normal	Representative, raw data not available. Normality assumption from the multiplication of a constant root:shoot ratio times AGB
BGB (tC /ha) Closed Wet Evergreen	10.5	Sampling error	Normal	Representative, raw data not available. Normality assumption from the multiplication of a constant root:shoot ratio times AGB
BGB (tC /ha) Closed Moist Evergreen	26.8	Sampling error	Normal	Representative, raw data not available. Normality assumption from the multiplication of a constant root:shoot ratio times AGB
BGB (tC /ha) Closed Moist Semideciduous SE	25.8	Sampling error	Normal	Representative, raw data not available. Normality assumption from the multiplication of a constant root:shoot ratio times AGB
BGB (tC /ha) Closed Moist Semideciduous NW	19.0	Sampling error	Normal	Representative, raw data not available. Normality assumption from the multiplication of a constant root:shoot ratio times AGB
BGB (tC /ha) Closed Upland Evergreen	24.1	Sampling error	Normal	Representative, raw data not available. Normality assumption from the multiplication of a constant root:shoot ratio times AGB
DW (tC /ha) Open All forest	20.5	Sampling error	Normal	Representative, raw data not available. Normality assumption from the mean

				estimator of independent line transects, as in Affleck et al. (2005)
DW (tC /ha) Closed Wet Evergreen	29.0	Sampling error	Normal	Representative, raw data not available. Normality assumption from the mean estimator of independent line transects, as in Affleck et al. (2005)
DW (tC /ha) Closed Moist Evergreen	18.3	Sampling error	Normal	Representative, raw data not available. Normality assumption from the mean estimator of independent line transects, as in Affleck et al. (2005)
DW (tC /ha) Closed Moist Semideciduous SE	65.8	Sampling error	Normal	Representative, raw data not available. Normality assumption from the mean estimator of independent line transects, as in Affleck et al. (2005)
DW (tC /ha) Closed Moist Semideciduous NW	38.6	Sampling error	Normal	Representative, raw data not available. Normality assumption from the mean estimator of independent line transects, as in Affleck et al. (2005)
DW (tC /ha) Closed Upland Evergreen	41.9	Sampling error	Normal	Representative, raw data not available. Normality assumption from the mean estimator of independent line transects, as in Affleck et al. (2005)
L (tC /ha) Open All forest	2.6	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Tuomi et al. (2009)
L (tC /ha) Closed Wet Evergreen	3.0	Sampling error	Normal	Representative, raw data not available. Normality

				assumption as in Tuomi et al. (2009)
L (tC /ha) Closed Moist Evergreen	3.3	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Tuomi et al. (2009)
L (tC /ha) Closed Moist Semideciduous SE	2.9	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Tuomi et al. (2009)
L (tC /ha) Closed Moist Semideciduous NW	2.4	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Tuomi et al. (2009)
L (tC /ha) Closed Upland Evergreen	1.4	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Tuomi et al. (2009)
SOC (tC /ha) Open All forest (20-year total)	10.6	Sampling error	Normal	Representative, raw data not available. Normality assumption as in the IPCC EF database ( <a href="https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php">https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php</a> )
SOC (tC /ha) Closed Wet Evergreen (20-year total)	18.2	Sampling error	Normal	Representative, raw data not available. Normality assumption as in the IPCC EF database ( <a href="https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php">https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php</a> )
SOC (tC /ha) Closed Moist Evergreen (20-year total)	18.0	Sampling error	Normal	Representative, raw data not available. Normality assumption as in the IPCC EF database ( <a href="https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php">https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php</a> )



SOC (tC /ha) Closed Moist Semideciduous SE (20-year total)	6.6	Sampling error	Normal	Representative, raw data not available. Normality assumption as in the IPCC EF database ( <a href="https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php">https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php</a> )
SOC (tC /ha) Closed Moist Semideciduous NW (20-year total)	11.8	Sampling error	Normal	Representative, raw data not available. Normality assumption as in the IPCC EF database ( <a href="https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php">https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php</a> )
SOC (tC /ha) Closed Upland Evergreen (20-year total)	17.2	Sampling error	Normal	Representative, raw data not available. Normality assumption as in the IPCC EF database ( <a href="https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php">https://www.ipcc-nggip.iges.or.jp/EFDB/ef_detail.php</a> )
post-Def LU (tC /ha) Open All forest (simplified average)	14.3	Sampling error	Normal	Representative, raw data not available. Normality assumption from error propagation between two random normal variables.
post-Def LU (tC /ha) Closed Wet Evergreen	15.2	Sampling error	Normal	Representative, raw data not available. Normality assumption from error propagation between two random normal variables
post-Def LU (tC /ha) Closed Moist Evergreen	17.0	Sampling error	Normal	Representative, raw data not available. Normality assumption from error propagation between two random normal variables
post-Def LU (tC /ha) Closed Moist Semideciduous SE	13.8	Sampling error	Normal	Representative, raw data not available. Normality assumption from error

				propagation between two random normal variables
post-Def LU (tC /ha) Closed Moist Semideciduous NW	17.6	Sampling error	Normal	Representative, raw data not available. Normality assumption from error propagation between two random normal variables
post-Def LU (tC /ha) Closed Upland Evergreen	7.9	Sampling error	Normal	Representative, raw data not available. Normality assumption from error propagation between two random normal variables
<b>Monitored values deforestation 2005-2014</b>				
AD (ha /yr) Open All forest	4,756	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Wet Evergreen	304	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Evergreen	1,728	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Semideciduous SE	1,078	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Semideciduous NW	1,171	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Upland Evergreen	160	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.

<b>Monitored values deforestation 2020 and 2021</b>				
AD (ha /yr) Open All forest	638	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Wet Evergreen	0	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Evergreen	1,272	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Semideciduous SE	1,282	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Semideciduous NW	3,101	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Upland Evergreen	159	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
<b>Planting (net areas, discounted for annual survival rates)</b>				
Area established (ha) teak 2005 (ha)	1,419	Not applicable	Fixed	
Area established (ha) teak 2006 (ha)	1,419	Not applicable	Fixed	
Area established (ha) teak 2007 (ha)	1,422	Not applicable	Fixed	
Area established (ha) teak 2008 (ha)	1,422	Not applicable	Fixed	
Area established (ha) teak 2009 (ha)	1,422	Not applicable	Fixed	

Area established (ha) teak 2010 (ha)	1,388	Not applicable	Fixed	
Area established (ha) teak 2011 (ha)	1,589	Not applicable	Fixed	
Area established (ha) teak 2012 (ha)	1,534	Not applicable	Fixed	
Area established (ha) teak 2013 (ha)	1,185	Not applicable	Fixed	
Area established (ha) teak 2014 (ha)	602	Not applicable	Fixed	
Area established (ha) non teak 2005 (ha)	608	Not applicable	Fixed	
Area established (ha) non teak 2006 (ha)	608	Not applicable	Fixed	
Area established (ha) non teak 2007 (ha)	609	Not applicable	Fixed	
Area established (ha) non teak 2008 (ha)	609	Not applicable	Fixed	
Area established (ha) non teak 2009 (ha)	609	Not applicable	Fixed	
Area established (ha) non teak 2010 (ha)	595	Not applicable	Fixed	
Area established (ha) non teak 2011 (ha)	681	Not applicable	Fixed	
Area established (ha) non teak 2012 (ha)	658	Not applicable	Fixed	
Area established (ha) non teak 2013 (ha)	508	Not applicable	Fixed	
Area established (ha) non teak 2014 (ha)	258	Not applicable	Fixed	
<b>Removal factors</b>				
Average stock AGB+BGB (tC /ha) teak	97.690	Sampling error	Normal	Representative, raw data not available. Normality

				assumption as in Chave et al. (2004)
Growth period (years) teak	25	Not applicable	Fixed	
Average stock AGB (t d.m. /ha) non teak	173.300	Sampling error	Normal	Representative, raw data not available. Normality assumption as in Chave et al. (2004)
RSR non teak	0.240	Uncertainty ranges as provided in sources	Lognormal	Representative, raw data not available. Log-normality assumption as in Mokany et al. (2006)
Growth period (years) non teak	40	Not applicable	Fixed	
<b>Removals from planting 2020 and 2021</b>				
Area planted (ha) teak 2020 & 2021 (ha)	28,944	Not applicable	Fixed	
Area planted (ha) non teak 2020 & 2021 (ha)	12,405	Not applicable	Fixed	
<b>EF forest degradation</b>				
Relative canopy cover reduction Open	0.480	Sampling error	Beta	Representative, raw data available. Beta distribution as in Ferrari & Cribari-Neto (2004) and Korhonen et al. (2007)
Relative canopy cover reduction Closed	0.299	Sampling error	Beta	Representative, raw data available. Beta distribution as in Ferrari & Cribari-Neto (2004) and Korhonen et al. (2007)
<b>Monitored values degradation 2005-2014</b>				

AD (ha /yr) Open All forest	437	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Wet Evergreen	304	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Evergreen	1,153	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Semideciduous SE	1,270	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Semideciduous NW	1,293	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Upland Evergreen	80	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
<b>Monitored values degradation 2020 &amp; 2021</b>				
AD (ha /yr) Open All forest	1,283	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Wet Evergreen	606	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Evergreen	1,276	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.

AD (ha /yr) Closed Moist Semideciduous SE	3,777	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Moist Semideciduous NW	4,317	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.
AD (ha /yr) Closed Upland Evergreen	319	Sampling error	Normal	Representative, raw data available. Central limit theorem: binomial approaches normal.

References quoted in Table 8 above :

- Chabi, A., Lautenbach, S., Tondoh, J. E., Orekan, V. O. A., Adu-Bredu, S., Kyei-Baffour, N., ... & Fonweban, J. (2019). The relevance of using in situ carbon and nitrogen data and satellite images to assess aboveground carbon and nitrogen stocks for supporting national REDD+ programmes in Africa. *Carbon Balance and Management*, 14(1), 1-13.
- Chave, J., Condit, R., Aguilar, S., Hernandez, A., Lao, S., & Perez, R. (2004). Error propagation and scaling for tropical forest biomass estimates. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 359(1443), 409-420.
- Affleck, D. L., Gregoire, T. G., & Valentine, H. T. (2005). Design unbiased estimation in line intersect sampling using segmented transects. *Environmental and Ecological Statistics*, 12(2), 139-154.
- Tuomi, M., Thum, T., Järvinen, H., Fronzek, S., Berg, B., Harmon, M., ... & Liski, J. (2009). Leaf litter decomposition—estimates of global variability based on Yasso07 model. *Ecological Modelling*, 220(23), 3362-3371.
- Mokany, K., Raison, R. J., & Prokushkin, A. S. (2006). Critical analysis of root: shoot ratios in terrestrial biomes. *Global Change Biology*, 12(1), 84-96.
- Ferrari, S. & Cribari-Neto, F. 2004. Beta regression for modelling rates and proportions. *Journal of Applied Statistics* 31(7): 799–815.
- Korhonen, L., Korhonen, K. T., Stenberg, P., Maltamo, M., & Rautiainen, M. (2007). Local models for forest canopy cover with beta regression. *Silva Fennica* 41(4), 671-685

The following summarizes the selection of PDF through testing the goodness of fit:

- Deforestation area: Deforestation area is measured through binary observations of deforestation / no-deforestation over a large number of sample plots. The total deforestation area corresponds to the counts of deforestation observations multiplied with an area factor. Such binary observations are, evidently, binomially distributed, a formal goodness-of-fit test is not necessary. The probability of deforestation is then calculated from several thousand such binary distributions. Since it is the sum of a large number of

random variables, it is normally distributed. The simulation of the deforestation area can therefore employ a normal distribution with the sample mean and its standard error as coefficients.

- Root-to-shoot ratio for removal factors in non-teak: Root-to-shoot ratios tend to follow lognormal distributions. The mean value was taken from the refined IPCC (2019) default tables, which take them from Mokany et al. (2006). The IPCC tables take a SE value with asymmetric extreme values due to the lognormality of residuals stated by Mokany et al. (2006). Both mean and SE are used to calculate the lognormal distribution, after which values are backtransformed to natural (antilog) scales.
- Relative canopy cover reduction: The relative canopy cover reduction upon forest degradation was measured for 137 sample locations. A sample mean and sample standard deviation could be estimated. In a first step, five statistical distributions were tested for their goodness of fit (normal, exponential, Poisson, uniform and beta), with the beta distribution having the best chi-squared statistic. It was therefore chosen to most accurately represent the distribution of relative canopy cover reduction. In a second step, the fitted beta distribution was employed to simulate the means over 137 sample locations for 1000 iterations. In a third step, the resulting statistical distribution of 1000 sample means was again fitted to the beta distribution, which could be used for the Monte Carlo model.
- Forest degradation area: The same reasoning applies as for the deforestation area as the same measurement approach was used.

### Quantification of the uncertainty of the estimate of Emission Reductions

In table 8 below the emission reduction estimates in the first column include forest degradation. For the uncertainty discount, the value of the aggregate estimate in the first column has been used.

Table 9: Quantification of Uncertainty of the estimate of ERs

		Reporting Period	Crediting Period
<b>A</b>	<b>Median</b>	4,509,217	5,766,251
<b>B</b>	<b>Upper bound 90% CI (Percentile 0.95)</b>	7,855,811	9,312,661
<b>C</b>	<b>Lower bound 90% CI (Percentile 0.05)</b>	1,398,464	2,506,059
<b>D</b>	<b>Half Width Confidence Interval at 90% (B – C / 2)</b>	3,228,673	3,403,301
<b>E</b>	<b>Relative margin (D / A)</b>	72%	59%
<b>F</b>	<b>Uncertainty discount</b>	12%	8%

### 5.3 Sensitivity analysis and identification of areas of improvement of MRV system



Referring to criterion 7 and indicators 9.2 and 9.3 of the Methodological Framework and the Guideline on the application of the Methodological Framework Number 4 On Uncertainty Analysis of Emission Reductions, a sensitivity analysis was undertaken to identify the relative contribution of each parameter to the overall uncertainty of Emission Reductions. The sensitivity analysis was conducted by “switching off” the sources of uncertainty one at a time and assessing the impact on the overall uncertainty of emission reductions.

The results of the sensitivity analysis were the following:

Scenario	ER Uncertainty 90%	Difference to ER Uncertainty 90% of all parameters
All parameters	71.6%	0.0%
No Deforestation	21.4%	50.2%
No Forest degradation	64.7%	6.9%
No Enhancement	71.6%	0.0%
No EF	62.7%	8.9%
No AD	25.0%	46.6%
No Deforestation AD	21.4%	50.2%
No Deforestation EF	61.7%	9.9%
No Forest degradation AD	64.8%	6.8%
No Forest degradation EF	67.7%	3.9%
No Enhancement AD	71.6%	0.0%
No Enhancement EF	68.2%	3.4%

The difference in the uncertainty of emissions reductions (right column in the table) with respect to the uncertainty in the reference level where all parameters are considered clearly shows a possible hierarchy of parameter importance when it comes to consideration of important error sources open for improvement in monitoring. Improvements in AD estimation have, for example, the potential to reduce the current ER uncertainty by 43% (overall ER uncertainty for all parameters being 68.0% vs. overall ER uncertainty when AD presents no errors being 25%). Given this prioritization, several overall improvements can be perceived.

Improved monitoring of activity data is likely to largely contribute to uncertainty decreases in emission reductions; higher-resolution imagery will likely be available for future years. Again, Ghana’s current Standard Operating Procedures for area estimation reinforce the training of interpreters to minimize both systematic and random errors in area estimation:



## **6 TRANSFER OF TITLE TO ERs**

### **6.1 Ability to transfer title**

The ability of the Forestry commission (FC) to transfer title of Emission Reductions is clear and there is no contesting party to that effect. Evidence demonstrating the FC's ability to transfer title has already been submitted to the Carbon Fund via letter referenced FC/A.10/sf.21/v.6/139 dated 3<sup>rd</sup> February 2020 ( attached as appendix 1). The FC has transferred the verified and validated Emission Reductions (ERs) for the first monitoring report under the Emission Reductions payment Agreement with the Carbon Fund through the International Bank for Reconstruction and Development (IBRD)

### **6.2 Implementation and operation of Program and Projects Data Management System**

Currently in Ghana, no entity has the right to claim<sup>21</sup> ownership of title to ERs. Therefore, there is no threat of multiple claims to an ER title. The Forestry Commission working in close collaboration with the Ghana Cocoa Board is authorized by the Government of Ghana through the Minister of Finance to implement the Program. There are currently two VCS registered projects, but they are both outside of GCFRP.

The FC has developed a Ghana REDD+ Data Hub ( [www.ghanaredddatahub.org](http://www.ghanaredddatahub.org)) that provides information on the Program including details on the geographic boundaries of the program, the carbon pools, and the reference level. The reference level has subsequently been amended. The data hub would display the amount of ERs that would be transferred to the Carbon Fund with the associated reversal and uncertainty buffer accounts. This would ensure transparency of the process.

### **6.3 Implementation and operation of ER transaction registry**

The Government of Ghana, through the FC, has communicated to the Carbon Fund to use the FCPF's ER Transaction Registry, so the responsibilities of the Registry Administration and buffer management will fall on the trustee of the Carbon Fund. As of now, within the program area, there are no existing carbon projects that are generating Carbon Credits. It must however be mentioned that there are two outside the Program Area that have been issued Carbon Credits by Verra. Ghana therefore checks the Verra Registry to monitor the issuances to know how much credits are being issued to the two projects.

Again, the Forestry Commission has a plantation database that captures the hectareage of all public and private plantations so even though the VCS projects are not accounted for in the GCFRP area, they are captured under the National Plantation database as the FC is in charge of managing forest plantation requests and supervises both on and off reserve plantations. Fortunately VCS projects are within Forest Reserves and their adjoining areas, FC is well aware and also have documentation with the land owners.

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<sup>21</sup> There exist two registered ARR Projects by Form Ghana and Miro Ghana, but these are all outside the GCFRP area.

That notwithstanding, as part of efforts to avoid double counting, Ghana will soon develop an interoperable registry to track all forest sector transactions in the country. Specifically, the Registry will be interoperable with Ghana's Nationally Determined Contributions (NDCs) registry which tracks all projects in both inside and outside the NDCs.

Moreover, in line with Ghana's Article 6 Framework operationalization<sup>22</sup>, all forest sector projects are suppose to register with the Forestry Commission before issuance are done so as to record such forest carbon projects in Ghana's GreenHouse Gas Inventory in line with the Enhanced Transparency framework of the Country. This will help track projects that issue carbon credits in Country.

As the UNFCCC Focal Point in Ghana, the Environmental Protection Agency will be engaged in the development of the development of Registry. Other key institutions include those identified in the MRV institutional arrangement as indicated in Figure 2 above.

The goal to develop Ghana's Registry has also come at the time when the World Bank is consulting to help countries develop their own National Registries, and we intend to take advantage of that. Lessons from the FCPF registry will be used to guide the development of such the registry.

In the meantime, the REDD data hub ([www.ghanaredddatahub.org](http://www.ghanaredddatahub.org)) has been developed to collect information on projects that are inside the GCFRP area. At ERPA signing, Ghana knew there were no existing projects in the Program Area and have therefore not recorded any other Projects. Again, because of the sustained engagements on the GCFRP, potential proponents are well informed on the fact that NO credits can be issued within the Program area for the World Bank ERPA period.

#### **6.4 ERs transferred to other entities or other schemes**

No ERs has been transferred to a third party. After the verification and Validation of the Monitoring Report (MR), all the volume would be transferred on 100% basis in line with the ERPA. No ERs would be transferred to third parties until the contractual ERs under the ERPA are met.

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<sup>22</sup> [chrome-extension://efaidnbmnnnibpcajpcgclefindmkaj/https://cmo.epa.gov.gh/wp-content/uploads/2022/12/Ghana-Carbon-Market-Framework-For-Public-Release\\_15122022.pdf](https://efaidnbmnnnibpcajpcgclefindmkaj/https://cmo.epa.gov.gh/wp-content/uploads/2022/12/Ghana-Carbon-Market-Framework-For-Public-Release_15122022.pdf)

## 7 REVERSALS

### 7.1 Occurrence of major events or changes in ER Program circumstances that might have led to the Reversals during the Reporting Period compared to the previous Reporting Period(s)

There have not been any major events or changes in ER Program circumstances that have led to the Reversals during the Reporting Period

### 7.2 Quantification of Reversals during the Reporting Period

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### 7.3 Reversal risk assessment

The reversal risk assessment using the CF Buffer Guidelines has changed from 18% to 13% since the preparation of the revised final ERP. The change is due to the risks associated with institutional capacity for implementation and sustainability. The risk was reduced due to several implementations that strengthen the institutional capacity for implementation as outlined in the table below:

Table 10: Reversal Risk Assessment

Risk Factor	Risk indicators	Default Reversal Risk Set-Aside Percentage	Discount	Resulting reversal risk set-aside percentage
Default risk	N/A	10%	N/A	10%
Lack of broad and sustained stakeholder support	There is low stakeholder risk as the programme has clearly identified its main stakeholders and a high degree of formal and informal consultations were undertaken during the design phase (reference ERP Section 5 pgs 70-81). Extensive further engagements /consultations/capacity building on specific issues (Benefit Sharing, Safeguards, governance) have continued across the HIAs ( <a href="https://reddsis.fcghana.org/documents.php">https://reddsis.fcghana.org/documents.php</a> ) In line with the program design, the in-depth participation of cocoa farmers, their rural communities, women, and the private sector and	10%	Reversal risk is considered low  10%-10%=0% discount	0%

	<p>farmer associations, and the HIA-Consortium structure ensures a high degree of buy-in. This is evident in the development of governance structures for 5 out of 6 HIAs (details in 1.1 above)</p> <p>There was a risk that broad support would not be provided during the early phase of implementation, this risk was mitigated early in the project cycle through official launch of the programme by the President of Ghana<sup>23</sup>, broad community consultation involving all stakeholders, especially traditional authorities, community elders, and other key persons. The consultation process served to manage community expectations, increase ownership, inclusiveness, and ensure sustainability while garnering broad community support ( refer to table 1 which gives further details of work in the various HIAs). These activities were buttressed by the implementation of safeguards and grievance redress mechanisms under the programme (details of safeguards and grievance redress mechanisms in annexes 1 &amp;2).</p> <p>In addition the existence of the following mitigates this risk:</p> <ul style="list-style-type: none"> <li>• Benefit Sharing Plan, which is being operationalized</li> <li>• Existence of Process Framework Document</li> <li>• Signing of Memorandum of Understanding with partner institutions<sup>24</sup></li> </ul>			
<p><b>Lack of institutional capacities and/or ineffective vertical/cross sectorial coordination</b></p>	<p>The risks associated with institutional capacity for implementation and sustainability are listed as low. At the start of REDD+ and the GCFRP in Ghana, institutional capacity was relatively low, however, capacity is being strengthened through numerous trainings and workshops (<a href="https://reddsis.fcghana.org/documents.php">https://reddsis.fcghana.org/documents.php</a><a href="https://reddsis.fcghana.org/documents.php">https://reddsis.fcghana.org/documents.php</a>) at the National and landscape levels, and Ghana’s capacity to implement this programme has further improved.</p>	<p><b>10%</b></p>	<p>Reversal risk is considered low: 10% - 10% = 0% discount</p>	<p>0%</p>

<sup>23</sup> <https://www.ghanaweb.com/GhanaHomePage/business/Ghana-signs-agreement-with-cocoa-and-chocolate-companies-to-protect-and-restore-forests-1234705>

<sup>24</sup> <https://www.confectionerynews.com/Article/2021/04/15/Cocoa-companies-forge-new-partnership-with-Ghana-to-protect-and-restore-forests>

	<p>For example, in the past, there was weak cross-sectoral coordination amongst the lead institutions, the Forestry Commission and the Ghana Cocoa Board. This has now changed as evidenced by the coordination required to design and implement this programme as well as the Forest Investment Program (FIP). Moreover, The CEOs of the FC and Cocobod sign the framework agreements with the HMBs</p> <p>Since the GCFRP began, Ghana continues to identify interventions<sup>25</sup>/initiatives (cocoa &amp; forest Initiative), which enhance annual work planning and budgeting across sectors and projects operating within the GCFRP. In addition, the program has sought to enhance safeguards implementation (annex 1 of this report) and has ensured delivery of operational and coordination requirements.</p> <p>Finally, the programs strategy focuses on interventions in decentralized deforestation hotspots (table 1), which given the emissions reductions reported in this document highlights that the program has successfully mitigated the risk associated with institutional capacity.</p> <p>In addition, the following also mitigate this risk</p> <ul style="list-style-type: none"> <li>• Forestry Commission and Ghana cocoa Board Regional and District Offices are located in all the programme areas and thus have the requisite staff to execute the programme and coordinate activities at the landscape level</li> <li>• FC has lots of experiences in the implementation of projects that involve other agencies in Ghana. The projects include the Forest Investment Programme, Natural resources Environment Programme, Sustainable Land and water Management Project )</li> <li>• Existence of the GCFRP Implementation Committee with membership from FC, Cocobod and World Cocoa Foundation to guide operational activities</li> </ul>			
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<sup>25</sup> <http://reddsis.fcghana.org/projects.php?id=4> ,

	<p>As part of operationalizing Ghana’s Benefit Sharing Plan (BSP)<sup>26</sup>, a consultant was procured to develop a Fund Flow Mechanism to guide the disbursement of Carbon Payments to the Beneficiaries as stipulated in the BSP. Subsequently, the Consultant has completed the work. Therefore, with guidance from the FFM, Ghana has distributed the first carbon Payment to community beneficiaries.</p> <p>The Hotspot Management Boards have been set up for the five HIAs</p> <p>In the addition to the above, in the years under review, the following activities have been undertaken to deepen the institutional capacities</p> <p>Broadened engagement with the development of governance structures for 5 out of the 6 HIAs and the signing of Framework agreements with the 5</p> <ul style="list-style-type: none"> <li>• Experience in collaboration between private sector and government agencies</li> <li>• Set of all REDD+ Dedicated Account at the national level as well as HIA accounts at the sub national level for onward transfer of Carbon Payments</li> <li>•</li> <li>• Capacity building of functional governance structures to prepare them adequately for the administration and disbursement of Carbon Payments<sup>27</sup>.</li> <li>• Trainings carried by the World Bank on Safegurads for all landscape actors ; details from annex 1</li> <li>• Good institutional arrangements for the development of Second MR, as a follow up to the first MR; details can be found in Section 2 of this report. Kindly refer to 'Table 3' that</li> </ul>			
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<sup>26</sup> Kindly refer to annex 6 of Ghana’s BSP for the consultant’s Terms of Reference.

<sup>27</sup> <https://reddsis.fcghana.org/documents.php>



	indicates the roles and responsibilities of the various institutions			
<b>Lack of long term effectiveness in addressing underlying drivers</b>	<p>The programme interventions have directly focused efforts on two of the main drivers and agents of deforestation and degradation in the region (cocoa/subsistence farming and unsustainable logging).</p> <p>The risks from cocoa farming and subsistence agriculture have been mitigated through the direct engagement of agents in programme interventions through the formation of the HMBs and signing of framework agreements (table 1) These agents are also unlikely to migrate within or outside the program area and thus the risk of displacement is low. This is because Cocoa production mainly thrives in the Programme area in Ghana<sup>28</sup></p> <p>Risks associated with illegal logging was considered low. As indicated in the ERPD, the risk of illegal logging is mitigated by both hard and soft approaches. The FC has increased its law enforcement role by deploying the Rapid Response Unit to augment the roles of Resource Guards in flash points where there are constant reports of illegal logging. As part of the VPA FLEGT process, there has been a reform in the regulation of timber utilization in Ghana, thus there is a new legislative Instrument to regulate the utilization of timber resources (<a href="http://www.fao.org/faolex/results/details/en/c/LEX-FAOC173919/">http://www.fao.org/faolex/results/details/en/c/LEX-FAOC173919/</a>).<a href="http://www.fao.org/faolex/results/details/en/c/LEX-FAOC173919/">http://www.fao.org/faolex/results/details/en/c/LEX-FAOC173919/</a>). Through this process, there is a legal assurance for timber production and utilization in Ghana. Ghana looks forward to issuing the first FLEGT License in 2024<sup>29</sup>.</p> <p>Also, as part of the by-laws of HMBs, they assist in the protection of the forest resources</p> <p>The risk from illegal small-scale mining was also considered medium. Landowners were not considered migratory, though some of the agents were. Increased income from climate-smart agriculture and other benefits is helping to mitigate the opportunity cost.</p>	<b>5%</b>	Reversal risk is considered Medium: 5% - 2% = 3% discount	<b>3%</b>

<sup>28</sup> Ghana Cocoa Board Research and Monitoring Department.

<sup>29</sup> <https://mlnr.gov.gh/index.php/ghana-to-become-first-african-country-to-issue-flegt-license/>

	<p>Again, Government has also introduced community mining schemes<sup>30</sup> to guide community level mining in sustainable manner.</p> <p>In addition, lessons learnt from the successful implementation of the FIP which is a pilot to the GCFRP are being used to address the underlying drivers (provision of Alternative/ additional livelihood options, key legislative reforms).</p> <p>The REDD+ strategy and the ERPD give a clear direction (at least 20 years) on the implementation of the program beyond the ERPA period.</p> <p>The program primarily targets sustainable cocoa productions and this commodity is a high exchange earner for Ghana. Therefore, governments always pay attention to this sector and hence the programme would persist the ERPA period.</p>			
<p><b>Exposure and vulnerability to natural disturbances</b></p>	<p>This risk associated with natural disturbances remains low. The main natural risk in the GCFRP accounting area is forest fires. Generally, the occurrence of uncontrolled forest fires may happen as a result of illegal practices related to , land clearing, charcoal production, and as a result of dry years (El Nino events).</p> <p>The programme has mitigated the risk of forest fires by strengthening fire management and control units at the Forestry Commission, district assemblies, and fire volunteers etc.</p> <p>The FC also implemented the Wild Fire Management Project (2000-2008) and has therefore gained lots of experience in the management of wildfires in Ghana.</p> <p>A Manual of Procedure to guide FC staff in the management of fires has also been produced.</p> <p>Better land use planning with the development and operationalization of HIA management plans would ensure forests remain healthy and less susceptible to</p>	<p><b>5%</b></p>	<p><i>Reversal risk is considered Low</i></p> <p>5% - 5% =0%</p>	<p>0%</p>

<sup>30</sup> <https://presidency.gov.gh/index.php/briefing-room/news-style-2/1653-new-community-mining-schemes-to-create-12-000-jobs-at-aboso-gwira-akango-president-akufo-addo>

	<p>fires. The HIA management plans for both Juaboso/Bia and Asutifi/Asunafo HIAs are ready.</p> <p>Again, the promotion of Climate Smart Cocoa practices is one of the pillars of this programme and this would mitigate the effect of climate change on cocoa production systems (ERPD page 55).</p>			
		<b>Total reversal risk set-aside percentage</b>		13%
		<b>Total reversal risk set-aside percentage from ER-PD or previous monitoring report (whichever is more recent)</b>		13%

## 8 EMISSION REDUCTIONS AVAILABLE FOR TRANSFER TO THE CARBON FUND

Table 11: Emission reductions available for transfer to the carbon fund

A.	Emission Reductions during the Reporting period (tCO <sub>2</sub> -e)	<i>from section 4.3</i>	4,413,741
B.	If applicable, number of Emission Reductions from reducing forest degradation that have been estimated using proxy-based estimation approaches (use zero if not applicable)		-
C.	Number of Emission Reductions estimated using measurement approaches (A-B)		4,413,741
D.	Percentage of ERs (A) for which the ability to transfer Title to ERs is clear or uncontested	<i>from section 6.1</i>	100%
E.	ERs sold, assigned or otherwise used by any other entity for sale, public relations, compliance or any other purpose including ERs accounted separately under other GHG accounting schemes or ERs that have been set-aside to meet Reversal management requirements under other GHG accounting schemes .	<i>From section 6.4</i>	-
F.	Total ERs (B+C)*D-E		4,413,741
G.	Conservativeness Factor to reflect the level of uncertainty from non-proxy based approaches associated with the estimation of ERs during the Crediting Period	<i>from section 5.2</i>	12%
H.	Quantity of ERs to be allocated to the Uncertainty Reversal Buffer $(0.15*B/A*F)+(G*C/A*F)$		529,648

I	<b>Total reversal risk set-aside percentage applied to the ER program</b>	<i>From section 7.3</i>	13%
J	<b>Quantity of ERs to allocated to the Reversal Buffer (F-H)*(I-5%)</b>		310,728
K	<b>Quantity of ERs to be allocated to the Pooled Reversal Buffer (F-H)*5%</b>		194,204
L	<b>Number of FCPF ERs (F-H-J-K).</b>		3,379,161

## ANNEX 1: INFORMATION ON THE IMPLEMENTATION OF THE SAFEGUARDS PLANS

### I. Requirements of FCPF on Managing the Environmental and Social Aspects of ER Programs

The goal of safeguards implementation under the scope of the Ghana Cocoa Forest REDD+ Program (GCFRP) is to primarily meet the World Bank's social and environmental safeguard policies which are aligned with UNFCCC safeguard guidance related to REDD+ (Cancun Safeguards), African Development Bank Safeguards as well as National Safeguards according to the Environmental Assessment Regulations 1999(LI 1652). In line with this, a Strategic Environmental and Social Assessment (SESA) was conducted, which led to the development of the Environmental and Social Management Framework (ESMF) and Resettlement and Policy Framework (RPF) to ensure that safeguards measures are integrated into the entire GCFRP process.

#### **Strategic Environmental and Social Assessment (SESA)**

A Strategic Environmental and Social Assessment (SESA)<sup>31</sup> was conducted in 2014 and updated in 2016 to understand better the social and environmental issues within the Ghana Cocoa Forest REDD+ Programme (GCFRP) area. The SESA was undertaken with the aim of mainstreaming sustainable development principles into the REDD+ strategy options. The SESA process went through a wider stakeholder consultative process from sub-national consultations to national validation workshops (number of stakeholders consulted can be found in annex 1 of the first monitoring report).

The SESA addresses the following strategy options that are relevant to the GCFRP through its implementation plan. These are:

- i. Improving the quality of multi-stakeholder dialogue and decision-making
- ii. Clarifying the rights regime
- iii. Addressing unsustainable timber harvesting
- iv. Mitigating effects of agricultural expansion (particularly cocoa in the High Forest Zone - HFZ)
- v. Strengthening local decentralized management of natural resources (developing governance structures)
- vi. Expansion of high biomass agroforestry /tree crops systems

#### **World Bank Operational Policies (OPs)**

The following World Bank Operational Policies (OPs) were triggered during the SESA process;

- OP 4.01 Environmental Assessment; improve decision making to ensure that project options are sound and sustainable, while adverse effects are mitigated;
- OP 4.04 Natural Habitats; promote environmentally sustainable development by supporting the rehabilitation of natural habitats;
- OP 4.36 Forests; Ensure that forest restoration projects maintain or enhance biodiversity and ecosystem functionality;

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<sup>31</sup> Link to SESA report - <https://reddsis.fcghana.org/admin/controller/publications/SESA%20Final%20Report-Safeguard-Final%20SESA%20Report-Dec%202017.docx>

- OP 4.09 Pest Management; Support integrated approaches to pest management
- OPN 11.03 Physical Cultural Resources; Inventory of potential cultural resources likely to be affected;
- OP 4.12 Involuntary Resettlement: Assist displaced persons in their effort to improve or at least restore their standards of living;

These Safeguards instruments produced during the SESA process have been disclosed in national dailies, stakeholder engagements, and on the Safeguards Information System (SIS) web platform<sup>32</sup>.

### **Environmental and Social Management Framework (ESMF)**

Ghana Cocoa Forest REDD+ Program's Environmental and Social Management Framework (ESMF) specifies appropriate roles and responsibilities and outlines the necessary reporting procedures for managing and monitoring environmental and social concerns related to project interventions.

Specifically, the objectives of the ESMF are to:

- Establish clear procedures and methodologies for the environmental and social assessment, review , approval and implementation of interventions identified by the REDD+ Strategy;
- Specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to project interventions;
- Determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF; and
- Provide practical information on resources for implementing the ESMF.

The ESMF is being executed by FC in collaboration with other partners such as Ghana Cocoa Board (Cocobod), Environmental Protection Agency (EPA), Ministry of Lands and Natural Resources (MLNR), Ministry of Food and Agriculture (MoFA), Ministries, Departments and Agencies (MDAs), Metropolitan Municipal and District Assemblies (MMDAs), Private sector partners, NGOs/CSOs. The FC is the lead government institution implementing REDD+ and coordinating the implementation of the ESMPs prepared for the HIAs. The National REDD+ Secretariat led by the Director - Climate Change at FC is responsible for coordinating all REDD+ Safeguards activities.

The ESMF has been operationalized by developing HIA specific ESMPs to guide the effective implementation of safeguards for each sub-project under the REDD+ Programme.

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<sup>32</sup> Link to the safeguards instruments-

<https://reddsis.fcghana.org/admin/controller/publications/ESMF%20GCFRP%20Clean%20for%20RSA%20cleared-Safeguard-ESMF%20GCFRP%20Clean%20for%20RSA%20cleared%20and%20for%20disclosure.doc>

[https://reddsis.fcghana.org/admin/controller/publications/Resettlement%20Policy%20Framework%20\(RPF\)%20for%20GCFRP-Safeguard-RPF%20GCFRP%20RPF%20November%202018%20Final.docx](https://reddsis.fcghana.org/admin/controller/publications/Resettlement%20Policy%20Framework%20(RPF)%20for%20GCFRP-Safeguard-RPF%20GCFRP%20RPF%20November%202018%20Final.docx)

### **Resettlement Policy Framework (RPF)**

The Resettlement Policy Framework (RPF) prepared in compliance with OP 4.12 provides guidance on how involuntary resettlement issues should be dealt with and how project affected persons should be compensated. In the end, such persons should not be “*worse-off if not better off*” after the resettlement.

The RPF was produced in response to the triggered WB OP 4.12 on involuntary resettlement. It is designed for subprojects that may entail involuntary resettlement, acquisition of land, impact on livelihood, or restricted access to natural resources. It provides guidance on how to address compensation issues as related to affected properties/livelihoods including land and income generation activities during Project implementation.

The objectives of the RPF are to:

- Ensure the smooth implementation of the GCFRP with regard to social impacts such as:
  - Involuntary Resettlement,
  - acquisition of land,
  - impacts on socio-cultural resources
  - impacts on livelihoods or
  - Restricted access to Natural Resources
- Ensure local participation for social cohesion and sustainability of the interventions
- Identification of national policies, laws and regulations that need to be complied with, and also gaps between these national policies, laws and regulations and the World Bank safeguard policy on involuntary resettlement

The FC does not anticipate any involuntary resettlement during the ERPA period.

However, for illegal farms, farmers would be given the opportunity to rehabilitate the farms for a period of 10 years to gradually take them out of the forest reserves. This would be done through the Modified Taungya System, where farmers would plant trees through their farms.

During the governance development processes in the Juaboso-Bia and Kakum HIAs, some farmers indicated that, they may want to voluntarily move out of encroached portions of forest reserves.

Therefore, together with all key stakeholders, a pathway, which includes a socio-economic baseline studies would be developed.

There were two (2) other SESA documents produced under the Forest Investment Programme (FIP). The FIP is a pilot programme under the GCFRP that seeks to address the underlying drivers of deforestation and catalyze transformational change by providing upfront investment to support the implementation of the REDD+ Strategy and generate information and experience for policy and regulatory changes with the aim of reducing the emissions of Green House Gas (GHG) within the Land Use, Land Use Change and Forestry (LULUCF) sector in Ghana.

The documents are:

- I. *Process Framework (PF)*<sup>33</sup>-

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<sup>33</sup> <https://www.reddsis.fcghana.org/admin/controller/publications/Updated-PF-GFIP-AF.pdf>



The PF establishes a process by which potentially affected communities are engaged in the design of project components, determination of measures necessary to achieve involuntary resettlement policy objectives and implementation as well as monitoring of relevant project activities

The objectives of the PF are to

- Determine measures necessary to achieve resettlement policy objectives and implementation.
- Monitor relevant project activities linked to PF.

## *II. Pest Management Plan (PMP)*

The specific objective of the PMP is to promote the use of biological and environmental control methods for pest management and reduce the use of synthetic pesticides to ensure the health and environmental hazards associated with pesticides are minimized.

Specifically, the procedures and steps in the PF guide inclusive and transparent stakeholder consultations as well as collective decision making by all stakeholders. The principles on appropriate pest management approaches and chemical pesticide thresholds and applications are also used to prevent pollution to near-by water bodies as a result of run-off.

### **REDD+ Safeguards Implementation Arrangements**

The National REDD+ Focal Point doubles as the REDD+ National safeguards Focal Person, and has the following roles and responsibilities:

- Coordinating environmental and social safeguards across all projects and programmes.
- Working closely with regional and district Safeguards Focal Persons for the implementation of safeguards;
- Providing guidance and project-level information and tools on safeguards for all stakeholders.
- Coordinating all safeguard activities with donors, implementing agencies and other potential investors.
- Overseeing all environmental and social safeguard training and capacity building.

There is also a functional REDD+ Safeguards Sub-Working Group (SSWG) which is a multi-stakeholder technical and advisory forum created to provide guidance and supervision for the effective implementation of REDD+ Safeguards in Ghana. The SSWG is made up of government (FC, COCOBOD, EPA, Minerals Commission), NGOs/CSOs and private sector.

The specific role of the SSWG is to facilitate, promote and supervise the development and effective implementation of REDD+ safeguard instruments in a transparent, inclusive and participatory manner. The SSWG constitutes one of the robust arms in the institutional arrangements set up during Readiness, and they have been very instrumental in ensuring the full and active participation of relevant stakeholders in all consultations regarding REDD+, both general and specific, in the program. The SSWG met twice during the Monitoring Period. Minutes can

be

found

here:

<https://www.dropbox.com/scl/fo/leid5h67ukb1ufo41fqte/h?rlkey=adh9mv5faxpnl6swjj8y0fysh&dl=0>

There are REDD+ Safeguards Focal Persons (SFPs) from the Forestry Commission District Offices from all 7 administrative regions and 23 forest districts and 2 National Parks within the programme area who have been selected and trained to support the implementation of safeguards. The SFPs have been trained in the application (both theory and practical) of the WB Safeguards instruments, Cancun safeguards and national safeguards during program implementation. Four (4) major trainings were held for SFPs. Table 7 provides modules, objectives, location and periods in which the trainings were undertaken. In addition, safeguards teams (comprising institutions other than the FC to enhance transparency and inclusivity) are also set up at the District levels to assist the District Safeguards Focal Person (DSFP) in undertaking safeguards implementation and monitoring. Training Reports can be found here: <https://reddsis.fcghana.org/documents.php>

Safeguards are a topic covered in almost every REDD+ training workshop. The training covers the country's approach to safeguards, the safeguards instruments developed, safeguards implementation and compliance, and monitoring and reporting. As such, stakeholders' capacities are continuously built on the topic of safeguards, and this ensures higher instances of addressing and respecting safeguards.

Table 12: Capacity building programs held for SFPs

PROGRAM	MODULES	OBJECTIVES	LOCATION/ VENUE	DATE
Training on safeguards for REDD+ regional and district focal persons	<ul style="list-style-type: none"> <li><i>Ghana's REDD+ Safeguards instruments</i></li> <li><i>Country Approach to REDD+ Safeguards</i></li> <li><i>Modalities for Feedback and Grievance Redress Mechanism (FGRM) under REDD+</i></li> <li><i>REDD+ Safeguards Monitoring and reporting.</i></li> </ul>	<ul style="list-style-type: none"> <li>Training on REDD+ Safeguards (WB Safeguards Instruments, Cancun Safeguards, etc) for the SFPs</li> <li>To train SFPs on the application of Principles, Criteria and Indicators (PCIs) developed for GCFRP Safeguards monitoring.</li> <li>To train SFPs on operationalizing the GCFRP FGRM at the landscape level</li> <li>To guide SFPs on how to conduct REDD+ Safeguards monitoring and reporting.</li> <li><i>To train SFPs on the development and application of Safeguards Action Plans, monitoring and reporting</i></li> </ul>	Anita Hotel, Kumasi	7 <sup>th</sup> , 8 <sup>th</sup> & 22 <sup>nd</sup> February 2018
Refresher training on safeguards for safeguards focal person (and team) in the Juaboso-Bia HIA under the 3PRCL Project	<ul style="list-style-type: none"> <li><i>Ghana's REDD+ Safeguards instruments</i></li> <li>Principles Criteria and Indicators</li> <li>Development of Safeguards Action Plans</li> <li><i>REDD+ Safeguards Information System (SIS)</i></li> </ul>	<ul style="list-style-type: none"> <li>Training on safeguards and sensitization on the PCIs</li> <li>Training on safeguards data collection</li> <li>Sensitization on the SIS web platform</li> <li>Training on gender responsive activity planning</li> </ul>	Juaboso-Bia	21 <sup>st</sup> – 23 <sup>rd</sup> May, 2019

PROGRAM	MODULES	OBJECTIVES	LOCATION/ VENUE	DATE
	<ul style="list-style-type: none"> <li>• <i>REDD+ Safeguards Monitoring and reporting.</i></li> <li>• REDD+ Feedback and Grievance Redress Mechanism (FGRM) operationalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Sensitization and operationalization of the FGRM</li> </ul>		
Training on the functions of Ghana's SIS web platform and FGRM	<ul style="list-style-type: none"> <li>• <i>REDD+ Safeguards Information System (SIS)</i></li> <li>• <i>REDD+ Safeguards Monitoring and reporting.</i></li> <li>• <i>REDD+ Feedback and Grievance Redress Mechanism (FGRM) operationalisation</i></li> </ul>	<ul style="list-style-type: none"> <li>• Training on the functions of the SIS web platform</li> <li>• To guide SFPs on how to conduct REDD+ Safeguards monitoring and reporting.</li> <li>• To train SFPs on operationalizing the GCFRP FGRM at the landscape level</li> </ul>	Forestry Commission Training Centre (FCTC), Akyawkrom	19 <sup>th</sup> - 20 <sup>th</sup> June, 2019
Refresher training on safeguards for safeguards focal person (and team) in the Juaboso-Bia HIA	<ul style="list-style-type: none"> <li>• <i>REDD+ Safeguards Information System (SIS)</i></li> <li>• <i>REDD+ Safeguards Monitoring and reporting.</i></li> <li>• <i>REDD+ Feedback and Grievance Redress Mechanism (FGRM) operationalisation</i></li> </ul>	<ul style="list-style-type: none"> <li>• Training on the functions of the SIS web platform</li> <li>• To guide SFPs on how to conduct REDD+ Safeguards monitoring and reporting.</li> <li>• To train SFPs on operationalizing the GCFRP FGRM at the landscape level</li> </ul>	Juaboso - Bia	19-21 November, 2019
Refresher training on safeguards for REDD+ regional and district safeguards focal persons across the GCFRP area	<ul style="list-style-type: none"> <li>• Overview of REDD+/GCFRP</li> <li>• Safeguards Instruments/ REDD+ &amp; Gender</li> <li>• Principles Criteria and Indicators</li> <li>• Overview of GCFRP Benefit Sharing Plan</li> <li>• Ghana Environmental Regulation</li> <li>• Undertaking Safeguards Monitoring &amp; Reporting / FGRM Modalities</li> <li>• Practical guidance- Safeguards Monitoring &amp; reporting (field Work)</li> </ul>	<ul style="list-style-type: none"> <li>• To conduct a refresher training on REDD+ Safeguards (WB Safeguards Instruments, Cancun Safeguards etc) for the SFPs</li> <li>• To train SFPs on the application of Principles Criteria and Indicators (PCIs) developed for GCFRP Safeguards monitoring.</li> <li>• To train SFPs on operationalizing the GCFRP FGRM at the landscape level</li> <li>• To guide SFPs on how to conduct REDD+ Safeguards monitoring and reporting.</li> <li>• <i>To train SFPs on the development and application of Safeguards Action Plans</i></li> </ul>	Golden Bean Hotel, Kumasi	3 <sup>rd</sup> - 5 <sup>th</sup> March, 2020
Ghana Emission Reductions Training Program; World Bank Safeguards Training	<ul style="list-style-type: none"> <li>• Overview of REDD+/GCFRP</li> <li>• WB OPs</li> <li>• Overview of GCFRP Benefit Sharing Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Training on World Bank Operational Policies</li> <li>• Training on how to conduct safeguards screening, monitoring and reporting.</li> </ul>	FCTC. Akyakrom	8 <sup>th</sup> - 10 <sup>th</sup> March, 2022

PROGRAM	MODULES	OBJECTIVES	LOCATION/ VENUE	DATE
	<ul style="list-style-type: none"> <li>Ghana Environmental Regulation</li> <li>Undertaking Safeguards screening, Monitoring &amp; Reporting / FGRM Modalities</li> </ul>	<ul style="list-style-type: none"> <li>To train SFPs on operationalizing the GCFRP FGRM at the landscape level</li> </ul>		

#### Implementing Safeguards

In advancing the implementation of safeguards plans, Environmental and Social Management Plans have been developed for five HIAs: Juaboso–Bia<sup>34</sup>, Asunafo–Asutifi<sup>35</sup>, Kakum<sup>36</sup>, Sefwi Wiawso – Bibiani and Ahafo Ano South. These ESMPs have been finalized and uploaded to the SIS web platform. The ESMP for Atewa HIA has been finalized with comments from the Bank. The ESMP will be disclosed on the SIS platform by the end of March 2024. .

The risks/impacts in the HIAs for which ESMPs were required were identified through a screening process using a checklist aimed at screening to screen all activities. The ESMPs were prepared to mitigate, address, and monitor the identified risks/impacts in compliance with World Bank Safeguard Policies triggered by the Program and applicable National Legislation/Regulations. The monitoring of the indicators within the respective ESMPs has been undertaken, and monitoring reports covering the years 2020 and 2021 have been produced.

As reported in the previous MR, per the design of the Emissions Reductions Programme (ERP), the ESMPs are being implemented and monitored quarterly to ensure safeguards compliance. The key project activities that were screened for potential risks and for which mitigation measures were provided comprise the following:

#### Component One: Forest Restoration

- Modified Taungya System (MTS)
- Enrichment Planting
- Trees on farm (ToF)

#### Component Two: Climate smart cocoa

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

<sup>34</sup> <https://www.reddsis.fcghana.org/admin/controller/consultations/2019%20-%20Juaboso-Bia%20HIA%20-%20Implementation%20and%20Monitoring%20report.pdf>

<sup>35</sup> <https://www.reddsis.fcghana.org/admin/controller/consultations/2019%20-%20Asunafo-Asutifi%20HIA%20-%20Implementation%20and%20Monitoring%20report.pdf>

<sup>36</sup> <https://www.reddsis.fcghana.org/admin/controller/consultations/2019%20-%20Kakum%20HIA%20-%20Implementation%20and%20Monitoring%20report.pdf>

### Component Three: Additional livelihoods Activities/Interventions

- Train and promote economically viable and environmentally sound on-farm income diversification options:
  - Vegetable farming
  - Bee-keeping
  - Animal husbandry

Monitoring was done to ensure / verify ESS compliance under these activities. Compliance with ESS implementation is done in two parts, namely:

- a) Addressing Safeguards: that is, confirming the existence of National legislative instruments, policies, and measures on REDD+ Safeguards. Addressing REDD+ Safeguards could also involve National Policy Reforms that aim to reduce/mitigate social, environmental, or economic risks from REDD+ programs/project implementation.
- b) Respecting Safeguards: activities undertaken to ensure that program activities triggering/ relating to safeguards requirements are being adhered to, including screening program/project activities and outputs for risks and pre-determining measures to forestall/mitigate the risks.

## II. Monitoring and Reporting Requirements

1. **Entities that are responsible for implementing the Safeguards Plans are adequately resourced to carry out their assigned duties and responsibilities as defined in the Safeguards Plans.**

1.1 Key institutional arrangements required under the Safeguards Plans.

### **Implementing Institutions**

The National REDD+ Secretariat (NRS) has put in place a robust institutional arrangement for the implementation, monitoring and reporting of safeguards in close collaboration with the Environmental Protection Agency (EPA), the National Safeguards Working Group as well as partner organizations supporting the implementation of ER activities.

#### **At the national level,**

The NRS Focal Point, who has had lots of training on Safeguards including the World Bank Operational Policies provides responsibility for operationalizing all safeguards aspects of the GCFRP and overseeing and organizing all activities related to safeguards training, monitoring, and reporting within the program area. This is complemented by both the REDD+ Programs and M&E Managers.

In addition, the PMU has recruited safeguards and governance officers each for the GCFRP. The two officers work directly with Regional/District Safeguards Focal Points to review and further analyse the data as required, provide final verification, and where questions or gaps arise, work with the Regional/district levels focal points to make corrections and improvements

Specifically, the national level PMU safeguards Officer plays a key role in ensuring safeguards compliance and is further responsible for:

- Coordination of environmental and social safeguards across the HIAs
- Provision of leadership across the regional and district levels for the implementation of safeguards
- Providing guidance and project-level info and tools on safeguards for all stakeholders
- Managing the environmental and social safeguard focal persons in ER program areas
- Responsible for coordinating all safeguard activities with donors, implementing agencies and other potential investors
- all environmental and social safeguard training and capacity building
- Addressing, monitoring and reporting on FGRM

#### **At the regional and districts levels**

- **Regional/district levels Environmental and Social Focal Points are in place.** They work closely with the national level NRS Environmental and Social Safeguards (ESS) Focal Point to ensure that all environmental and social safeguards issues are incorporated into Bid and specifications documents for all sub-project types.
- Ensure that safeguards issues are included as part of the training at the district level and contractors invited to participate.
- Draft safeguards report based on collated documents and reports from district activities as part of usual regional reporting on the project.
- Be the first point of contact for the district in case of any challenging issues on project-related safeguards - land, environmental, safety and health and draw the NRS ESS Focal Point's attention in case of lack of resolution.
- Collaborate with relevant authorities (chiefs and elders) and other community members and facilitate the implementation of subprojects and implementation of any other safeguards-related activity.
- Perform any other related activities that may be assigned by the NRS ESS Focal Point to whom s/he will report.

#### **Collaborating Institutions**

NRS supervised on-ground safeguards implementation including screening and monitoring of interventions / activities captured under the Ghana Cocoa Forest REDD+ Programme. This exercise was done collaboratively between NRS and other key partners such as the Environmental Protection Agency (EPA) and the HIA Management Board (HMB).

The EPA, being the statutory regulator of the environment, provided technical support to complement the efforts of the NRS.

The EPA undertook training and sensitization programmes focusing on the safe handling of agrochemicals, safety issues, and the protection of natural resources, including forests, biodiversity, and water. The EPA collaborated with key institutions like the District Assemblies and the Department of Agriculture (under the Ministry of Food and Agriculture) to provide these services<sup>37</sup>. The details can be found in the EPA annual reports for 2020 and 2021; <http://www.epa.gov.gh/epa/publications/annual-reports>.

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<sup>37</sup> <http://www.epa.gov.gh/epa/publications/annual-reports>

The Ghana Cocoa Board, being one of the proponents of GCFRP undertook measures to promote safeguards adherence through Climate Smart Cocoa engagements, training on the safe use of agrochemicals, compost application, training on approved/recommended agrochemicals, and on-farm biodiversity conservation.

The private sector cocoa companies similarly undertake such activities as part of their commitment to safeguards implementation.

Table 13: Some of the trainings carried out by COCOBOD

Activity	Lead institution	Date/Location	Participants
Farmer Business School	COCOBOD	26 <sup>th</sup> to 30 <sup>th</sup> October, 2020 Kakum HIA: Damintikro Nyamebebu	26 men 35 women
Farmer Business School	COCOBOD	Juaboso - Bia HIA: Asempaneye Anhweafutu	58 men 15 women
Climate Smart Cocoa	COCOBOD	30 <sup>th</sup> October, 2020 Kakum HIA: Sesekor	127
Climate Smart Cocoa	COCOBOD	Juaboso - Bia HIA: Asempaneye	124
Farmer Business School	COCOBOD	14th to 15th October, 2021 <u>Ahafo Ano South HIA:</u> Mpasaso dotiem, Sikafrebogya, Biemso No. 1,  <u>Asunafo Asutifi HIA:</u> Ayomso, Mim, Daudakrom	159 men 93 women
Climate Smart Cocoa	COCOBOD	14th to 15th October, 2021 <u>Ahafo Ano South HIA</u> Mpasaso dotiem, Sikafrebogya, Biemso No. 1,  <u>Asunafo Asutifi HIA</u> Ayomso, Mim, Daudakrom	

The Civil Society Organizations (NGOs) /Non-Governmental Organizations (NGOs), on the other hand, promoted the implementation of safeguards among farmers at the community level. The CSOs/ NGOs regularly interface with farmers/ farmer groups on of several capacity-building activities related to safety compliance. All these are done in collaboration with the National/Regional/District level Safeguards Focal Points.

The project proponents are obligated to document all interventions and activities. The NRS conducts biannual safeguards monitoring exercises. The NRS screens, monitors, and compiles all relevant data on these exercises. This information is backed up by reports, pictures, , and/or on-site observations, which can be found here:

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extension://efaidnbmnnnibpcajpcglclefindmkaj/https://reddsis.fcghana.org/admin/controller/publications/2nd%20Final%20REDD+%20safeguards%20Refresher%20%20Training%20Report%20edit.pdf,

<https://www.dropbox.com/scl/fo/q947nbn4u9td8wzypt9hn/h?rlkey=n6zgyfbcok6r1td6m5kdqf9c4&dl=0>

## Monitoring and Reporting

The PMU employs a participatory bottom-up M&E approach, which starts with the HIA governance structure, the safeguards focal persons at the various levels and the REDD+ implementing partners. The key safeguards outputs and outcomes for the reporting period include;

- Strengthened safeguards knowledge and increased capacity of safeguards focal persons and stakeholders in the landscapes.
- Screening and risks assessments are increasingly being adopted by the HIAs and mitigation plans developed before projects are implemented in the GCFRP area. 5 ESMPs have been developed.
- Adoption of the FGRM modalities by stakeholders has improved. A total of 134 grievances and 38 feedback were recorded for 2020 – 2021 across the HIAs.
- Project proponents implement the gender strategy through active engagement of women, youth, and the vulnerable in the landscape.
- Free Prior and Informed consent was sought for stakeholder engagements and consultations
- Improved community governance of forest resources through participation and inclusion in the HIA governance structure, including women, youth, men, traditional authorities, local government and community representatives. As at reporting, a total of 1092 communities form part of the governance structure and this number is expected to increase as the governance structures are being developed and strengthened.
- Preserved Indigenous tree species through enrichment planting and MTS. The farmers suggested Some tree species and verified and accepted by the REDD+ implementing partners. These include, Ofram, Mahogany, Emire and Otie

The FC through its medium term workplans make budgetary provisions for Safeguards implementation. Therefore, as and when needed, funds are made available to undertake Safeguards activities. Table 8 below indicates the provisions made by FC for Safeguards implementation. This is in addition to the Program's budgetary support

Table 14: Budgetary Provisions for Safeguards Implementation by FC

Year	Amount (GH¢)
2020	486, 000
2021	417, 000

The private sector's support has been encouraging because they recognize the importance of adhering to the safeguards requirement for the sustainability of the REDD+ program. For instance, Tropenbos Ghana contributed GHC 65,000 to develop a Safeguards Training Manual in 2020.

## Safeguards Information System (SIS)

A web-based REDD+ Safeguards Information System (SIS) has been developed to provide transparent and consistent information that is accessible by all relevant stakeholders. The web-based SIS platform provides information on how REDD+ Social and Environmental safeguards are being addressed and respected throughout



implementation of the REDD+ programme. The web platform was developed after a series of engagements by stakeholders. The web platform was developed by the ICT department of FC with financial support from SNV Netherlands Development Organization under the project “Operationalizing national safeguards for results-based payment from REDD+” with funding from the German Government. The SIS web address is [www.reddsis.fcghana.org](http://www.reddsis.fcghana.org). This SIS was launched officially on 21<sup>st</sup> December, 2020. The FC has demonstrated its dedication to boosting accountability, improving livelihoods and enhancing ecosystem resilience. The launch positioned Ghana again for positive and ambitious climate mitigation and adaptation action.

The SIS is populated with information that covers all the activities being carried out by NRS and all proponents of the GCFRP. Stakeholders are continuously educated on how to access and navigate the SIS web platform. The web platform provides information on the Climate Change Directorate (NRS), its functions and mandate as well as the purpose of the SIS.

The information on the web platform has been categorized per HIA under the consultations section, with GCFRP area wide (National and Sub-national) reports and documents uploaded to the library page (publications and documents). Information that is HIA specific is uploaded and updated under the respective HIA as and when necessary. This includes data on the governance structure set up, the REDD+ activities undertaken and feedback from stakeholders. Information on the institutional arrangements under the GCFRP is also provided.

The programmes page has been populated with information on the various activities carried out in the HIA, by which programme proponent, and the timeframe. The FGRM page provides stakeholders with information on FGRM and its modalities. The page also has feedback in the form of videos from project proponents as well as various means of contact and reporting of feedback and grievances, like hotlines and forms.

### Summary of Information

The Summary of Information (SOI) presents the overall approach to safeguards implementation and reporting (to comply with UNFCCC, FCPF and other safeguards requirements) and how Cancun safeguards have been addressed and respected. The SOI includes details on how the information will be gathered and reported in the SIS, and the types of information for demonstrating how the safeguards are being addressed and respected. Ghana submitted its first SOI (in 2019)<sup>38</sup>. Ghana will submit its second SOI by the end of first quarter 2024.

### 1.2 Confirmation of institutional arrangements in place.

The Safeguards plans have been operationalized, effectively integrating the key institutions/ stakeholders with clearly assigned roles and responsibilities ranging from government to the private sector and NGO/CSOs. This has been made possible due to the establishment and operationalization of the institutional frameworks. It is well recognized that each structure member has roles and responsibilities related to executing the REDD+ safeguards. They have received in-depth training and capacity building in REDD+ Safeguards implementation

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<sup>38</sup> [https://redd.unfccc.int/files/summary\\_of\\_information\\_v2\\_01.05.19.pdf](https://redd.unfccc.int/files/summary_of_information_v2_01.05.19.pdf).

1.3 Implementing entities and stakeholders understand their respective roles and responsibilities with adequate human and financial resources.

The consortium partners and other significant parties, such as Safeguards Focal Persons and Safeguards Teams, have undergone extensive safeguards capacity building, and they possess the necessary technical capacity to carry out their roles and responsibilities and to ensure safeguards compliance as stated above. Throughout the implementation of the REDD+ program, inclusive participation of important stakeholders in the program's decision-making and activities has been of utmost importance<sup>39</sup>.

In a bid to build the capacities of REDD+ project implementers and proponents, particularly institutions/ organizations and local communities, the World Bank, with funding support from the project dubbed Accelerated REDD+ (AccelREDD), organized a three-day capacity-building workshop for relevant stakeholders to strengthen safeguards implementation in the Ghana Cocoa Forest REDD+ Programme. The workshop was held at the Forestry Commission Training Center (FCTC) at Akyawkrom in the Ashanti Region of Ghana from 8th to 10th March 2022. The training brought together representatives from the Government (Forestry Commission, Ghana Cocoa Board, and the Environmental Protection Agency), Private sector (World Cocoa Foundation and Olam), Non-Governmental Organizations/ Civil Society Organizations (Proforest, Nature and Development Foundation and Tropenbos Ghana), and local actors including executives of HIA functional Units such as Hotspot Intervention Area Management Board (HMB), Sub-HIA Executive Committee (SHEC), CREMA Executive Committees (CEC) and Community Resource Management Committees (CRMC) who mainly represent local communities, Traditional Authorities and farmers.

The workshop was preceded by a one-day Training of Trainers' workshop where the environment and social safeguards focal points from the FC regional and district Forest Services Division (FSD) offices within the Asunafo – Asutifi and Ahafo Ano South Hotspot intervention Areas (HIA) and the team from the National REDD+ Secretariat (NRS) were trained on the World Bank safeguards policies and procedures, with a particular focus on the policies that were triggered as a result of the ER program.

For the three-day training, a number of training topics were discussed in a participatory manner to include: overview of GCFRP; World Bank Safeguards Policies; GCFRP Benefit Sharing Plan; Ghana's Country Approach to Safeguards; Feedback Grievance Redress Mechanism (FGRM) and, the Role of the Environmental Protection Agency in safeguards implementation. Group exercises on GCFRP activities vis-à-vis the safeguards policies triggered generated useful discussions and understanding of how to use the safeguards instruments to address and mitigate adverse impacts and risks. The training was attended by 58 participants in total. Of these, 45 (77.5%) were males and 13 (22.5%) were females<sup>40</sup>. One of the key outcomes is the development of a safeguards screening checklist to identify, address and mitigate the environment and social risks pertaining the program activities to comply with World Bank's and country systems policies and procedures. Feedback from participants and trainers also contributed to the conversion of the SAP into ESMPs.

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<sup>39</sup> <https://reddsis.fcghana.org/documents.php>

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<https://www.reddsis.fcghana.org/admin/controller/publications/WB%20SAFEGUARDS%20TRAINING%20%20REPO%20final.pdf>

Table 15: Capacity building for stakeholders

Type of Training	Training Objectives	Target HIAs	Dates
REDD+ Training	<ul style="list-style-type: none"> <li>To build the capacities of participants on REDD+ Safeguards and Safeguard Information System (SIS).</li> <li>To build capacity on mainstreaming Gender consideration into the REDD+ Process.</li> <li>To build capacity on the operationalization of the Feedback Grievance Redress Mechanism (FGRM)</li> </ul>	Asunafo – Asutifi, Juaboso – Bia, Ahafo Ano South, Sefwi Wiawso – Bibiani, Kakum	11 <sup>th</sup> – 21 <sup>st</sup> May, 2021
REDD+ Training	<ul style="list-style-type: none"> <li>To build the capacities of participants on REDD+ Safeguards and Safeguard Information System (SIS).</li> <li>To build capacity on mainstreaming Gender consideration into the REDD+ Process.</li> <li>To build capacity on the operationalization of the Feedback Grievance Redress Mechanism (FGRM)</li> </ul>	Asunafo – Asutifi, Juaboso – Bia, Ahafo Ano South, Sefwi Wiawso – Bibiani, Kakum	16 <sup>th</sup> August – 4 <sup>th</sup> September, 2021
Field engagement on safeguards, governance and monitoring of planting activities	<ul style="list-style-type: none"> <li>To build the capacities of stakeholders on safeguards and governance.</li> <li>To create continuous awareness and sensitization on GCFRP, safeguards, FGRM, BSP through radio and community information centers as well as community visits</li> <li>To monitor and build capacity on the operationalization of the Feedback Grievance Redress Mechanism (FGRM)</li> </ul>	Asunafo - Asutifi	7 <sup>th</sup> – 11 <sup>th</sup> December, 2021
Ghana Emission Reductions Training Program; World Bank Safeguards Training	<ul style="list-style-type: none"> <li>To build the capacities of stakeholders on World Bank Operational Policies</li> </ul>	FCTC, Akyakrom	8 <sup>th</sup> – 10 <sup>th</sup> March 2022
Capacity Building for HIA Leaders and Stakeholders	<ul style="list-style-type: none"> <li>To build the capacities of HIA leaders and stakeholders on critical REDD+ topics</li> </ul>	Asunafo – Asutifi HIA,	21 <sup>st</sup> – 31 <sup>st</sup> March, 2022
Proforest capacity building workshops for Local Level / Sub HIA participants.	<ul style="list-style-type: none"> <li>To build the capacities of HIA leaders and stakeholders on critical REDD+ topics</li> </ul>	Asunafo – Asutifi HIA	26 <sup>th</sup> – 28 <sup>th</sup> April, 2022
Capacity Building for HIA Leaders and Stakeholders	<ul style="list-style-type: none"> <li>To build the capacities of HIA leaders and stakeholders on critical REDD+ topics</li> </ul>	Ahafo Ano South HIA	16 <sup>th</sup> May - 9 <sup>th</sup> June, 2022
Proforest capacity building workshops for Local Level / Sub HIA participants	<ul style="list-style-type: none"> <li>To build the capacities of HIA leaders and stakeholders on critical REDD+ topics</li> </ul>	Asunafo – Asutifi HIA	17 <sup>th</sup> May – 20 <sup>th</sup> May, 2022

In order to strengthen the capacities of stakeholders, including their roles and responsibilities in Safeguards operationalization, funds (Table 13) are made available through FC and/or other partners (as by Tropenbos and SNV as above).

#### 1.4 Extent to which specific capacity building measures have been carried out.

The FC requires its workers to identify their annual training needs each year, and budgets are then set aside for such trainings. The FC plans to strengthen the capacity of every employee at every level in order to improve performance and achieve the program's overall objective and vision. All SFPs are also routinely updated on advances by the NRS through refresher trainings, as REDD+ is always changing and gaining new knowledge. To increase the capacity of SFPs, some services with the necessary competence may be procured. For instance, when necessary, SFPs are given training by EPA experts on how to screen projects and the demands of an environmental impact assessment. Additionally, capacity needs assessment is also carried out at the landscape

level to identify specific capacity needs of local landscape actors. By so doing this helps to provide guidance on specific training/capacity building topics to render.

**2. ER Program activities are implemented in accordance with management and mitigation measures specified in the Safeguards Plans.**

2.1 Confirmation that Environmental and Social documents prepared are based on Safeguards plans

All documents prepared during programme implementation such as the Safeguards Principles, Criteria and Indicators (PCI), the Safeguards Action Plan (SAP) for the 3PRCL Project and the Environmental and Social Management Plans (ESMPs) are based on World Bank OPs.

The ESMPs developed to guide project implementation are consistent with the World Bank’s OPs, National Safeguards and other safeguards and Procedures to guide project implementers in screening project activities for their likely social and environmental impacts and outline mitigation measures to address those risks as well as monitor safeguards compliance. These ESMPs consider existing institutional structures, Policies, Laws and Regulations (PLRs), socio-economic conditions, stakeholders and partners, projects and plans, environmental profiles and infrastructure of each HIA as well as documents prepared during the SESA process and planned REDD+ Policies, Actions and Measures (PAMs) to ensure proper screening is done and the appropriate mitigation measures put in place. To ensure that all bases are covered, these mitigation measures encompass both social and environmental factors<sup>41</sup>.

Table 16: Activities/Interventions within the GCFRP area during the reporting Period (2020/2021)

Activity	HIA	Proponent	Safeguards instruments
MTS	Asunafo Asutifi Kakum Ahafo Ano South	FC	ESMF ESMP Screening checklist
Enrichment planting	Asunafo Asutifi Kakum Ahafo Ano South	FC	ESMF ESMP Screening checklist
Trees On Farm	Asunafo Asutifi Kakum Ahafo Ano South	FC	ESMF ESMP Screening checklist
Productivity Enhancement Programme (PEP)	All HIAs	COCOBOD	ESMF ESMP Screening checklist
Climate Smart Cocoa	All HIAs	Almost all partners	ESMF ESMP Screening checklist
Partnership for Productivity Protection and Resilience in Cocoa Landscapes (3PRCL)	Juaboso - Bia	Touton	ESMF ESMP (SAP) Screening checklist

<sup>41</sup> <https://www.reddsis.fcghana.org/admin/controller/consultations/2019%20-%20Kakum%20HIA%20-%20Implementation%20and%20Monitoring%20report.pdf>  
<https://reddsis.fcghana.org/admin/controller/consultations/2019%20-%20Asunafo-Asutifi%20HIA%20-%20Implementation%20and%20Monitoring%20report.pdf>

Kakum Cocoa Agroforestry Project	Kakum	NCRC	ESMF Screening checklist
Production Landscape Programme (PLP)	Asunafo Asutifi	Proforest	ESMF Screening checklist
Cocoa Rehabilitation and Improvement Project (CORIP)	Asunafo Asutifi	Solidaridad	ESMF Screening checklist
Cocoa Life Programme (CLP)	Asunafo Asutifi	Mondelez/UNDP	ESMF Screening checklist
Landscapes and Environmental Agility across the Nation (LEAN)	Sefwi Wiawso - Bibiani	Rainforest Alliance	ESMF Screening checklist
Partnership for Livelihoods and Landscapes	Sefwi Wiawso - Bibiani	Rainforest Alliance	ESMF Screening checklist

2.2 Entities responsible for implementing the Safeguards Plans maintain consistent and comprehensive records of ER Program activities.

Primarily, the PMU is in charge of documenting all reports received. For 2020/2021 as indicated above, the three ESMPs (Juaboso – Bia, Kakum, Asunafo – Asutifi) have all been uploaded. However, the ESMPs for the remaining two (Sefwi Wiawso – Bibiani, Ahafo Ano South) were developed in 2022 and have also been uploaded onto the SIS web platform. All safeguards instruments have also been uploaded onto the SIS web platform.

The SFPs are in charge of safeguards reporting as well as receiving and resolving disputes relating to the implementation of REDD+ as they double as FGRM officers. They have received training on how to handle complaints and feedback related to GCFRP. Across the HIAs, SFPs have documented these grievances and feedback. These records detail the type of grievances or feedback, details of the complainant, date of record and status of resolution.

The HIA Functional Units also act on behalf of community members in reporting feedback and this is recorded.

2.3 Extent to which environmental and social management measures set out in the Safeguards Plans and any subsequent plans prepared during Program implementation are implemented in practice, the quality of stakeholder engagement, as well as field monitoring and supervision arrangements in place.

The safeguarding plans are critical to the program's success. The ESMP serves as a blueprint for the environmental and social screening of projects and sub-projects, as well as an acceptable level of environmental assessment for the sub-project to guide implementation. Screening is done to determine how initiatives may affect the environment and people.

NRS has put in place an inclusive and participatory approach for the implementation of all activities. While NRS directs and coordinates implementation, the actual implementation of priority activities in each HIA rely on a consortium of stakeholders (HIA Implementation Consortium Partners) who live, work, or have investments within the landscape, and have an interest in the area. The HIA landscape is managed by an HIA Governance Body made up of local land-users, landowners and traditional authorities who organize themselves into a government recognized Natural Resource Management (NRM) structure, like that of the CREMA (i.e., modified CREMA), which accords them the right to manage their natural resources for their benefit. The NRS and the HIA

Consortium carry on a participatory process to build the HIA governance and implementation structure at each location.

Compliance with safeguards implementation is done in two parts, namely:

- a) Addressing Safeguards: that is, confirming existence of National legislative instruments, policies and measures on REDD+ Safeguards. Addressing REDD+ Safeguards could also involve National Policy Reforms that aim at reducing/ mitigating social, environmental, or economic risks from REDD+ programs/project implementation.
- b) Respecting Safeguards: relating to activities undertaken to ensure that program activities triggering/ relating to safeguards requirements are being adhered to, including screening of program/project activities and outputs for risks and pre-determining measures to forestall/mitigate the risks.

Stakeholder involvement occurs at all levels and with a variety of stakeholder groups. This has increased public awareness of the GCFRP. At the national level, there is widespread support, with the President of the Republic officially launching the GCFRP on October 4th, 2019. This has also aided in garnering greater private sector assistance for the programme's effective implementation.

Formation of CREMAs, Sub HIAs and HIA Management Board (HMB) are examples of how stakeholders are engaged at the landscape level.

SFPs' capacity has also been built on WB OPs, the REDD+ Safeguards architecture for the Program, and field monitoring and supervision of safeguards compliance. Gender is given special consideration in capacity building programs to ensure gender mainstreaming in the REDD+ process. The engagement reports are available on the SIS web platform.

Engagement Principles have also been developed to guide partners on how to engage on the GCFRP. Resource persons are engaged to lead on safeguards capacity building workshops as and when needed<sup>42</sup>.

A World Bank mission team traveled to the field and visited the Asunafo - Asutifi HIA - Ayum forest reserve in December 2021. Focus group discussions were held with the FC District Manager, the Safeguards Focal points and his team supporting the implementation of the ER activities in the HIA. The Mission noted three key activities are currently being implemented in the Asunafo - Asutifi HIA. They are (i) Climate Smart Cocoa activities, (ii) Tree Planting and (iii) Alternative Livelihood Activities (e.g., honey production and vegetable cultivation). These activities are supported by FC, COCOBOD, Mondelez and UNDP. Based on discussions with the district level and safeguards focal point, the Mission noted that the NRS has mainstreamed and advanced environment and social safeguards issues in subproject implementation of activities at the Ayum forest visited. Furthermore, the FC provided documentation showing the progress made in screening the safeguards impacts and mitigation measures. The FC further showed evidence of filing of the screening reports in the safeguards file in paper form. The Bank Team recommended for NRS to upload the documents on the Safeguards page of the REDD+ website as well as share the reports with the Bank Team. The Bank Team, together with the NRS

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<https://www.reddsis.fcghana.org/admin/controller/publications/Engagement%20Principles%20for%20GCFRP.pdf>

team reviewed the SAP developed by NRS to guide the mitigation of identified safeguards impacts. The Bank team acknowledged the considerable experience of the NRS in risks/impact screening, however, gaps were noted on the understanding of the Bank safeguards policies and how to operationalize them in a manner that address/mitigate risks associated with activities being implemented. The Mission agreed with NRS in the interim to update the SAP to acceptable standard required (based on comments provided) by the Bank's safeguards policies and procedures based on the feedback provided.

Again, a World Bank (WB) Implementation Support Mission for the Emission Reductions Program under the Ghana Cocoa Forest REDD+ Program took place from June 13 - 15, 2022 with the objective to review overall implementation progress of Ghana's Emission Reductions Program, in accordance with the endorsed ER Program Design and signed ER Payment Agreement, including implementation progress with the upfront advance payment of US\$1.30 million made to the Government of Ghana in 2020. Amongst others, the mission specifically reviewed progress on (i) establishing the program's benefit sharing mechanism to transfer benefits of carbon payments for first monitoring period according to the benefit sharing plan; (ii) safeguards capacity building and safeguards compliance, (iii) pending issues with validation and verification process of the first monitoring report and preparation for second monitoring report; and (iv) systems and capacity for monitoring ER Program implementation.

Another World Bank (WB) Implementation Support Missions for the Emission Reductions Program under the Ghana Cocoa Forest REDD+ Program took place from December 5 – 9, 2022 with the same objective as above. This mission specifically reviewed progress on (i) readiness of mechanisms to enable transfer of benefits of first ER payments to legitimate beneficiaries in accordance with the benefit sharing plan; (ii) safeguards capacity building and safeguards compliance, (iii) preparation for second monitoring report with a view to future ER Payments, and (iv) systems and capacity for monitoring ER Program implementation.

NRS acknowledges the consistent support received from the WB E&S Specialists in ensuring effective safeguards implementation and monitoring. As a result, NRS has revised the HIA safeguards and monitoring reports in order to ensure that the social and environments risks associated with implemented activities are addressed and are in compliance with the Bank's safeguards policies and procedures. The safeguards capacity at the NRS has improved due to guidance on the application of safeguards policies by the World Bank and the EPA. Additional capacity-building support was provided in the preparation of safeguards instruments as well as safeguards monitoring and audit reports. On the findings of the mission according to the WB team, the E&S performance is **Satisfactory**, and the Environmental and Social (E&S) risk of the project remains *Moderate*.

#### 2.4 Functionality status of the FGRM

The FGRM is operational. The FGRM operational modalities have been properly communicated to all significant stakeholders through open, inclusive and transparent communication channels and they are all increasingly aware of where to file complaints (nearest FC office or using the Safeguards Information System). The SFPs positioned in all the HIAs respond and document complaints and grievances in FGRM dedicated record books. These capture details such as names, gender, contacts and locations of complainant, nature of the complaint, the mode of resolution, the status, the attending SFP and whether the complaint is REDD+ related or not.

Some stakeholders and project proponents also have pre-existing modes of grievances and redress mechanisms and methods of documentation. As such, they are continuously entreated to align their GRMs with the REDD+ FGRM as much as possible. Their records and documentation are subsequently captured under the FGRM to

ensure a streamlined and comprehensive documentation process and record keeping. This further enhances cooperation with and inclusivity of stakeholders in programme implementation.

The HIAs have received FGRM awareness-raising materials (flyers and posters). For the objective of raising awareness, several communication channels have also been used, including holding workshops, radio programs, radio jingles, and community center announcements. There is a REDD+ dedicated hotline at the national level for FGRM purposes, as well as an FGRM portal on the SIS web platform.

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.

A total of 134 grievances were recorded across five HIAs, namely, Asunafo Asutifi, Kakum, Sefwi Wiawso – Bibiani, Ahafo Ano South and Juaboso – Bia for 2020/2021 period. 8 grievances were recorded under resource use and access and 125 under safeguards and 1 under participation and inclusiveness, within the reporting period. Of these, 130 were resolved and 4 are still outstanding. 38 feedback were also recorded within that period across these five HIAs.

ASUNAFO - ASUTIFI			JUABOSO -BIA			KAKUM		
Grievance/Feedback	2020	2021	Grievance/Feedback	2020	2021	Grievance/Feedback	2020	2021
Resource use and access		4	Resource use and access			Resource use and access		4
Land and tree tenure			Land and tree tenure			Land and tree tenure		
Benefit Sharing			Benefit Sharing			Benefit Sharing		
Participation and inclusiveness			Participation and inclusiveness			Participation and inclusiveness		1
Safeguards		124	Safeguards			Safeguards		1
Feedback		27	Feedback	11		Feedback		

HIA	2020				GENDER		2021				GENDER	
	FEEDBACK	GRIEVANCE	RESOLVED	ONGOING	M	F	FEEDBACK	GRIEVANCE	RESOLVED	ONGOING	M	F
Asunafo Asutifi							27	128	126	2	114	33
Kakum							0	6	4	2	6	
Ahafo Ano South							0	0				
Sefwi Wiawso - Bibiani							0	0				
Juaboso - Bia	11						0	0				
<b>Total</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>134</b>	<b>130</b>	<b>4</b>	<b>120</b>	<b>33</b>

### 3. The objectives and expected outcomes in the Safeguards Plans have been achieved.

3.1 Overall effectiveness of the management and mitigation measures set out in the Safeguards Plans.



Generally, the Safeguards Plans have guided the rolling out of safeguards actions which have contributed to the overall smooth implementation of safeguards.

- The ESMP enables programme implementers to identify and reduce risks, outline mitigation measures to address the risks and enhance benefits.
- The mitigation measures outlined in the ESMP are clear and concise and have guided the overall compliance with safeguards measures to enable the programme to meet the requirement for receiving results-based payment under REDD+.
- SFPs help with ease of access and early detection at the district level.
- The Safeguards teams comprising of different institutions ensure transparency and inclusiveness in contributing to the implementation and management of mitigation measures in the safeguards plans.

Table 17: Sample results of monitoring done based on the ESMP and screening checklist developed

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION
Modified Taungya System (MTS)	Reverse gains from carbon sequestration – adding carbon into the atmosphere	4.01 Environmental Assessment 4.04 Natural Habitats	<ul style="list-style-type: none"> <li>• Minimized burning of biomass as much as possible</li> <li>• Fire was used only in situations where this was effective and least environmentally damaging</li> </ul>	<ul style="list-style-type: none"> <li>• Site observation</li> </ul>
	Risks of Accelerated erosion	4.36 Forests	<ul style="list-style-type: none"> <li>• Sensitive sites with high erosion risk were identified and were not cultivated. Vegetation of such areas was maintained to help control erosion as well as to ensure soil stability</li> <li>• Implementation of standard erosion and sediment control best management practices</li> </ul>	<ul style="list-style-type: none"> <li>• Site observation</li> </ul>
	Impacts of Poor site selection		<ul style="list-style-type: none"> <li>• Ensured good site selection taking into consideration condition score, natural regeneration potential and basal area</li> </ul>	<ul style="list-style-type: none"> <li>• Site observation</li> </ul>
	Low percentage of women accessing lands		<ul style="list-style-type: none"> <li>• Equal opportunity was given to all women who wanted to participate</li> </ul>	<ul style="list-style-type: none"> <li>• Records of farmers</li> </ul>
Enrichment Planting	Improper disposal of polybags	4.01 Environmental Assessment	<ul style="list-style-type: none"> <li>• Education and sensitization on the proper disposal of polybags</li> </ul>	<ul style="list-style-type: none"> <li>• Site Observation</li> </ul>
	Planting single tree species	4.04 Natural Habitats	<ul style="list-style-type: none"> <li>• Planting was designed to include variety of both exotic and indigenous</li> </ul>	<ul style="list-style-type: none"> <li>• Site observation</li> </ul>
	Planting/ keeping shade tree with			

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION
	undesirable characteristics e.g., Disease prone shade trees, host of pest and diseases, easily broken branches etc.	4.36 Forests	<ul style="list-style-type: none"> <li>plants in the right proportions and positions</li> <li>Planned and strategized the procurement of desirable and diversified seedlings</li> </ul>	<ul style="list-style-type: none"> <li>Records of seedlings supplied</li> </ul>
	Planting more trees than required leading to over-shadowing of cocoa farms.		<ul style="list-style-type: none"> <li>Farms were mapped to determine farm sizes and site/area specific conditions to avoid over supply of seedlings</li> <li>Thinning out was done to adjust the number of trees on the farms</li> </ul>	
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 Natural Habitats 4.09 Pest Management 4.36 Forests	<ul style="list-style-type: none"> <li>Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate.</li> <li>Education and sensitization were done on the need for and proper usage of PPEs</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Records of PPE supply</li> <li>Training report</li> </ul>
	Unavailability and no/limited use of personal protective equipment		<ul style="list-style-type: none"> <li>Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate.</li> <li>Sensitization was done on the need for and proper usage of PPEs</li> </ul>	<ul style="list-style-type: none"> <li>Confirmation with workers</li> </ul>
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	<ul style="list-style-type: none"> <li>Most biomass generated was used as firewood and as pegs</li> <li>Minimized burning of biomass as much as possible</li> <li>Workers were required to wear suitable Personal</li> </ul>	<ul style="list-style-type: none"> <li>Site observation</li> <li>Records of PPEs provided</li> <li>FGRM operationalized</li> </ul>

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION
		4.36 Forests	Protective Equipment (PPE) as appropriate <ul style="list-style-type: none"> <li>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</li> </ul>	
	Over-use of agro-inputs such fertilizers and agro-chemicals		<ul style="list-style-type: none"> <li>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.</li> <li>Education and sensitization were done on the proper use and dosage of agro-inputs</li> </ul>	<ul style="list-style-type: none"> <li>Training report</li> <li>List of approved and unapproved agrochemicals shared</li> </ul>

3.2 Arrangements for quality assurance, monitoring, and supervision for identifying and correcting shortcomings in cases when ER Program activities are not implemented in accordance with the Safeguards Plans.

At the national level, the PMU Safeguard Specialists are responsible for operationalizing all safeguards aspects of the GCFRP and overseeing and organizing all activities related to safeguards trainings, monitoring, and reporting within the program area. This team receives all of the safeguard information and data from the regional/district-level Safeguards Focal Points in order to review and further analyse the data as required, provide final verification, and where questions or gaps arise, work with the Regional/district level focal points to make corrections and improvements.

At the regional and districts levels, regional/district level SFP Points are put in place to gather data together with the safeguards team and submit their report to the regional SFP after verification by the safeguards team. This eliminates bias on the side of the FC in the Safeguards reporting arrangement.

The regional SFP then verifies the submitted document and ensures that whatever has been captured in the report is a true reflection of what happened in the landscape. Once this data is verified by the regional SFP the report is submitted to the PMU, where further quality checks are carried out before onward submission to the national level for final approval by the Director of Climate Change.

These arrangements ensure shortcomings are identified and corrected in accordance with the Safeguards plans.

3.3 Description and effectiveness of supervision and oversight arrangements to ensure that the Safeguards Plans and, if any, subsequent environmental and social documents prepared during Program implementation are implemented.

The PMU Safeguard Officer coordinates the operationalization of all GCFRP safeguards-related elements as well as managing all program-area safeguards-related training, monitoring, and reporting activities. This team receives all the safeguards-related information and data from the regional/district Safeguards Focal Points in order to examine and further analyze the data as necessary, offer final verification, and work with them to address any issues or gaps where they appear.

Regional/district level SFPs are put in place at the regional and district levels to collect data alongside the safeguards team and send their report to the regional SFP following verification by the safeguards team. As a result, any potential bias in the Safeguards reporting arrangement is eliminated.

The regional SFP then confirms the submitted data to make sure that all information is accurate and accurately reflects what occurred in the landscape. The report is submitted to the PMU for additional quality checks once this data has been validated by the regional SFP, and then it is forwarded to the national level for final approval by the Director of Climate Change.

The FGRM operational modalities have been properly communicated to all significant stakeholders, and they are all aware of where to file complaints as well as provide feedback (nearest FC office or using the Safeguards Information System). The SFPs positioned in all the HIAs respond and document complaints and feedback in FGRM dedicated record books. There is a REDD+ dedicated hotline at the national level for FGRM purposes, as well as an FGRM portal on the SIS web platform.

#### **4 Program activities present emerging environmental and social risks and impacts not identified or anticipated in the Safeguard Plans prepared prior to ERPA signature.**

4.1 Continuous Relevance of potential risks and impacts identified during the SESA process to ER Program activities

The updated ESMF, which was produced during the updated SESA process clearly specifies appropriate roles and responsibilities, and outlines the necessary reporting procedures, for managing and monitoring environmental and social concerns related to project interventions. It provides a scope of potential risks and impacts and their mitigation measures.

Subsequently, ESMPs are developed from the ESMF to guide the effective implementation of each sub-project under the REDD+ programme. structures, Policies, Laws and Regulations (PLRs), socio-economic conditions, stakeholders and partners, projects and plans, environmental profiles and infrastructure of each HIA as well as documents prepared during

4.2 Risks and impacts not previously identified in Safeguards Plans.

No additional risks/impacts have been identified. The NRS undertakes periodic field monitoring and reporting and documents such activities therefore in any case where additional risks are identified, mitigation measures will be identified to address such risks.

## **5. Corrective actions and improvements needed to enhance the effectiveness of the Safeguards Plans.**

### 5.1 Self-assessment of the overall implementation of the Safeguards Plans

The Safeguards plans developed during the SESA process provide a better understanding of the environmental, social, and economic issues within the GCFRP area. This positioned Ghana to easily identify the risks, come up with mitigation measures and ways of enhancing benefits from the programme. This was conducted in a transparent and all-inclusive manner with all key stakeholders consulted. This has enabled smooth safeguards compliance monitoring to ensure that Ghana is able to receive results-based payment under REDD+.

Implementation of Safeguards is being mainstreamed into the operations of the FC in which SFPs lead on the implementation of safeguards from the district through regional to national level. Again, there is continuous capacity building of key stakeholders on safeguards. Additionally, the development of ESMPs have contributed to identifying the HIA (landscape) specific impacts/risks associated with GCFRP with implementable mitigation measures to address those impacts/risks.

### 5.2 Corrective actions and areas for improvements.

N/A

Currently, no corrective measures have been identified. Once this is identified, it will be reported in subsequent MR.

### 5.3 Timeline to carry out the corrective actions and improves identified above.

N/A

Since no corrective actions have been identified there exist no time

## ANNEX 2: INFORMATION ON THE IMPLEMENTATION OF THE BENEFIT-SHARING PLAN

### I. Requirements of FCPF on Benefit Sharing Plans

The Benefit Sharing Plan (BSP) is one of the conditions of effectiveness for the Emission Reductions Payment Agreement (ERPA) of the Ghana Cocoa Forest Redd+ Programme (GCFRP). After finalizing the BSP and other conditions, the World Bank subsequently communicated the effectiveness of the ERPA. The BSP was publicly disclosed in the national dailies in 2020.

With support from the Accelerating REDD+ Project (Bank Executed Trust Fund), the National REDD+ Secretariat (NRS) in operationalising the BSP Fund Flow Mechanism (FFM) based on the principles and guidelines outlined in the FFM manual, which was developed after extensive stakeholder consultations. The project also supported the NRS in producing the following: FFM's operational modalities, which puts a lot of emphasis on stakeholder engagement and participation in the implementation of the BSP and FFM, the REDD+ Dedicated Account (RDA) Steering Committee's selection process and criteria, the Committee's terms of reference, and rules of procedure for the RDA Steering Committee.

This report presents the progress made in the implementation of the BSP under the Ghana Cocoa Forest REDD+ Programme. The REDD+ Dedicated Account has already been set up in the HIAs/HMBs and was used for the receipt of the Upfront Advance Payment (UAP). This was followed by capacity building of HIAs/HMBs to be able to effectively implement the BSP. Subsequently, an RDA Steering Committee has been set up to guide the transparent flow of funds from the National REDD+ Dedicated Accounts to the Beneficiaries' Accounts. Members of the RDA Steering Committee include representatives from the Ministry of Finance, Office of the Administrator of Stool Lands, National House of Chiefs, World Cocoa Foundation and three (3) Civil Society Organisations (CSOs) and Non-Governmental Organisations (NGOs).

The RDA has authorised the first payments to beneficiaries including the Five (5)<sup>43</sup> HIAs Asutifi Asunafo, Kakum, Ahafo Ano, Sefwi Wiawso and Juabeso, the Forestry Commission, Ghana Cocoa Board and the 19 Municipal and District Assemblies.

### II. Monitoring and Reporting Requirements

#### 1. Benefit Sharing Plan Readiness

##### *1.1 Disclosure of BSP*

After extensive stakeholder consultations, validations, comments, and iterations, the BSP was certified as finalized in March 2020. The final BSP benefited from wider acceptance owing to the participatory, inclusive and transparent approach with which it was developed. It was designed based on extensive field study (focus group discussions and key informant interviews), broad stakeholder consultations at the local and national levels and multiple expert reviews. Precisely, 30 focus group discussions were conducted comprising about 413 individuals. This includes 304 men and 109 women. In addition to the focus group discussions, 27 key informant interviews were conducted at the local level, some of the key informants were Farmers, Chiefs, Cocobod, Assemblymen, Forest Service Division, Private Sector Cocoa Companies, CSOs, HIA Functional Units and District Assemblies for informed individualized perspectives. Also, several consultative meetings with local communities, private sector

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<sup>43</sup> The governance structure of the sixth (6<sup>th</sup>) HIA (Atewa) is yet to be developed.

players, civil society organizations, government, and expert groups were conducted to ascertain views on the draft benefit-sharing plan. This means that almost every segment of society including women, youth, elderly, local communities, etc., were taken into consideration as their views and inputs were consulted thus, the risk of non-involvement is very minimal. The details of the stakeholders consulted can be found in Annex 1 of the Final BSP (pgs 54-64).

Beneficiaries have access to printed copies of the BSP and it is available on Ghana's REDD SIS platform.

Beneficiaries have access to the disclosed BSP; available on Ghana's REDD SIS platform<sup>44</sup>

### *1.2 Completed and outstanding capacity building measures to ensure system effectiveness of the program*

The capacity building of stakeholders on the BSP followed a similar structure to the BSP design process, where stakeholders at both the national and sub-national levels were consulted. Considering the wider scope of GCFRP and its numerous stakeholder groups, particularly local communities, continuous but intensive capacity building and awareness creation that emphasizes the BSP was adopted.

At the national and landscape level, targeted stakeholders from government, private sector and CSO/NGOs have received multiple trainings on the Ghana REDD+ Benefit Sharing Mechanism. At the national level, key institutions including the National House of Chiefs, the Government Ministries, Departments and Agencies (MDAs), Private Sector and the NGOs/CSOs have been sensitized on the BSP implementation. In 2020, a two-day workshop was held for all such institutions.

At the sub-national level, since the implementation is primarily concentrated in the HIAs and their respective local government offices, a training was conducted between 17 January- 2 February 2023 for the functional units of governance structures developed in the HIAs. This includes the Hotspot Intervention Area (HIA) Management Boards (HMBs) in five HIAs (thus, Juaboso-Bia, Asunafo-Asutifi, Kakum, Sefwi-Wiawso Bibiani, and Ahafo-Ano South HIAs) as well as the other Functional Units at the lower tiers of the HIA governance structure such as the Sub-HIA Executive Committee (SHEC), CREMA/Zonal Executive Committee (CEC/ZEC) and the Community Resource Management Committee (CRMC). The Functional Units are thus trained as Trainer-of-Trainers to promote uptake and ensure sharing of key information at the community level.

Engagements on the BSP and implementation of the FFM at HIA and community levels concentrated on informing HIA leaders and community members about their duties and benefits as defined in the BSP. This helps to manage stakeholders' expectations and enables them to appreciate that the GCFRP is results-based and that emission reductions must be demonstrated and verified before any payments can be provided.

The FFM Consultant conducted the first training on the FFM for the RDA Steering Committee (trustees for the Carbon Payments) on 5<sup>th</sup> August 2022.

Again, a stakeholder's engagement was held with the 19 beneficiary Municipal and District Assemblies within the HIAs on the 13<sup>th</sup> June 2023 in Kumasi. The composition of participants included the Municipal/District Chief Executives and Planning Officers and some technical officers from the Forestry Commission and the Ghana Cocoa Board, made up of 41 males and 7 females. The engagement focused on the roles and responsibilities of the beneficiary assemblies concerning the GCFRP, their benefits due them and the eligible areas for the utilization of funds.

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<sup>44</sup> [https://reddsis.fcghana.org/admin/controller/publications/Final%20BSP\\_Ghana\\_%20March%202020.pdf](https://reddsis.fcghana.org/admin/controller/publications/Final%20BSP_Ghana_%20March%202020.pdf)

In all, 17 different capacity building/sensitization engagements have been done for various stakeholders. Details are found in Table 18 below.

Table 18 covers stakeholder engagements conducted on the BSP, and lists all national and subnational stakeholder workshops, trainings, and engagements undertaken purposely to raise awareness of the BSP. The table also lists the stakeholders engaged, the date and place of each engagement, and the key observations or lessons from the event. Discussions on the Benefit Sharing Plan have been part of every landscape level engagement since its public disclosure in 2020.

In all such engagements, participants got a better understanding of their roles and responsibilities as prescribed in the BSP. Beneficiaries are now aware of their requirements before funds are transferred to their respective accounts as well as eligible projects or areas that the payments can be put to.



Table 18: Stakeholder engagements on BSP

DATE	ACTIVITY	LOCATION	PURPOSE OF ENGAGEMENT	STAKEHOLDERS	SUMMARY OF DISCUSSION	COMMENTS/NEXT STEPS
23 <sup>rd</sup> September, 2020	Kakum HIA consortium meeting	Assin Fosu	To update and sensitize key stakeholders on the benefit sharing arrangements including the Upfront advance payment for the Ghana Cocoa Forest REDD+ Programme	<ul style="list-style-type: none"> <li>• NCRC</li> <li>• SHEC</li> <li>• District Assembly</li> <li>• FC</li> <li>• Olam</li> <li>• COCOBOD</li> <li>• ECOM</li> </ul>	<ul style="list-style-type: none"> <li>• Finalization and disclosure of the GCFRP BSP</li> <li>• Types of benefits (Carbon and non-carbon)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Distribution of ERPA proceeds</li> <li>• Flow of funds and governance</li> <li>• Activity plan for the UAP.</li> </ul>	<ul style="list-style-type: none"> <li>• undertake stakeholder engagement on the BSP and UAP from 2nd -20th November, 2020</li> <li>• There should be continuous stakeholder engagement on the BSP at the HIA level. SECTION A.  SECTION B.</li> </ul>
2 <sup>nd</sup> – 3 <sup>rd</sup> November, 2020	National stakeholder engagement on the benefit sharing plan and upfront advance payment	Accra	To sensitize and update key stakeholders on the benefit sharing arrangements including the Upfront advance payment for the Ghana Cocoa Forest REDD+ Programme and discuss the implementation plan for the GCFRP.	<ol style="list-style-type: none"> <li>1) National REDD+ working group (MLNR, COCOBOD, CSIR-FORIG, FC, MoF, National House of Chiefs, Ministry of Local Government and Rural development, National Forest Forum)</li> <li>2) Safeguards and Gender sub-working group (IUCN, Tropenbos Ghana, A Rocha, FC, SNV,)</li> </ol>	<p>The discussion focused on the following;</p> <ul style="list-style-type: none"> <li>• Purpose of the BSP</li> <li>• Design process (stakeholder consultations, extensive field study)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Types of benefits (Carbon and non-carbon)</li> <li>• Distribution of ERPA proceeds including UAP and its use.</li> <li>• ER payment and performance scenarios</li> <li>• Flow of funds and governance</li> <li>• Monitoring of the BSP</li> </ul>	<ul style="list-style-type: none"> <li>• There should be continuous stakeholder engagement on the BSP</li> <li>• There is the need to have an effective communication strategy to assist all levels of stakeholders understand and appreciate the BSP monitoring reports.</li> <li>• There should be a comprehensive budget for the preparation of the</li> </ul>

				<p>3) MRV Sub-working Group (EPA, FORIG, FC, RMSC, CERSGIS, KNUST)</p> <p>4) Policy Sub-working Group (MLNR, FC, Energy Commission, MESTI,)</p> <p>5) M&amp;E Sub-working Group Private sector, CSOs and NGOs actors</p>		BSP monitoring reports.
12 <sup>th</sup> – 13 <sup>th</sup> November, 2020	HIA community engagement	Assin Fosu	To sensitize key stakeholders on the benefit sharing arrangements including the Upfront advance payment for the Ghana Cocoa Forest REDD+ Programme	<ul style="list-style-type: none"> <li>• NCRC</li> <li>• SHEC</li> <li>• District Assembly</li> <li>• FC</li> <li>• Olam</li> <li>• COCOBOD</li> </ul>	<p>The discussion focused on the following;</p> <ul style="list-style-type: none"> <li>• Purpose of the BSP</li> <li>• Design process (stakeholder consultations, extensive field study)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Types of benefits (Carbon and non-carbon)</li> <li>• Distribution of ERPA proceeds including UAP and its use.</li> <li>• ER payment and performance scenarios</li> <li>• Flow of funds and governance Monitoring of the BSP</li> </ul>	<ul style="list-style-type: none"> <li>• There should be continuous stakeholder engagement on the BSP at the Sub-HIA levels.</li> <li>• Allocation should be made for more portions of the benefits to be used to support the forestry teams on the ground, especially the monitoring teams</li> </ul>
17 <sup>th</sup> – 18 <sup>th</sup> November, 2020	HIA community engagement	Sefwi Wiawso	To sensitize and update key stakeholders on the benefit sharing arrangements including the Upfront	<ul style="list-style-type: none"> <li>• LMB</li> <li>• District Assembly</li> <li>• FC</li> <li>• Rainforest Alliance</li> <li>• Olam</li> <li>• COCOBOD</li> </ul>	<ul style="list-style-type: none"> <li>• Finalization and disclosure of the GCFRP BSP</li> <li>• Types of benefits (Carbon and non-carbon)</li> </ul>	<ul style="list-style-type: none"> <li>• There should be a collaborative effort among stakeholders in the registration of farmers to benefit from the BSP as</li> </ul>

			advance payment for the Ghana Cocoa Forest REDD+ Programme	<ul style="list-style-type: none"> <li>Traditional Authority</li> </ul>	<ul style="list-style-type: none"> <li>Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>Distribution of ERPA proceeds</li> <li>Flow of funds and governance</li> </ul>	beneficiaries under the GCFRP
19 <sup>th</sup> – 27 <sup>th</sup> November, 2020	Sub-national stakeholder engagement on the benefit sharing plan and upfront advance payment	Juaboso-Bia,	To sensitize key stakeholders on the benefit sharing arrangements including the Upfront advance payment for the Ghana Cocoa Forest REDD+ Programme	<ul style="list-style-type: none"> <li>HIA executive members</li> <li>FC</li> <li>COCOBOD</li> <li>Police</li> <li>Fire Service</li> <li>District Assembly</li> <li>Agro Eco</li> <li>Touton</li> <li>Tropenbos Ghana</li> <li>Department of Agric</li> <li>MTS farmers</li> </ul>	<ul style="list-style-type: none"> <li>Purpose of the BSP</li> <li>Design process (stakeholder consultations, extensive field study)</li> <li>Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>Types of benefits (Carbon and non-carbon)</li> <li>Distribution of ERPA proceeds including UAP and its use.</li> <li>ER payment and performance scenarios</li> <li>Flow of funds and governance</li> <li>Monitoring of the BSP</li> </ul>	<ul style="list-style-type: none"> <li>There should be continuous stakeholder engagement on the BSP at the HIA level.</li> </ul>
6 <sup>th</sup> – 7 <sup>th</sup> July, 2021	Engagement of Local Actors on Ghana Cocoa Forest Redd+ Programme (GCFRP) Benefit Sharing Plan (BSP)	Ahafo Ano South, Atwima Mponua, Atwima Nwabiagya	To sensitize key stakeholders on the benefit sharing arrangements including the Upfront advance payment for the Ghana Cocoa Forest REDD+ Programme	<ul style="list-style-type: none"> <li>HIA executive members</li> <li>FC</li> <li>COCOBOD</li> </ul>	<ul style="list-style-type: none"> <li>Purpose of the BSP</li> <li>Design process (stakeholder consultations, extensive field study)</li> <li>Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>Types of benefits (Carbon and non-carbon)</li> <li>Distribution of ERPA proceeds including UAP and its use.</li> <li>ER payment and performance scenarios</li> <li>Flow of funds and governance</li> <li>Monitoring of the BSP</li> </ul>	<ul style="list-style-type: none"> <li>There should be continuous stakeholder engagement on the BSP at the Sub-HIA level.</li> </ul>

<p>16<sup>th</sup> August – 4<sup>th</sup> September, 2021</p>	<p>Safeguards Monitoring and Stakeholder Engagement on the Ghana Cocoa Forest Program Benefit Sharing Plan.</p>	<p>Kakum; Asunafo-Asutifi; Juabeso-Bia; Ahafo Ano South, Atwima Mponua, Atwima Nwabiagya; and Sefwi Wiawso-Bibiani</p>	<p>To sensitize key stakeholders on the benefit sharing arrangements including the Upfront advance payment for the Ghana Cocoa Forest REDD+ Programme</p>	<ul style="list-style-type: none"> <li>• HIA executive members</li> <li>• FC</li> <li>• COCOBOD</li> <li>• Police</li> <li>• Fire Service</li> <li>• District Assembly</li> <li>• Agro Eco</li> <li>• Touton</li> <li>• Tropenbos Ghana</li> <li>• Department of Agric</li> <li>• MTS farmers</li> <li>• NCRC</li> <li>• Olam</li> <li>• ECOM</li> <li>• LMB</li> <li>• Rainforest Alliance</li> <li>• Traditional Authority</li> </ul>	<ul style="list-style-type: none"> <li>• Purpose of the BSP</li> <li>• Design process (stakeholder consultations, extensive field study)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Types of benefits (Carbon and non-carbon)</li> <li>• Distribution of ERPA proceeds including UAP and its use.</li> <li>• ER payment and performance scenarios</li> <li>• Flow of funds and governance</li> <li>• Monitoring of the BSP</li> </ul>	<ul style="list-style-type: none"> <li>• There should be a collaborative effort among stakeholders in the registration of farmers to benefit from the BSP as beneficiaries under the GCFRP</li> </ul>
<p>8th to 18th February 2022</p>	<p>Engagement in BSP and Monitoring of uptake of HIA governance arrangements</p>	<p>Asunafo – Asutifi, Ahafo Ano South, Atwima Mponua, Atwima Nwabiagya</p>	<p>To sensitize key stakeholders on the benefit-sharing arrangements including the Upfront advance payment for the Ghana Cocoa Forest REDD+ Programme and monitor the uptake of governance arrangement</p>	<ul style="list-style-type: none"> <li>• Members of the HIA governance structure</li> </ul>	<ul style="list-style-type: none"> <li>• Purpose of the BSP</li> <li>• Design process (stakeholder consultations, extensive field study)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Types of benefits (Carbon and non-carbon)</li> <li>• Distribution of ERPA proceeds including UAP and its use.</li> <li>• ER payment and performance scenarios</li> <li>• Flow of funds and governance</li> <li>• Monitoring of the BSP</li> </ul>	<ul style="list-style-type: none"> <li>• There should be investment or provision of funds for HMB members to continue stakeholder engagement on the BSP at the Sub-HIA and Community level.</li> </ul>

8 <sup>th</sup> – 10 <sup>th</sup> March 2022	Ghana Emission Reductions Training Program; World Bank Safeguards Training	FCTC, Akyakrom	To build capacities of stakeholders on some REDD+ topics including the BSP	<ul style="list-style-type: none"> <li>• NRS</li> <li>• FC</li> <li>• COCOBOD</li> <li>• EPA</li> <li>• MMDAs</li> <li>• HIA functional units</li> <li>• NGOs/CSOs</li> </ul>	<ul style="list-style-type: none"> <li>• Purpose of the BSP</li> <li>• Design process (stakeholder consultations, extensive field study)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Types of benefits (Carbon and non-carbon)</li> <li>• Distribution of ERPA proceeds including UAP and its use.</li> <li>• ER payment and performance scenarios</li> <li>• Flow of funds and governance</li> </ul>	<ul style="list-style-type: none"> <li>• There should be continuous stakeholder engagement on the BSP at the HIA level.</li> </ul>
21 <sup>st</sup> - 31 <sup>st</sup> March, 2022  &  16 <sup>th</sup> May – 9 <sup>th</sup> June, 2022	Capacity Building for HIA Leaders and Stakeholders	Asunafo – Asutifi, Ahafo Ano South	To build the capacities of stakeholders on REDD+ implementation process	<ul style="list-style-type: none"> <li>• Members of the HIA governance structure</li> </ul>	<ul style="list-style-type: none"> <li>• Purpose of the BSP</li> <li>• Design process (stakeholder consultations, extensive field study)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Types of benefits (Carbon and non-carbon)</li> <li>• Distribution of ERPA proceeds including UAP and its use.</li> <li>• ER payment and performance scenarios</li> <li>• Flow of funds and governance</li> </ul>	<ul style="list-style-type: none"> <li>• There should be continuous stakeholder engagement on the BSP at the HIA level.</li> </ul>
26 <sup>th</sup> - 28 <sup>th</sup> April, 2022  &  17 <sup>th</sup> - 20 <sup>th</sup> May, 2022	capacity building workshops for Local Level/Sub HIA participants.	Asunafo – Asutifi	To build the capacities of HIA leaders and stakeholders on critical REDD+ topics	<ul style="list-style-type: none"> <li>• Members of the HIA governance structure</li> </ul>	<ul style="list-style-type: none"> <li>• Purpose of the BSP</li> <li>• Design process (stakeholder consultations, extensive field study)</li> <li>• Beneficiaries (HIA landscape stakeholders, Government, Private sector)</li> <li>• Types of benefits (Carbon and non-carbon)</li> </ul>	<ul style="list-style-type: none"> <li>• There should be continuous stakeholder engagement on the BSP at the HIA level.</li> </ul>

					<ul style="list-style-type: none"> <li>• Distribution of ERPA proceeds including UAP and its use.</li> <li>• ER payment and performance scenarios</li> <li>• Flow of funds and governance</li> </ul>	
1 <sup>st</sup> – 2 <sup>nd</sup> of September, 2022	Engagement with Stakeholders and Hotspot Intervention Area Management Board members on the presentation of Emission reductions payments and the Fund flow mechanism	Mensvic, Accra  FC Auditorium, Accra	To present how ER results and allocated benefits were generated, the social and environmental indicators, HIA performance and their allocated benefits.	<ul style="list-style-type: none"> <li>• HMBs</li> <li>• Government officials including FC, Cocobod, MDAs, MMDAs etc</li> <li>• NGOs/CSOs</li> <li>• Private sector</li> </ul>	<ul style="list-style-type: none"> <li>• How ERs were generated</li> <li>• Social and environmental indicators used to measure HIA performance</li> <li>• HIA performance and their allocated benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Consultant to check the law and make inquiries on the possibility of opening a dollar account for the HIAs.</li> </ul>
14 <sup>th</sup> – 25 <sup>th</sup> November, 2022	Strengthening awareness of the benefits-sharing arrangement under the cocoa forest REDD+ programme	Asunafo – Asutifi, Kakum, Ahafo Ano South, Sefwi Wiawso – Bibiani and Juaboso - Bia	To deepen understanding of how ER results and allocated benefits were generated, as well as the social and environmental indicators, HIA performance and their allocated benefits.	<ul style="list-style-type: none"> <li>• HMBs</li> <li>• SHECs</li> </ul>	<ul style="list-style-type: none"> <li>• How ERs were generated</li> <li>• Social and environmental indicators</li> <li>• HIA performance and their allocated benefits</li> </ul>	Each HIA be further sensitized and educated by
17 <sup>th</sup> Jan 2 <sup>nd</sup> February 2023	Training of the functional governance units of the HIAs	Asunafo – Asutifi, Kakum, Ahafo Ano South, Sefwi Wiawso – Bibiani and Juaboso - Bia	Enhance the HIA stakeholders understanding of the operations of the Fund Flow Mechanism	<ul style="list-style-type: none"> <li>• HMB</li> <li>• SHECs</li> </ul>	<ul style="list-style-type: none"> <li>• The governance arrangements to manage the benefit-sharing processes of the FFM.</li> <li>• The roles of all bodies and actors in the FFM;</li> <li>• The role of HIA Members in the control and operations of Bank accounts for the receipt and disbursement of benefits.</li> </ul>	The next step was for the HMB to engage communities on the kind of farmer benefits they prepared. Formation of the HIA Implementation Committee (HIC)

					<ul style="list-style-type: none"> <li>Guidelines and controls in the operations of the HIA Implementing Committees and the HMBs related to benefit-sharing;</li> <li>The scope and process of the selection of community development projects/ farmer group benefits</li> </ul>	
13 <sup>th</sup> & 14 <sup>th</sup> April 2023	Stakeholders meeting on the Formation of HIC under the GCFRP	Asunafo Asutiti HIC, Ahafo Ano HIC, Sefwi Wiawso HIC and Juabeso HIC	The formation of the HIA Implementation Committee and its maiden meeting	<ul style="list-style-type: none"> <li>HMB</li> <li>Ghana Cocoa Board</li> <li>Forestry Commission</li> <li>CSOs/NGOs</li> <li>WCF</li> </ul>	<ul style="list-style-type: none"> <li>Governance arrangement under the GCFRP, the role of the RDA Committee of Trustees, role of HMBs, Process for selection of Consortium Partners for Procurement/Contracting process, Responsibilities of Procurement entities</li> </ul>	The next steps were for the various HICs to prepare and submit their finalized proposals to the NRS for onward submission to the RDA, create a WhatsApp platform for the group
13 <sup>th</sup> June 2023	Stakeholders' engagement with Municipal and District Assemblies on the GCFRP	Juaboso District, Bia West District, Asunafo North District, Asunafo South District, Asutifi North District, Asutifi South District, Ahafo Ano North Municipal, Atwima Nwabiagya Municipal, Ahafo Ano South West District, Ahafo Ano South East District, Atwima	The roles and responsibilities of the Assemblies and the eligible areas under the programme	<ul style="list-style-type: none"> <li>MDCEs</li> <li>Planning Officers</li> <li>Forestry Commission</li> <li>Ghana Cocoa Board</li> </ul>	<ul style="list-style-type: none"> <li>The pillars of the GCFRP</li> <li>The overview and rationale of the programme</li> <li>The programme area</li> <li>The type of benefits</li> <li>The roles and responsibilities of the Assemblies</li> <li>The BSP design process</li> <li>Who qualifies to be a beneficiary</li> <li>The percentage allocated to the various beneficiaries</li> <li>The distribution of the first carbon payments</li> <li>The Fund Flow mechanism and governance arrangement</li> </ul>	The next steps: Preparation and submission of workplans by the Assemblies and create a WhatsApp platform for the group to enhance communication and share lessons

		Mponua District Bibiani Anwiaso Bekwai Municipal, Sefwi Wiawso Municipal, Ankotombra District, Bodi District Assin South District, Assin Central District, Assin North District, Twifo-Hemang Lower Denkyira District			<ul style="list-style-type: none"> <li>The roles of the HIC, HMB, Consortium partners and farmers</li> </ul> SECTION C.	
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*1.3 Confirmation of whether any agreed changes to the benefit sharing arrangement identified during the previous reporting period have been completed.*

The BSP/ Fund Flow Mechanism has been updated to accommodate well-consulted perspectives and inputs from relevant stakeholders aimed at ensuring smooth implementation of the Fund Flow Mechanism which are detailed below:

- There has been an introduction of the administrative cost of 2% of carbon payments as part of the 69% allocation to the HIAs (farmer groups only) to facilitate HMB activities. The initial proposals on the farmer inputs submitted by the HICs to the RDA Steering Committee had an activity line for the operationalization of the Committee's activities. Therefore, at the RDA meeting held on 9<sup>th</sup> & 10<sup>th</sup> May, 2023, the Committee recommended that 2% of the carbon payment (farmer inputs only) to the HIAs should be set aside for administrative costs, comprising of overnight stays, communication and transport.
- 13% of carbon payment as part of the 69% allocation for HIAs (farmer groups only) should be allocated for contingency due to volatility in the market (price variations). The allocation for contingency is to cater for price variation, in case there are price hikes during procurement. However, in instances where the prices are stable or there is a reduction during procurement, the allotment for price variation would be used to purchase extra farmer benefits (prioritized benefit will be considered) and in case the allocation for price variation (contingency) does not meet up with the total amount, the quantities of the benefits would be reduced.
- As part of ensuring balanced representation of stakeholders to sit on the HIA Implementation Committee the HIC membership has been adjusted from six to eight. Currently the HIC structure allocates three slots for the HMBS and five for consortium partners (2 for CSOs/NGO, 2 government reps and 1 for private sector rep)

## **2. Institutional Arrangements**

*2.1 Agreed institutional arrangements under the BSP and appropriate resources for implementing entities to carry out their respective responsibilities in place.*

The Fund Flow Mechanism (FFM) Manual, which spells out the roles and responsibilities of the institutional arrangements under the BSP has been developed. The key institutions include the RDA Steering Committee, the HMB, the HIA Implementation Committee, and the Program Management Unit. Details on the key institutions are found in the FFM Manual, however, a summary of each of the above structures is provided below:

### **RDA Steering Committee**

A seven-member RDA Steering Committee has been set up to provide accountability backstopping for the ER payments. In line with the BSP, the Trustees are made up of representatives from the Ministry of Finance (Chair), National House of Chiefs, Office of the Administrator of Stool Lands, World Cocoa Foundation and Non-Governmental Organisations/Civil Society Organizations (NGOs/CSOs) namely: Tropenbos Ghana Consortium, Solidaridad West Africa and Forest Watch.

The NGOs/CSOs were selected through a competitive process to complete the Seven Member Committee of Trustees. In selecting the NGOs/CSOs representations, there was an initial open call to forest sector related NGOs/CSOs in the national dailies to submit applications. After the receipt of applications, a team chaired by the Ministry of Finance was put together to vet and select the most appropriate applicants. The successful three (3) are Tropenbos Ghana Consortium, Solidaridad West Africa and Forest Watch, Ghana.

### **PMU**

The Program Management Unit (PMU) caters to the members' activities, which are covered under the 'fixed cost' component for project coordination. The PMU has already facilitated the Committee's three (3) meetings which were held on 5<sup>th</sup> August 2022, 9<sup>th</sup> February, 2023 and 9<sup>th</sup> May, 2023. In the month of April 2023, the PMU recruited a BSP Officer to facilitate activities/correspondences on the disbursement of the Carbon Payments. The World Bank was officially notified on 26<sup>th</sup> April, 2023.

The PMU also provided technical backstopping for the procurement of selected inputs by the farmer groups within the SHIAs.

#### HMBs

The HMBs, which are the representatives of the communities, have been set up in 5 HIAs. The Atewa HIA, which is the sixth is however yet to be set up. The WB has provided some funds to support the development of the governance structures and a Consultant has been hired to support the process. The should be completed by the end of the second quarter 2024. The roles of the HMB include opening and managing HIA bank accounts, collation of HIA requests, monitoring of benefits distribution and execution of community projects. Details are in the first monitoring report. All the HMBs have subsequently opened the HMB accounts.

#### HIC

The Program has also set up the HIA Implementation Committee (HIC), which is made up of representatives from the respective HMBs as well as consortium partners (Government Agencies, CSOs/NGOs, and Private Sector). The eight (8) member committee is made up of three members selected by the HIA Management Board with one being a female, two representatives from CSOs/NGOs who are operating within the HIA and a representative each from the following institutions who have offices in the HIA: The Forestry Commission, The Ghana Cocoa Board, and the private sector cocoa companies nominated or selected in consultation with the World Cocoa Foundation (WCF). The roles of the HIC are defined in the FFM Manual. Designated funds for farmers in registered groups will be shared as in-kind, non-monetary benefits. Therefore, the HIC through the HMB will work with the registered farmers to agree on the appropriate farmer inputs to be given to each group of farmers.

Benefits to communities will also be shared in the form of community development projects. Some eligible areas under the community projects are the construction of Classroom blocks, CHPs compound, drilling and mechanization of boreholes and provision of school furniture. The Committee will receive applications prepared by the HIA Management Board and then select those projects that can be supported. The community projects must align with the Medium-Term Development Plan of the beneficiary assemblies. The designated benefits to the Traditional Authorities will be transferred to the Traditional Council's account directly. The RDA has advised that, since Traditional authorities receive royalties through the Office of Administrator of Stool Lands, the PMU should take a cue from that disbursement mechanism and use the same approach to disburse the benefits due to the Chiefs. The FC, Cocobod and RDA Steering Committee would engage the National House of Chiefs to discuss further the modalities. Discussions are underway with the Office of the Administrator of Stool Land to facilitate a meeting with the Forestry Commission and the National House of Chiefs

### *2.2 Regulatory or administrative approvals required for implementing the BSP*

The ERPA's signature by the Finance Minister and the Chief Executive of the Forestry Commission denotes government support for the BSP. For stakeholder buy-in and acceptability, the document underwent a series of stakeholder discussions and validations. In line with this, no other regulatory or administrative approvals are required for the implementation of the BSP.

### *2.3 Assessment of BSP stakeholders (beneficiaries and administrators) understanding of their obligations, roles and responsibilities.*

The BSP stakeholders made up of government entities (FC, Cocobod, and MMDAs), community members (farmer groups), Traditional Authorities, NGOs/CSOs and the Private sector have been taken through a series of consultative meetings and expert review meetings to discuss the draft BSP. Various engagements with key stakeholders have helped them better understand their roles, responsibilities and obligations. At the national level, members of the RDA Steering Committee have been trained on their roles and responsibilities so far as administering carbon payments is concerned. This was done during the first RDA Steering Committee meeting by the FFM Consultant (details in the first RDA meeting minutes). The RDA Steering Committee has had two more meetings afterward on the 9<sup>th</sup> of February, 2023 and the 9<sup>th</sup> and 10<sup>th</sup> May 2023. The minutes for the second can be found here<sup>45</sup>:

At the sub-national level, the local decision-making bodies (HIA Functional Units) thus, the HMBs, SHEC, CEC/ZEC and CRMC have been engaged on multiple accounts of their roles and responsibilities. In addition to the efforts of the PMU, the FFM Consultant has taken steps to engage the Functional Units to increase awareness of their roles and responsibilities.

A capacity building workshop was organized for HIA stakeholders on the operationalization of the Fund Flow Mechanism from 17 January – 2 February 2023. At the end of the programme, participants were able to absorb the complexity of the benefit sharing process, suggested eligible areas for the execution of the community projects and the need to align them with the DA’s medium-term plans, proposed modalities for the procurement and distribution of the benefits<sup>46</sup>.

In December 2021, the World Bank, as part of a safeguards field mission to the Asunafo-Asutifi HIA to assess the understanding of the governance functional units (HMB, SHEC), indicated that understanding of the BSP process was sound.

A similar exercise was also undertaken by the Bank during the December 2022 WB Implementation Support Mission and again, the feedback indicated an improved understanding of the BSP processes by stakeholders. The Aide Memoire indicated that from the field visit to the HIAs (Kakum, Asunafo-Asutifi, and Juaboso-Bia) and discussions with stakeholders, the following areas of support were highlighted by stakeholders.

Although the HMB members have a good understanding of the criteria and modalities of the first ER Payments and benefit sharing plan, the level of understanding among other stakeholders was varied. At the last WB mission held on the 23<sup>rd</sup> -25<sup>th</sup> May 2023, the HMB Chairmen from the HIAs (Kakum, Ahafo Ano, Sefwi Wiawso, Asunafo-Asutifi, and Juaboso-Bia) who were invited to the meeting exhibited an improved understanding of the BSP processes.

The NRS will further engage the Sub- HIA stakeholders such as the SHEC, CRMC, CEC and traditional authorities to help ensure transparency and a common understanding of Benefit-Sharing, its eligibility criteria and the process that needs to take place for communities to access the carbon benefits and help manage expectations and grievances.

The HMBs and HICs who are tasked to support communities and farmer groups with the preparation of their proposals for the request for funds for community projects, farmer inputs, etc. (no cash payments) have been given the needed orientation using the Fund Flow Manual, Procurement and Contracting process. This orientation meeting

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[https://reddsis.fcghana.org/admin/controller/publications/MINUTES%20%202ND%20RDA%20COMMITTEE%20MEETING%20\(2\).docx](https://reddsis.fcghana.org/admin/controller/publications/MINUTES%20%202ND%20RDA%20COMMITTEE%20MEETING%20(2).docx)

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<https://www.reddsis.fcghana.org/admin/controller/publications/HIA.CapacityB.Training.Report.25.2.23.Final.docx>

was held on 13<sup>th</sup> and 14<sup>th</sup> April, 2023 in Kumasi. Participants at the meeting were the HMBs Executives, CSOs/NGOs, FC, Cocobod and WCF.

In addition to the above, under the Capacity Building Project, Solidaridad West Africa undertook training of trainers for the HIA functional units to build the capacity of participating Community-based organizations, notably CREMA/Zonal Executive Committees (CECs/ZECs) on developing and tailoring the messaging on the Emissions Reduction Program to HIA Landscape Stakeholders, which comprises of registered farmer-groups, Traditional Authorities, and community members. This has enabled communities to better understand their roles and responsibilities within the GCFRP program governance structures and understand the concepts and processes of the Benefit Sharing Plan at HIA levels.

There were inception meetings with the World Bank and the NRS to discuss the criteria for the selection of trainers and the exploration of the entry points which was agreed to be CREMA/Zonal level who will subsequently train community members on the GCFRP and associated benefit sharing plan.

Solidaridad in collaboration with NRS embarked on an initial community/landscape-level engagement within the HIAs. The aim was to officially introduce the programme and Solidaridad to the community stakeholders and explore knowledge gaps that exist around the GCFRP implementation and the BSP amongst farmers and community members.

A five-day intensive training session of master trainers was held for 15 participants, including 6 women, drawn from HMBs, selected NGOs, and landscape-level community-based organizations on the GCFRP context, its implementation activities, beneficiaries, benefit sharing plan, and fund flow mechanism. The participants received additional training in communication/facilitation skills and public speaking to equip them to deliver training to the community landscape actors.

These master trainers then put their newly acquired skills into action by training sub-HIAs/CECs/ZECs under the direct supervision and guidance of Solidaridad with the support of the NRS. The fully competent and completely equipped Master Trainers successfully delivered training to 617 persons in 10 communities within the 5 HIAs under Solidaridad's supervision to monitor the skills obtained.

Illustrations and posters were designed and printed to facilitate the training sessions and enhance understanding. These were used to further support the development of well-illustrated flip-chart and animation videos to enhance visualization and tailor the messaging on the Emissions Reduction Program to HIA landscape stakeholders. Knowledge retention and satisfaction assessment surveys were conducted to gather feedback where there was an overall consensus that using tailored delivery approaches (such as visual aids) is critical for creating a better understanding for a wider array of stakeholders on the various activities that characterize GCFRP implementation.

#### *2.4 A system in place for recording the distribution of benefits and associated obligations to eligible beneficiaries.*

For the receiving, tracking, distribution, and supervision of ER payments, a REDD+ Dedicated Account has been established and is operational. The first payment of \$3,562,280, equivalent to GH¢38,575,573.892, was received in January 2023 and deposited in the RDA Account.

The HMBs have respectively opened Bank accounts and transfers for the farmer inputs only have been made to their accounts.

The 19 Municipal and District Assemblies, Cocobod and FC have also submitted their respective accounts and their carbon payments has been transferred into these accounts.

The HMB collated the farmer’s inputs within the various HIAs and submitted them to HIC to prioritise and prepare a proposal. The proposals were submitted to the RDA Steering Committee through the PMU. The Government Institutions including the MMDAs, FC and Cocobod also submitted proposals. The RDA Steering Committee vetted these proposals and approved the authorisation forms for the carbon payments transfers to the respective accounts of the following; the 5 HIAs (Asunafo-Asutifi, Juaboso-Bia, Ahafo Ano South, Kakum and Sefwi Wiawso-Biabini), Ghana Cocoa Board Forestry Commission and the 19 Municipal and District Assemblies.

Kindly find attached copies of the authorisation forms in Appendix 1.

The release of funds to the various beneficiaries as well as the resolution letters to set up the accounts are indicated in Appendix II below.

The RDA Steering Committee, the body that would provide controls and transparency backstopping has been set up. Specifically, members will

- Authorize disbursement of funds to government accounts
- Review of PMU reports assessing each HIA’s relative performance
- Endorse the carbon payments due to each beneficiary
- Provide back-stopping for procurement processes
- Receive, review, and approve reports/proposals from each HIA Implementation Committee for HIA beneficiaries, 19 beneficiary assemblies, Cocobod and FC

The program has set up the HIC for the 5 HIAs (details in 2.1 above HIC will serve as oversight and advisory body for Carbon payments at the HIA level).

All systems and control mechanisms are in place for tracking and record keeping. The PMU would be the repository of all records related to the BSP. For instance, the documentation of the nomination processes of the RDA Steering Committee. The minutes of the RDA Steering Committee would also be kept by the PMU. The proposals from the 5 HIAs, FC, Cocobod and the 19 beneficiary Municipal and District Assemblies including all reports on the procurement and contracting process will trickle from the bottom up and kept at the PMU. The PMU in collaboration with the ICT department of the Forestry Commission is in the process of developing software to collate the distribution of benefits to all eligible beneficiaries, which is expected to be operational by January 2024.

The table below indicates the type of records and where they would be kept.

Table 19: Repository of Key Records

<b>Records</b>	<b>Repository</b>	<b>Level</b>
Minutes of RDA	PMU	National
Reports submitted by Beneficiaries to RDA	PMU	National
Implementation Reports on the use of Payments	PMU, HMB	Sub National
Community Proposals	PMU, HIC	Sub National
Vetted Proposals from Communities	PMU, HIC	Sub National
Vetted proposals from Government Institutions	PMU, Assemblies, Cocobod	National, Sub National

Audit Reports	PMU, HIC	National, Sub National
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NB: Audit is yet to be conducted

### 2.5 Accountability mechanisms in place and functional

The REDD+ programme ensures the full and effective participation of stakeholders in all REDD+ activities as part of respecting and resolving safeguards. This guarantees that the programme's design and execution consider the opinions of all stakeholders. The governance structures established in the HIAs serve as an accountability tool where the relevant stakeholders within the structure convene meetings and dialogue occasionally to discuss program implementation and any bottlenecks to be addressed. In addition, the project has also established a Feedback and Grievance Redress Mechanism (FGRM). The FGRM has been decentralized to all HIAs with the district's officers and sub-national safeguards focal points within NRS overseeing and addressing any grievance. Cases are documents and fed to the national level for beneficiaries to communicate grievances and feedback on benefits distribution on all levels. Part of the prior extensive safeguards capacity building trainings included specific trainings on the FGRM and its usage. Beneficiaries at varied HIAs/HMB levels have utilized the FGRM with satisfactory results. An FGRM book is available within the local government offices in the HIAs with records of grievance and redress. These are collated and send to NRS at national level. All related documents and reports are made available to the public on the FC website to ensure openness and transparency.

Table 20: Publicly Available BSP Documents and links

BSP Document	Link
Kakum HIA consortium meeting report	<a href="https://reddsis.fcghana.org/admin/controller/publications/Minutes%20of%20Kakum%20consortium%20meeting_%20September%202020.pdf">https://reddsis.fcghana.org/admin/controller/publications/Minutes%20of%20Kakum%20consortium%20meeting_%20September%202020.pdf</a>
National Stakeholders engagement on BSP and Upfront Advance Payment	<a href="https://reddsis.fcghana.org/admin/controller/publications/REPORT%20ON%20NATIONAL%20STAKEHOLDER%20%20ENGAGEMENT%20MEETINGS%20ON%20BSP%20AND%20REDD+%20UPDATE%20FOR%20THE%20GCFRP.pdf">https://reddsis.fcghana.org/admin/controller/publications/REPORT%20ON%20NATIONAL%20STAKEHOLDER%20%20ENGAGEMENT%20MEETINGS%20ON%20BSP%20AND%20REDD+%20UPDATE%20FOR%20THE%20GCFRP.pdf</a>
First Monitoring Report	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.reddsis.fcghana.org/admin/controller/publications/Monitoring%20Report_GCFRP_Ghana_28_06_2021.pdf
Final Benefit Sharing Plan	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.reddsis.fcghana.org/admin/controller/publications/Final%20BSP_Ghana_%20March%202020.pdf
Brochure for understanding the BSP	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.reddsis.fcghana.org/admin/controller/publications/Brochure_Understanding%20BSP.pdf
Training Manual	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.reddsis.fcghana.org/admin/controller/publications/Final%20Draft%20-%20Flipchart%20for%20Trainers.pdf
Benefits	https://www.reddsis.fcghana.org/admin/controller/publications/2.%20WHAT%20BENEFITS%20ARE%20YOU%20GOING%20TO%20GET%20FROM%20%20THE%20%20GCFRP.jpg
'To do Things'	<a href="https://www.reddsis.fcghana.org/admin/controller/publications/1.%20DO%20THESE%20THINGS%20TO%20BENEFIT%20FROM%20THE%20%20GCFRP.jpg">https://www.reddsis.fcghana.org/admin/controller/publications/1.%20DO%20THESE%20THINGS%20TO%20BENEFIT%20FROM%20THE%20%20GCFRP.jpg</a>

Share of beneficiaries from first ER Payment	<a href="https://www.reddsis.fcghana.org/admin/controller/publications/SHARES%20OF%20BENEFICIARIES%20FROM%20FIRST%20ER%20PAYMENTS.xlsx">https://www.reddsis.fcghana.org/admin/controller/publications/SHARES%20OF%20BENEFICIARIES%20FROM%20FIRST%20ER%20PAYMENTS.xlsx</a>
First RDA Meeting Minutes	chrome-extension://efaidnbmnnnibpcjpcglclefindmkaj/https://www.reddsis.fcghana.org/admin/controller/publications/Minutes%20of%20RDA%20Steering%20Committee%20Orientation.pdf
Second RDA meeting minutes	<a href="https://reddsis.fcghana.org/admin/controller/publications/MINUTES%20-%202ND%20RDA%20COMMITTEE%20MEETING%20(2).docx">https://reddsis.fcghana.org/admin/controller/publications/MINUTES%20-%202ND%20RDA%20COMMITTEE%20MEETING%20(2).docx</a>
Formation of HICs	<a href="https://reddsis.fcghana.org/admin/controller/publications/REPORT_FORMATION%20OFF%20HICs.docx">https://reddsis.fcghana.org/admin/controller/publications/REPORT_FORMATION%20OFF%20HICs.docx</a>
Stakeholders' engagement with MMDAs	<a href="https://reddsis.fcghana.org/admin/controller/publications/MMDAs%20STAKEHOLDER%20ENGAGEMENT%20REPORT.docx">https://reddsis.fcghana.org/admin/controller/publications/MMDAs%20STAKEHOLDER%20ENGAGEMENT%20REPORT.docx</a>

As indicated in the fixed costs (table 8; GCFRP fixed cost – pg 29 of the BSP), USD 10,000 from the FC component shall be set aside to audit all the accounts for the flow of all carbon payments. In addition to these annual audits, the Auditor General audits FC operational activities for every financial year. In line with this, the Carbon Payments would be audited both at the National and Sub National Levels.

## 2.6 Functionality of the FGRM

As already indicated, the FGRM is in use (see Annex 1 above). At both regional and district levels, focal persons have been trained to receive and address feedback and/or grievances, thus, there is the readiness to receive and address concerns. Hotlines are accessible for users to call to file a complaint. All significant partners and stakeholders within the programme's scope are also aware of the FGRM's modalities.

Within the GCFRP region, Safeguards Focal Persons (SFPs), the Safeguards team, Consortium partners, and HIA functional units have all received training on the FGRM operational modalities. The SFPs are expected to keep track of data on complaints that have been filed and resolved. Additionally, the SIS web platform is set up to take complaints and address them. Despite the fact that the FGRM has been the subject of numerous workshops for training and raising awareness, ongoing stakeholder engagement is required.

Specific sessions are devoted to FGRM at each Safeguards capacity training workshop and stakeholder interaction. All HIAs underwent FGRM sensitization as part of UAP operations because it is not necessary to fully establish governance structures prior to FGRM sensitization. The FGRM also enables complaints of exclusion from consultations to be addressed; as a result, it serves as a useful tool for locating marginalized stakeholders who may have unintentionally been left out of stakeholder mapping studies.

No grievances were recorded within the period of review.

## 2.7 Adequate human and financial resources allocated or maintained for implementing the BSP

The National REDD+ Secretariat (NRS) has a team in place that is responsible for the ER Program as well as the operationalization of the BSP. At the National level, there is a Programs Coordinator, Deputy Coordinator, 3 MRV/GIS

Specialists, Governance and safeguards Specialists to coordinate the activities of 36 Regional and District Safeguards Officers and a BSP Officer to support the operationalization of the BSP (FFM).

The Resource Management Support Centre of the Forestry Commission provides MRV/GIS support to develop the HIA relative performance by interpreting the sample plots within the HIAs. Based on this work, the relative environmental performances of the respective HIAs were developed. The RMSC will support the PMU in subsequent reporting cycles.

The RDA Steering Committee provides accountability backstopping for ER payments. The operational cost for running the GCFRP and operationalizing the BSP is deducted as a fixed cost from the gross payment that Ghana would receive.

The HIA Implementation Committee made up of members of the HMB and the consortium has also been formed to assist the HMB in setting up the HIA's bank account and review proposals submitted by the HIA Management Boards and submit to the RDA Steering Committee through the PMU for approval and release of funds to their accounts.

### **3. Status of Benefit Distribution**

#### *3.1 Distribution of all monetary and non-monetary benefits during the reporting period.*

The Final Benefit Sharing Plan (Table 5; Page 21) indicates Carbon benefits from Carbon Fund and performance indicators (Beneficiaries and Benefit type (Monetary/Non-Monetary)).

The following processes/steps guide the disbursement of the carbon payment

- Development of the MR report
- Validation and Verification of MR Report
- Development of HIA Indicators
- Breakdown of beneficiary shares
- Set up of RDA Steering Committee
- Engage HMBs on the relative Performance and agree on the breakdown of the benefits
- Engage the WB on the breakdown of the benefits
- Undertake capacity Building (throughout the process)
- Formation of HICs
- Submission of farmer benefits
- HIC deliberates on the proposals
- Submission of proposals to the RDA
- RDA vets and approves the proposals
- Opening of accounts by HIAs and submission of account details by Government institutions (FC, MMDAs and Cocobod)
- Release of funds to HIA accounts per the approval of the authorisation form
- Goods/Services are procured
- HIC endorses the work and authorises payment
- Based on authorization, cheques are issued accordingly
- Reports are submitted to the RDA



The UAP was used for operations of the PMU as well as the implementation of some key programme activities such as

- Recruitment of 1 safeguards specialist and 1 governance specialist
- Supply of 380, 000 tree seedlings to farmers
- Establishment of 151ha of forest plantation through MTS
- Establishment of 824 ha of enrichment planting and maintaining them
- Engagement and Capacity Building of functional units on the BSP.
- RDA Steering Committee Meetings
- Facilitate the development of proposal
- Engagement of stakeholders leading to the formation of HICs
- Engagement with relevant MMDAs
- Safeguards Monitoring within 5 HIAs.
- Key consultations and engagements leading to the development of the Atewa ESMP
- Organization of a public durbar to present cheques to the Beneficiaries to enhance the transparency of the process
- Salary Payments to Safeguards and Governance Officers
- Monitor the delivery and safekeeping of farmer inputs at the 5HIAs (Asutifi Asunafo, Kakum, Ahafo Ano, Sefwi Wiaawso and Juaboso)

The RDA Steering Committee, therefore, went ahead to approve the authorization forms for the carbon payments transfers for the beneficiaries.

Below is the table detailing the carbon payments to each beneficiary;

Table 21: Carbon Payments to Beneficiaries

GOVERNMENT AGENCIES				
MUNICIPAL AND DISTRICT ASSEMBLIES				
NO.	ASSEMBLY	CARBON PAYMENT (USD)	CARBON PAYMENT (GH¢)	BENEFIT TYPE
1.	ASUTIFI SOUTH DISTRICT ASSEMBLY	5,591.40	60,548.68	Non-monetary
2.	ASUTIFI NORTH DISTRICT ASSEMBLY	5,591.40	60,548.68	
3.	SEFWI WIAWISO MUNICIPAL ASSEMBLY	3,727.60	40,365.78	
4.	BIA WEST DISTRICT ASSEMBLY	8,697.73	94,186.85	
5.	BODI DISTRICT ASSEMBLY	3,727.60	40,365.78	
6.	BIBIANI ANHWIASO BEKWAI MUNICIPAL ASSEMBLY	3,727.60	40,365.78	
7.	ASUNAFO NORTH MUNICIPAL ASSEMBLY	5,591.40	60,548.68	
8.	ATWIMA NWABIAGYA MUNICIPAL ASSEMBLY	2,485.07	26,910.53	

9.	ASSIN SOUTH DISTRICT ASSEMBLY	4,348.86	47,093.37	Non-monetary
10.	AHAFO ANO SOUTH WEST DISTRICT ASSEMBLY	2,485.07	26,910.53	
11.	AKONTOMBRA DISTRICT ASSEMBLY	3,727.60	40,365.78	
12.	JUABOSO DISTRICT ASSEMBLY	8,697.73	94,186.85	
13.	AHAFO ANO NORTH MUNICIPAL	2,485.07	26,910.53	
14.	ASSIN NORTH DISTRICT ASSEMBLY	4,348.86	47,093.37	
15.	ATWIMA MPONUO DISTRICT ASSEMBLY	2,485.07	26,910.53	
16.	AHAFO ANO SOUTH EAST DISTRICT	2,485.07	26,910.53	
17.	TWIFO HEMANG LOWER DENKYIRA DISTRICT ASSEMBLY	4,348.86	47,093.37	
18.	ASSIN CENTRAL MUNICIPAL ASSEMBLY	4,348.86	47,093.37	
19.	ASUNAFO SOUTH DISTRICT ASSEMBLY	5,591.40	60,548.68	
Total		84,492.25	914,957.67	
<b>FORESTRY COMMISSION</b>				
20.	FORESTRY COMMISSION	180,336.70	1,952,848.09	Monetary
Total		180,336.70	1,952,848.09	
<b>GHANA COCOA BOARD</b>				
21	GHANA COCOA BOARD	89,462.36	968,778.95	Monetary
Total		89,462.36	968,778.95	
<b>HIA LANDSCAPE STAKEHOLDERS (FARMER INPUTS)</b>				
22.	ASUTIFI ASUNAFO	442,010.30	4,786,485.34	Non-monetary
23.	AHAFO ANO	245,561.28	2,659,158.54	
24.	KAKUM	343,785.79	3,722,821.94	
25.	JUABESO	343,785.79	3,722,821.94	
26.	SEFWI WIAWSO	294,673.54	3,190,990.30	
Total		1,669,816.70	18,082,278.06	

BoG exchange rate: 10.8289

The payments of monetary benefits have not been made to the Traditional Authorities due to the lack of consensus on how the payment should be routed, i.e., whether through the National House of Chiefs or the Office of the Administrator of Stool Lands (OASL). However, during the last WB Mission in November 2023, it was agreed, based on further reading of the BSP that the ER payment be transferred to the paramountcy through the National House of Chiefs as performance-based payment for presiding over the lands and resources of the HIAs and providing leadership that led to the generation of ERs at the local HIA level. Following this, a notice of disbursement of funds has been issued to the beneficiary Traditional Authorities, and they have submitted their account details for the Carbon fund transfers. Therefore, the TAs should receive their carbon payments by the Middle of April 2024 at the latest.

The 5 HIAs have initiated their procurement process where they advertised the request for quotation for the procurement of goods. Some of the prioritized inputs to procure were Cutlasses, mist blowers, indigenous tree seedlings, wellington boots, knapsack sprayers, pruners fertilizer 1-liter bottles etc. Tender opening and evaluation

have also been conducted per the procurement guidelines. The procurement process was completed in in November 2023.

Below is a table showing the dates for Advert (Request for quotation), tender opening and tender evaluation per the 5 HIAs;

Table 22: Dates for RFQ, Tender Opening and Evaluation

NO	HIA	DATE FOR ADVERT (RFQ)	TENDER OPENING DATE	TENDER EVALUATION
1	Kakum	5 <sup>th</sup> June 2023	19 <sup>th</sup> June 2023	3 <sup>rd</sup> July 2023
2	Sefwi Wiawso	6 <sup>th</sup> June 2023	20 <sup>th</sup> June 2023	4 <sup>th</sup> July 2023
3	Juabeso	7 <sup>th</sup> June 2023	21 <sup>st</sup> June 2023	5 <sup>th</sup> July 2023
4	Asutifi Asunafo	8 <sup>th</sup> June 2023	22 <sup>nd</sup> June 2023	6 <sup>th</sup> July 2023
5	Ahafo Ano	9 <sup>th</sup> June 2023	23 <sup>rd</sup> June 2023	7 <sup>th</sup> July 2023

The procurement exercise took two weeks intervals to complete each stage (from advert to tender evaluation). The tender opening was done two weeks after the request for quotations and the 5 HIA Implementation committee met to open the tender documents in the presence of tenderers or their representatives after that, another two weeks were scheduled to evaluate and come out with the responsive tenderers.

The 5HIAs are in the process of giving out award letters to the responsive suppliers to supply the farmer inputs.

A ceremony was organized to present the emission reduction payments to GCFRP beneficiaries. This was organized at Forestry Commission Training Center on the 20<sup>th</sup> July 2023. Participants at the programme included the Deputy Minister for Lands and Natural Resources, the Ashanti Regional Minister, the Chief Executive, FC, a Representative from the World Bank, and Municipal and District Chief Executives among other key stakeholders. Pictures of the ceremony can be found in Annex 4

### 3.2 Number and type of beneficiaries who received benefits during the reporting period

Currently, distribution of farm inputs under the famer benefit category has kickstarted in all of the five active the HIAs namely Asunafo- Asutifi, Ahafo Ano, Kakum, Sefwi Wiawso-Bibiani and Juaboso-Bia. Data on the beneficiaries receiving benefits are being collated. However, Table 23 shares details of number of beneficiaries expected to receive benefit within the five HIAs.

Table 23: No. of farmers benefiting from the farmer inputs only within the 5HIAs

NO.	HIA	NUMBER OF FARMERS	MALE	FEMALE
1	KAKUM	11,933	8,114	3,819
2	JUABESO	31,352	15,049	16,303
3	AHAFO ANO	75,112	44,316	30,796
4	ASUSTIFI ASUNAFO	66,815	39,421	27,394
5	SEFWI WIAWSO	55,796	35,542	20,254

<b>TOTAL</b>	<b>241,008</b>	<b>142,442</b>	<b>98,566</b>
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With respect to the Government Agencies, the Ghana Cocoa Board, Forestry Commission and the 19 beneficiary Municipal and District Assemblies under the GSCFP areas have also received their benefits within the reporting period.

However, the governance structure for the sixth (6<sup>th</sup>) HIA is yet to be developed. Also, the HMBs have initiated the collation of community projects within the HIAs. The NRS is yet to engage the National House of Chiefs on the modalities that will facilitate the operationalization of benefits to the traditional authorities.

*3.3 Adequate implementation support of beneficiaries to assist in the management and use of benefits distributed to them?*

The required governance structures have been developed. This includes the RDA Steering Committee, the HMB, HICs, and SHECs.

Capacity-building workshops (Table 1) have been organised for the various structures and they are aware of their roles and responsibilities.

In addition to capacity building workshops, the PMU has provided logistical support for the organization of the RDA Steering Committee. At the first meeting of the RDA, an orientation on members' roles and responsibilities was led by the FFM Consultant.

The beneficiaries have also prepared proposals in line with the eligible areas under the programme.

The PMU engaged HMBs to validate the estimated shares of beneficiary groups. The FFM Consultant and a WB Safeguards Specialist have also trained the HMBs, SHECs on the development of proposals as well as their roles and responsibilities.

*3.4 Description and assessment of the effectiveness of the mechanisms for ensuring transparency and accountability during the implementation of the BSP.*

To ensure transparency and accountability at all levels;

At the National level the RDA Steering Committee;

- has no member being a beneficiary of the programme.
- The CSOs representation on the committee was taken through a competitive open call of expression of interest before their selection on the board
- The Committee approves proposals by the HICs before funds are disbursed into their accounts

At the Sub-national level the HMBs;

- Authorises payments for the HIAs and HICs
- Were given the draft FFM to give their comments and inputs before its finalisation so they are aware of the entire process
- The advert for the procurement of goods was posted at vantage points within the HIAs to ensure transparency
- the FFM consultant engaged key stakeholders and developed the right frameworks and procedures.

### *3.5 Continued Relevancy of Benefit Sharing distributions to core objectives and legitimacy of the ER Program objectives*

The Benefit Sharing distributions continue to be relevant to the ER Program as a results-based program. The BSP needed to be developed in anticipation of the carbon and non-carbon benefits that the GCFRP will generate. Since the receipt of the Carbon Payments, the BSP has guided the disbursement process.

This is expected to incentivize the beneficiaries to continue to contribute to achieving the target ERs and improve local economic development.

### *3.6 Description of the mechanisms in place to verify how benefits are used and whether those payments provide sufficient incentive or compensation to participate in program activities to change land use or reduce carbon emissions.*

First, the mechanism of setting up the accounts, and requesting for benefits has inherent control mechanisms for ensuring that benefits are effectively and efficiently utilized. For instance, before HMBs sign off cheques for the payment of goods/services, the HIC would have to endorse the payment before such payments could be made. The HICs were also engaged thoroughly in the procurement and contracting processes and they are aware of their roles.

The proposal template which included, the type of benefit that would go to the beneficiaries with their decision and justification for the choice of activity was very participatory and encouraged the beneficiaries to be continually engaged in the program. For instance, at the time of this report, the HIAs through the HICs, FC, Cocobod and Municipal and District Assemblies had submitted their proposals to the RDA Steering Committee and their proposals have been subsequently approved.

As a way to verify how benefits are being used, the beneficiaries will submit detailed progress reports to the PMU for onward submission to the RDA Steering Committee on the activities in their approved proposals detailing lessons learnt, challenges and way forward.

The program has also put in place adequate checks at the various levels for the disbursement of the Carbon payments.

- At the National level, the RDA vets proposals and requests from all beneficiaries before endorsing payments
- The RDA together with the PMU is expected to undertake monitoring on the benefits sharing at the sub national level.
- The PMU is expected to produce a half-year report on the BS, also for the Bank's review
- The HIC is expected to undertake monitoring of all activities on what the funds are being used for, and whether they are in line with the proposals endorsed and submitted to the RDA Steering Committee.

The above notwithstanding, the FGRM mechanism would also be used to address grievances if any.

### *3.7 Understanding of beneficiaries of their continued obligations*

Obligations, roles and responsibilities are the key elements in the Framework Agreements, HMB constitutions, CREMA bye-laws and constitutions. As the process of setting up governance structures progresses, there is evidence of understanding of these obligations, roles and responsibilities with the needed capacity building. However, as ER payments have been received, they will be another layer to assess the understanding and priorities assigned to these obligations, roles and responsibilities. Continuous capacity-building workshops would be organized for the communities' governance structures to strengthen their monitoring capacities. As part of measures for beneficiaries to understand their continued obligations, one of the eligible areas for the utilisation of funds by the Assemblies is to support the enactment and enforcement of HIA and Sub-HIA by laws.

#### **4. Implementation of the Environmental and Social Management Measures for the BSP**

##### *4.1 Extent to which the measures for managing the environmental and social aspects of BSP activities have been implemented in the finalized BSP*

The measures that would be applied for managing both the environmental and social aspects of the Program, sub-projects/activities and its BSP are the Safeguards instrument, protocols and Plans which the ER programme is subjected to including Benefit Sharing. Therefore, all activities (services, community projects) that would be implemented under the BSP would also follow the same; safeguards instrument, protocols and safeguards plans.

#### **5. Recommendations for BSP Improvement or Modifications.**

##### *5.1 Specific recommendations for modifying the procedural or substantive content of the BSP*

*To facilitate HMB coordination activities, an administrative allocation of 2% of ER payments from the farmer inputs component only has been introduced by the RDA SC upon the request of the HMBs/HICs.*

*The proposals on work needed to be done to procure farmer inputs submitted by the HICs to the RDA Steering Committee, had an activity line for operations costs. The HICs made a case that the cost of mobilization, outreach and fulfilling the procurement procedures to purchase and distribute the farmer inputs had not been catered for in any aspect of the BSP. Therefore, in their proposals, they had allocated varying percentages for this operations costs. This omission was found to be the case upon reflections by the RDA.*

*Therefore, at the RDA meeting held on 9th & 10th May, 2023, the Committee recommended that 2% of the ER payments (farmer inputs component only) be set aside to support the operations costs of the HICs and HMBs for their meetings and outreaches to cover the cost of accommodation for overnight out of station stays, transportation, communication and refreshments. The 2% was adopted as a uniform provision to avoid arbitrary allocations by HMBs/HICs. This was presented to the HICs and they accepted the uniformity of the provision to support their application. The NRS facilitated these conversations and also informed the World Bank accordingly*

*5.2 Procedural or administrative obstacles to timely distribution of benefits.*

There has not been a significant administrative obstacle to the timely distribution of benefits.

*5.3 Evidence of other emerging risks that may affect the sustainability or effectiveness of the BSP.*

No emerging risks have been identified yet since the initiation of the benefit sharing process. It is hopeful that the BSP will be sustained and be effective through the programme life cycle.

*5.4 Suggested timeline and an outline of administrative arrangements to introduce any recommended changes.*

The recommended changes made so far have been more procedural and therefore no administrative arrangements have been introduced.

### ANNEX 3: INFORMATION ON THE GENERATION AND/OR ENHANCEMENT OF PRIORITY NON-CARBON BENEFITS

#### Priority Non-Carbon benefits

##### 1. Identified set of priority Non-Carbon benefits

The priority non-carbon benefits which are deemed to be critical to incentivizing the behavioral changes which will produce ERs within the GCFRP area are listed in the table below. These non-carbon benefits are same as were identified during the ERPD formulation:

Table 24: Priority Non-Carbon Benefits

Priority Non-Carbon Benefit	<ul style="list-style-type: none"> <li>• <i>Details on activities for generation and enhancement</i> <ul style="list-style-type: none"> <li>○ <i>Approach (as defined in ERPD including relevant indicators)</i></li> </ul> </li> </ul>	• <i>REMARKS</i>
<ul style="list-style-type: none"> <li>• <i>Increased yields via Climate Smart Cocoa (CSC) practices</i></li> </ul>	<p>Farmer engagement package that gives farmers access to improved planting materials, access to inputs, access to technical extension, access to business extension, and access to financial and risk products will enable increases in yields and incomes. Ensuring transparency in cocoa purchases will further increase income for cocoa farmers;</p> <p>Indicators</p> <ul style="list-style-type: none"> <li>• <i>Average yield per hectare over the programme period</i></li> <li>• <i>Number of tree seedlings supplied to farmers</i></li> <li>• <i>Hectares of cocoa farms benefiting from hand pollination</i></li> <li>• <i>Number of farmers trained on CSC practices</i></li> <li>• <i>Number of farmers trained in Farmer Business School (FBS)</i></li> </ul>	<p>The ERPD estimates an average farm yield of 400kg/ha. This is expected to double over the Programme period.</p> <p>ACHIEVEMENT 2019/2020: 453kg/ha 2020/2021: 615kg/ha</p> <p>2020 &amp; 2021: 5,010,261 and 2,252,877 tree seedlings supplied respectively (<a href="https://fcghana.org/?p=3362">https://fcghana.org/?p=3362</a>, <a href="https://fcghana.org/?p=3501">https://fcghana.org/?p=3501</a>)</p> <p>29,618 ha pollinated as at end of 2020</p> <p>229,469 farmers were trained in 2020 (68,270 of the were females) 341,299 farmers were trained in 2021 (114,976 were females)</p> <p>7885 farmers were trained in 2020 (5,655 were females) 21,241 farmers were trained in 2021 (11,919 were females)</p>



<ul style="list-style-type: none"> <li>• <i>Tree tenure reform and resource use rights improved for farmers, land users</i></li> </ul>		<p>There have been several stakeholder consultations on tree tenure rights /benefits. Through these engagements, farmers now really appreciate the fact , ‘once one plants a tree, the tree belongs to her/him’ . The demand for shade trees from farmers to plant on farms has increased over the period. Currently, what remains inconclusive is the naturally occurring trees which have been/ are being nurtured by farmers. By law all such trees are invested in the President ( the State) for communal benefit. As the discussions continue, farmers are being supported to register their trees. By this process farmers can make claim to both user and benefit rights and clearly distinguish planted trees from naturally occurring ones.</p>
<ul style="list-style-type: none"> <li>• <i>Improved law enforcement</i></li> </ul>	<p>Strengthened collaboration with HIA communities on monitoring and enforcement of local by-laws and national laws;</p> <p>Indicators</p> <ul style="list-style-type: none"> <li>• <i>Number of Hotpot Intervention Areas Management Boards (HMBs) set up</i></li> </ul>	<p>The setting up of community frameworks (governance structures )to efficiently assist with monitoring has been the initial focus.</p> <p>The HIAs enact by-laws to include forest protection, and this makes it obligatory for local communities to support FC's forest protection mandate.</p> <p>4 additional HMBs set up (Kakum, Asunafo-Asutifi, Ahafo Ano, Sefwi Wiawso/Bibiani)</p>
<ul style="list-style-type: none"> <li>• <i>Improved landscape management and planning in the HIA landscapes</i></li> </ul>	<p>The adoption of a landscape management approach to natural resource management under the GCFRP through coordinated efforts and support by stakeholders will lead to improved landscape management and planning in HIA landscapes</p> <p>Indicators</p> <ul style="list-style-type: none"> <li>• <i>Number of framework agreements signed</i></li> </ul>	<p>The framework agreement is signed between the Forestry Commission, Ghana Cocoa Board and the Hotspot Intervention Area Management Board who represent the communities/the HIA.</p> <p>There are six HIAs, and the expectation is to sign 6 framework agreements. So far, one framework agreement had been signed (first MR). Additional four has now been signed: Asunafo/Asutifi, Kakum, Ahafo Ano and Sefwi Wiawso/Bibiani.</p> <p>Achievement</p>

	<ul style="list-style-type: none"> <li>No of women elected unto the HMB</li> <li>Number of HMB and Landscape Management Board (LMB) in place.</li> </ul>	<p>4 Framework Agreements Signed</p> <p>18 women elected unto the four (4) HMBs Total Membership of the 4 HMBs: 42 (18 women representing 42%)</p> <p>5 HMBs have been established</p>
<ul style="list-style-type: none"> <li>Improved watershed management</li> </ul>	<p>As a result of HIA landscape management planning and monitoring water bodies are being protected and effectively managed.</p> <p>Indicators</p> <ul style="list-style-type: none"> <li>Area of degraded watershed restored</li> </ul>	<p>406.14ha and 75.21ha of degraded watershed restored in 2020 and 2021 respectively.</p>

**Other Non-Carbon benefits and additional information as linked to Monitoring and Evaluation Framework**

**2. Any other (non-priority identified) Non-Carbon benefits**

Livelihood enhancement and sustainability

2.1. Testing ways to sustain and enhance livelihoods under the CF program.

The NRS educates stakeholders about alternative/additional livelihood possibilities as part of its safeguards capacity-building workshops to ensure sustainability and improve the livelihoods of local actors within the GCFRP area. The NRS further urges the private sector to provide alternative or extra sources of income for local actors as part of the implementation of the GCFRP.

Biodiversity

2.2. Testing ways to conserve biodiversity under the CF program.

Generally, the GCFRP does not primarily target biodiversity. However, when trees on farms are increased, it contributes to the improvement of biodiversity within the off-Forest Reserve areas.

Specifically, the Kakum HIA is highly considered for biodiversity conservation under the GCFRP. The focus is to create a rich buffer zone to minimize the threat to the Kakum National park. The Wildlife Division also monitors seasonal patterns/changes to check elephant and other large mammal distribution, abundance and movement.

In the Bia National Park, wildlife corridors have been established through the Forest Investment Programme (FIP) to enhance movement of the wild animals

Protected/conserved areas

2.3. Amount (in ha) of protected or conserved areas included in your CF program area

There are three main protected and conservation areas in the GCFRP area as follows:

Conservation Area	Extent (ha)
Kakum National park	20,918
Bia National Park	31,401
Assin-Atandanso Game Production Reserve	15,802

These are areas under conservation and as such have not increased nor decreased in the last year.

Re/afforestation and restoration

2.4. Total forest area re/afforested or restored through program

Over 1.27 million ha (21%) of the programme area is gazetted as forest reserves and national parks, both of which are managed by the FC and commonly referred to as the “On-Reserve and Protected Areas”. The majority of the forests within the accounting area are located within the on-reserve. In contrast, the “off reserve” (all land outside of protected areas) covers approximately 4.65 million ha and is made up of settlements and infrastructure, agricultural lands (including tree crops), fallow lands, and forest patches or high biomass agroforests.

In 2020 and 2021 a total of 53,321.921ha was reforested in the programme area (<https://fcghana.org/?p=3362>, <https://fcghana.org/?p=3501>).

Table 25: Restoration activities within the ecological zones, 2020

		FOREST RESERVES				OFF-RESERVE			
		Forest plantation establishment (ha)	Enrichment planting (ha)	Coppice management (ha)	REDD+ MTS	Forest plantation establishment (ha)	Trees-on-farm YAP (ha)	Trees-on-farm FIP1 (ha)	Trees on Farm(GCFRP)
Ashanti	Kumawu	226.22	0	0		0	0	0	
	Juaso	78.22	92.37	9		8	0	0	
	New Edubiase	0	0	0		0	0	0	
	Mankranso	128.98	115.79	0		15.86	0	0	
	Offinso	111.41	0	0		13.94	0	0	

	Nkawie	0	270	0		35.13	0	0	
	Bekwai	60	0	0		4	0	0	
Ahafo	Bechem	0	0	0		4.1	0	0	
	Goaso	175.68		0	167.47	0	0	0	
Bono	Sunyani	384.395		0		29	0	0	
	Dormaa	208.9	150	0		0	0	0	
Central	Assin Foso	32.88	237.44	0		6.08	0	0	
	Dunkwa	67.2	80	0		15.274	0	0	
Eastern	Mpraeso	103.11	58.4	0		0	0	0	
	Begoro	41.09	75	0		17.15	0	0	
	Kade	16.5	249.94	0		9.3	0	0	
	Oda	72.07	80	0		0	0	0	
	Somanya	62.8571	0	0		0	0	0	
Western	Asankrangwa	75		0		0	0	0	
	Takoradi	0		0		15.5	0	0	
	Tarkwa	0		0		0	0	0	
Western North	Bibiani	256.6	0	0		0	0	0	
	Enchi	266.0	553	0		0	0	0	
	Juaboso	287.80	120	0		0	0	0	
	Sefwi Wiawso	496.32	26.7	0		80	0	0	
Total		3151.234	2108.64	9	167.47	253.334	0	0	

Table26: Restoration activities within the ecological zones, 2021<sup>47</sup>

		FOREST RESERVES						OFF-RESERVE			
		Forest plantation establishment (ha)	MTS	PPP	PPD	TAIN II LANDSCAPE	Enrichment planting (ha)YAP &GCFRP	Forest plantation establishment (ha)	Trees-on-farm YAP (ha)	Trees-on-Farm GCFRP	
Ashanti	Kumawu	241	55.01	758.4	0		0	0	9	0	
	Juaso	89.86	210.43	626.82	154.8		86.25		0	0	
	New Edubiase	0	115	0			0	0	243	0	
	Mankranso	88.5	292.5	696			438.96		0	0	
	Offinso	167.29	750.128	0			0		585	0	
	Nkawie	175.34	930.91	210	10		145		1950	1071	
	Bekwai	30	550	0			370		1347	0	

<sup>47</sup> Annual Plantation reports for 2020 and 2021 (links to report given above)

Ahafo	Bechem	12.47	603.55				0			0	0	
	Goaso	74.98	425.47				748.49		0	2202	3599	
Bono	Sunyani	282.4	294.3	266.56	228.5	29.7	110			4,866	0	
	Dormaa	305.373	119.672	36	130		264		0	0	0	
Central	Assin Foso	52.9	505.23				182.6			1684.85	1800	
	Dunkwa	68.6	0				0			388.87	0	
Eastern	Mpraeso	65.44					58.4		0	0	0	
	Begoro	74.57	136.73							0	0	
	Kade	66.47	64				249.94			0	0	
	Oda	158.5	112.18	23.31			80		0	1528.19	0	
	Somanya	55.81	0				0		0	5274.93	0	
Western	Asankranga	75	115				75		0	0	0	
	Takoradi	30	195.19				30			0	0	
	Tarkwa	0	53.47				0		0	0	0	
Western North	Bibiani	271.23	559.1		25.4		271.23		0	0	0	
	Enchi	-	0		54		0		0	0	0	
	Juaboso	300.00	589.5				300		0	0	2549	
	Sefwi Wiawso	645.44	1221.01				645.44			0	0	
Total		3331.173	7898.38	2617.09	602.7	29.7	4055.31			20078.89	9019	

#### Finance and Private Sector partnerships

- 2.5. Update on CF program budget (as originally presented in ERPD), with updated detail on secured (i.e. fully committed) finance, in US\$

Funding for the implementation of the GCFRP is from a mix of sources: ER Payments (21.1%), private sector investment (51.3%), Government of Ghana, including Cocoa Board and FC investment (22.7), and donor grants (4.9%).

Ghana estimates that the total cost of setting up and operating the GCFRP over its first five years is US \$ 236,727,250. Out of this, it is anticipated that the programme will generate approximately US\$50 Million in revenue from emission reductions.

Table27: Summary of funding sources for the GCFRP (2020 & 2021)

Summary of Funding Sources	Projections	Receipts
REDD+ Funding	\$ 50,000,000	\$1.3m (UAP)

Private Sector	\$ 121,360,000	
Grants	\$ 11,718,800	
Government	\$ 53,658,050	30,896,616.38* <sup>48</sup>
<b>TOTAL</b>	<b>\$ \$236,727,250</b>	

\*Bank of Ghana Interbank rate for 14/12/2022 1 USD : GHS9.3

2.5.1. Amount of finance received (including ER payments) in support of development and delivery of your CF program.

Amount (US\$)	Source (e.g. FCPF, FIP, name of gov't department)	Date committed (MM/YY)	Public or private finance? (Delete as appropriate)	ERP, grant, loan, equity or other? (Delete as appropriate)
\$1,300,000	FCPF	September, 2020	Public	ERP Payment
\$17,942*	FAO ; Forest & Farm Facility Phase II Project	2020	Public	Grant
\$29,463.76*	IDH	2020	Private	Grant
\$7,000*	Tropenbos Ghana	2020	Private	Grant
\$21,000*	FAO ; Forest & Farm Facility Phase II Project	2021	Public	Grant

\*Bank of Ghana Interbank rate for 14/12/2022 1USD : GHS9.3

2.5.2. The value of REDD+ ER payments that the CF projects and the county have received overall not including ER payments from the FCPF Carbon Fund.

	Total REDD+ ER payments received to date (\$US)
<b>Carbon Fund project/s</b> (i.e. ER payments from sources other than the Carbon Fund)	\$0
<b>All other national REDD+ projects</b>	\$0

2.5.3. Number of formal partnerships established between the CF program and private sector entities.

The GCFRP has engaged a number of private sector/CSO/NGOs and subsequently signed MoUs with some of them, whilst maintaining working relationship with others.

<sup>48</sup> Source;Funds for establishing forest plantations; Annual Reports Ghana Forest Plantation Strategy 2020 & 2021 (<https://fcghana.org/?p=3362>, <https://fcghana.org/?p=3501>)

Table 28: Partnerships between CF Program and Private sector entities

<b>Partner institutions</b>	<b>Partner Institutions with MoU</b>
Tropenbos Ghana	Tropenbos Ghana
International Union for Conservation of Nature	Proforest Africa
Solidaridad	Solidaridad West Africa
Mondelez International Ghana	*Mondelez International
Center for International Forestry Research (CIFOR)	CIFOR
World Cocoa Foundation	World Cocoa Foundation
Touton SA	*Touton SA
Proforest Africa	*NCRC
Hershey	*SNV
KASA Initiative Ghana	*Agro Eco
A ROCHA	Nyonkopa (Subsidiary of Barry Callebaut Ghana)
SNV Netherlands Development Organisation (SNV)	
Rainforest Alliance	
IDH	
OLAM Ghana Ltd	
FAO	
South Pole	
ECOM Agroindustrial Corp. Ltd	
Nature Conservation Research Centre (NCRC)	
Agro Eco-Louis Bolk Institute ( Agro Eco)	
Nyonkopa (Subsidiary of Barry Callebaut Ghana)	

\* FC has individual and/or joint MoU with those entities

	<b>Established in the last year (2020 &amp; 2021)</b>	<b>Total to date</b>
<b>Number of private sector partnerships involving financial exchange</b>	4	5
<b>Number of private sector partnerships involving non-financial exchange</b>	4	16

### 3. Other Non-Carbon benefits and additional information

Other Non-Carbon Benefits in addition to the priority non-carbon benefits stated earlier are:

- Improved supply chain efficiency through the adoption of CSC practices
- Provision of additional income sources for communities in the Kakum HIA through the collection and sale of Kombo nut

### Policy development

- 3.1. CF program involvement in the development, reform and/or implementation of policies to help institutions/people/systems/sectors.

The FIP which is a programme under the GCFRP has advanced a policy reform process on tree tenure and benefits especially on naturally occurring trees in off reserves.

### Capacity building

- 3.2. Training, education or capacity building opportunities to increase the capacity of institutions/people/systems for the CF program.

Given that REDD+ local actors and other key stakeholders are quite heterogenous and represent socially, culturally and traditionally diverse backgrounds, different levels of knowledge, development, and exposure exist amongst them. Therefore, in order to offer equal level playing ground or opportunity for communities to fully participate, by way of strategy, proponents of GCFRP endeavored to map out the capacity needs of local communities and other key stakeholders through a bottom-up approach where communities and/or stakeholders are given the opportunity to express such needs. By so doing, this provides a clear capacity development implementation pathway premised on knowing what to train and who to train over a period of time. Within the years under review, the HIA functional units (community representatives) have received considerable capacity building on several topics. The topics range from overview of GCFRP, safeguards, fund flow Mechanism, and feedback and grievance redress mechanism. With support from other key partners, capacity building across almost all HIAs have been sustained and deepened with further emphasis on topics such as effective functioning and sustainability of landscape governance, Community mobilization, group dynamics, climate smart cocoa to mention but a few. Under the AccelREDD support, stakeholders from government, civil society and private sector cocoa companies as well as local actors continuously been trained on GCFRP, safeguards, Fund Flow Mechanism, and Feedback and grievance redress mechanism.

### Other

- 3.3. Non-carbon benefits not already covered in this annex of the CF program

N/A

All non-carbon benefits are covered under the Annex



Appendix I – HIA Accounts

Asunafo – Asutifi

11:52: 9:20 PM

GCB BANK PLC  
GASO

**GCB**

CASH DEPOSIT RECEIPT

Transaction Date: 2022-09-12

Transaction reference: 707CHDP222550179  
Transaction Account: 7071180001191  
Account Name: ASUNAFO-ASUTIFI HOTSPOT INTERVENTION ASSESSMENT  
Transaction Currency: GHS  
Transaction Amount: 100.00  
Amount In Words: One Hundred Ghana Cedi(s) Only

Narration: Cash Deposit SELF

**GCB Bank Ltd.**  
RECEIVED  
11/09/2022  
CUSTOMER SERVICE  
GHS

Cashier's Stamp & Signature

**NOTE:**

1. The bank will accept no liability whatsoever for cash tendered for withdrawal exceeding the limit of the Bank's liability for such amount, for which, provision must be made by the depositor, being held authorized for withdrawal at time.
2. Please ensure that the above information is correct as the bank will not be liable for any return caused by incorrect information provided by you.
3. This deposit receipt is only valid when receipted and signed by an authorized official.

THE HIA MANAGEMENT BOARD (HIA) OF THE ASUNAFO-ASUTIFI HOTSPOT INTERVENTION AREA (HIA)

September 02, 2022

Resolution to Open a Bank Account


The Asunafo-Asutifi Hotspot Intervention Area (HIA) Management Board (HMB), set up as the apex body for the coordination of landscape-level activities under Forestry Commission and Ghana Cocoa Board implemented program dubbed "the Ghana Cocoa Forest REDD+ Programme", at a meeting held on Friday, September 2, 2022 agreed to open a Bank Account with GCB Bank Ghana Limited.

The undersigned leadership of the HMB were hereby authorized to designate GCB Bank Ghana Limited as a depository for the funds of the Asunafo-Asutifi HIA Management Board.

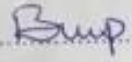
The HMB resolved that an Authority Note from the HIA Implementation Committee (HIC) will be required to authorize the designated signatories of the HMB to effect bank transactions at every occasion on behalf of all beneficiary groups.

Therefore, the mandate on the Bank Account shall be valid if the Chairman who is the Principal Signatory to this Bank Account and either the Treasurer or the Secretary signs the cheque/document on the account which shall be accompanied by a signed Authority Note from the HIC.


Please find below their names and respective signatures:

- The Chairman, Mr. Daniel Amponsah Gyinayah: 

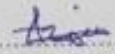
And either;

- The Treasurer, Madam Ama Boatmaa: 

Or

- The Secretary, Mr. Azumah Moses Mbawin: 

The information provided for the opening of this account is true and correct in all material respect.

  
.....  
Mr. Azumah Moses Mbawin  
Secretary  
Friday September 2, 2022

Cc: The Chief Executive, Forestry Commission  
The Director, Climate Change Directorate, Forestry Commission

Ahafo Ano South

10/19/22 1:43 PM about:bank

GCB

GCB BANK PLC  
MKAWIE

CASH DEPOSIT RECEIPT

Transaction Date 2022-10-19

Transaction Reference 6231010077840

Transaction Account 6231710377840

Account Name AHAFO ANO ATWIMA HOTSPOT INTERVENTION AREA

Transaction Currency GHS

Transaction Amount 80.00

Amount In Words Eighty Ghana Cedis Only

Narration Cash Deposit BY PETER AGYEMANG

Cashier's Stamp & Signature

NOTE: 1. The Bank will accept no liability whatsoever for funds handed to accredited members of staff of the Bank outside the banking hours or outside the Bank's premises unless specific arrangements have been contracted for and are in force.  
2. Please ensure that the above information is correct as the bank will not be liable for any errors caused by incorrect information provided by you.  
3. This deposit receipt is only valid when stamped and signed by an authorized official.

GCB CASHIER/2015464

**THE HIA MANAGEMENT BOARD (HIA) OF THE AHAFO-ANO SOUTH ATWIMA  
MPONUWA ATWIMA NWABIAGYA HOTSPOT INTERVENTION AREA**

September 02, 2022

**THE MANAGER,  
GCB BANK PLC  
NKAWIE – ASHANTI**

Dear Sir,

**RESOLUTION TO OPEN A BANK ACCOUNT**

The Ahafo – Ano South Atwima Mponua , Atwima Nwabiagya Hotspot intervention Area, set up for the landscape – level activities under the Ghana Cocoa Forest REDD+ Programme, at a meeting held on Friday, September 2, 2022 agreed to open a Bank Account with GCB Bank PLC. The name of the account is Ahafo Ano, Atwima Hotspot Intervention Area.

The type of account is Savings account.

The undersigned leadership of the HMB were hereby authorized to designate GCB BANK PLC as a depository for the funds of the Ahafo – Ano South Atwima Mponua, Atwima Nwabiagya Hotspot Intervention Area HIA Management Board.

The HMB resolved that an Authority Note from the HIA implementation Committee (HIC) will be required to authorize the HMB to effect bank transactions at every occasion on behalf of all beneficiary groups.

Therefore, the mandate on the Bank Account shall be valid if the Chairman who is the Principal Signatory to this Bank Account and either the Treasurer or the Vice Chairman present: an Authority Note from the HIC and sign the cheque / document on the account.

Please find below their names and respective signatures:

**Mr. Augustine Dabo**

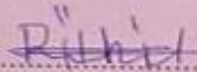
**Chairman**

  
.....

And either;

**Ms. Racheal Amponsah**

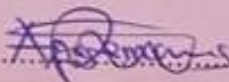
**Treasurer**

  
.....


Or

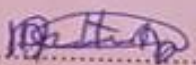
**Mr. Agyeman Peter**

**Vice Chairman**

  
.....

The information provided for the opening of this account is true and correct in all material respect.

  
.....  
**Mr. Agyeman Peter**  
(Vice Chairman)

  
.....  
**Mr. Augustine Dabo**  
(Chairman)

10/7/22, 2:39 PM about:blank

**GCB BANK PLC**  
**SEFWI WIAWSO**

  
**GCB**

**CASH DEPOSIT RECEIPT** Transaction Date 2022-10-07

Transaction reference	412CHDP222800105
Transaction Account	4121010068244
Account Name	JUABOSO-BIA WEST HOTSPOT INTERVENTION AREA
Transaction Currency	GHS
Transaction Amount	100.00
Amount In Words	One Hundred Ghana Cedi(s) Only

**Narration** **Cash Deposit BY PAUL GYABENG**

**NOTE:**

1. The Bank will accept no liability whatsoever for funds deposited to accounts of members of staff of the Bank outside the banking hours or outside the Bank's premises unless specific arrangements have been contracted for and are in force.
2. Please ensure that the above information is correct so the bank will not be liable for any errors caused by incorrect information provided by you.
3. The deposit receipt is only valid when stamped and signed by an authorized official.

  
Cashier's Stamp & Signature

GCB/CA/HD/211894

Post Office Box 110

Sefwi Wiawso

2<sup>nd</sup> September, 2022

THE BRANCH MANAGER

GCB

SEFWI WIAWSO

**THE HIA MANAGEMENT BOARD (HIA) OF THE SEFWI WIAWSO-BIBIANI  
HOTSPOT INTERVENTION AREA**

**RESOLUTION TO OPEN A BANK ACCOUNT**

The Sefwi Wiawso-Bibiani HIA Management Board (HMB), set up for the landscape-level activities under the Ghana Cocoa Forest REDD+ Programme, at a meeting held on Friday, September 2, 2022 at John Bitar Club House of Sefwi Dwinase at 9:30am. At the meeting, we agreed to open a savings account by name: Sefwi Wiawso-Bibiani HIA, at GCB Bank Limited Sefwi Wiawso Branch.


The HMB resolved that an Authority Note from the Hia Implementation Committee (HIC) will be required to authorize the HMB to effect bank transactions at every occasion on behalf of all beneficiary groups.

Therefore, the mandate on the Bank Account shall be valid if the chairman who is the principal signatory to this Bank Account and either the Treasurer or the Secretary presents: an Authority Note from the HIC and sign the cheque/document on the account.

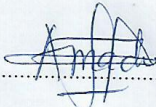
Please find below their names and respective signatures:

- The chairman, Mr. Sylvester Mensah: 

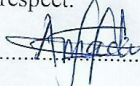
And either;

- The Treasurer, Madam Patricia Addae: 

Or

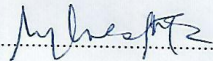
- The Secretary, Mr. Amadu Alhassan: 

The information provided for the opening of this account is true and correct in all material respect.

  
.....

Mr. Amadu Alhassan

Secretary

  
.....

Mr. Sylvester Mensah

Chairman

Cc: File

10/7/22, 2:59 PM about:blank

**GCB BANK PLC**  
**SEFWI WIAWSO**

  
**GCB**

**CASH DEPOSIT RECEIPT** Transaction Date **2022-10-07**

Transaction reference	412CHDP222800105
Transaction Account	4121010068244
Account Name	JUABOSO-BIA WEST HOTSPOT INTERVENTION AREA
Transaction Currency	GHS
Transaction Amount	100.00
Amount In Words	One Hundred Ghana Cedi(s) Only

**Narration** **Cash Deposit BY PAUL GYABENG**

**NOTE:** 1. The Bank will accept no liability or responsibility for funds handled or accepted by members of staff of the Bank outside the banking hours or outside the Bank's premises unless specific arrangements have been constructed for and are in force.  
2. Please ensure that the above information is correct as the bank will not be liable for signatures caused by incorrect information provided by you.  
3. The deposit receipt is only valid when stamped and signed by an authorized official.

  
Cashier's Stamp & Signature

GCBGARD001904

**THE HIA MANAGEMENT BOARD (HIA) OF THE JUABOSO-BIA HOTSPOT AREA**

The Manager  
GCB Bank  
Sefwi Wiawso

September 02, 2022

Dear Sir

**Resolution to Open a Bank Account**




The Juaboso-Bia HIA Management Board (HMB), set up for the landscape-level activities under the Ghana Cocoa Forest REDD+ Programme, at a meeting held on Friday, September 2, 2022 agreed to open a Savings Account with GCB Bank Ghana Limited and the accounts name shall be Juaboso – Bia West Hospot Intervention Area

The undersigned leadership of the HMB were hereby authorized to designate GCB Bank Ghana Limited as a depository for the funds of the Juaboso-Bia HIA Management Board.

The HMB resolved that an Authority Note from the HIA Implementation Committee (HIC) will be required to authorize the HMB to effect bank transactions at every occasion on behalf of all beneficiary groups.

Therefore, the mandate on the Bank Account shall be valid if the Chairman who is the Principal Signatory to this Bank Account and either the Treasurer or the Secretary present: an Authority Note from the HIC and sign the cheque/document on the account.

Please find below their names and respective signatures:

- The Chairman, Mr. Paul Gyabeng:  .....
- The Treasurer, Madam Christiana Adusei:  .....
- The Secretary, Mr. Anthony Kofi Beh:  .....

The information provided for the opening of this account is true and correct in all material respect.



Mr. Anthony Kofi Beh  
Secretary  
Friday September 2, 2022




Mr. Paul Gyabeng  
Chairman

Cc: File



Kakum

**GCB**

**GCB BANK PLC  
ASSIN FOSU**

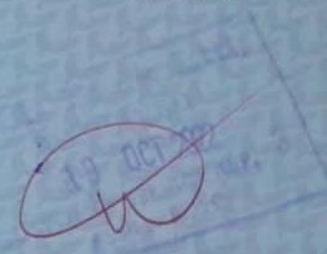
**CASH DEPOSIT RECEIPT**

Transaction reference	304CHDP222920135	Transaction Date	2022-10-19
Transaction Account	3041010092219		
Account Name	KAKUM HOTSPOT INTERVENTION AREA		
Transaction Currency	GHS		
Transaction Amount	100.00		
Amount in Words	One Hundred Ghana Cedi(s) Only		

**Narration**  
Cash Deposit by **NICHOLAS JOSEPH NKRUMAH**

We will accept no liability whatsoever for funds handed to accredited members of staff of the Bank outside the banking hours or outside the Bank's premises specific arrangements have been contracted for and are in force.  
Please note that the above information is correct as the bank will not be liable for any errors caused by incorrect information provided by you.  
This receipt is only valid when stamped and signed by an authorized official.

*Cashier's Stamp & Signature*



**THE HIA MANAGEMENT BOARD (HIA) OF THE KAKUM HOTSPOT INTERVENTION AREA**

The Manager  
GCB Bank  
Assin Fosu

September 02, 2022

Dear Sir/Madam

**Resolution to Open a Bank Account**

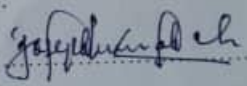
The Kakum HIA Management Board (HMB), set up for the landscape-level activities under the Ghana Cocoa Forest REDD+ Programme, at a meeting held on Friday, September 2, 2022 agreed to open a Bank Account with GCB Bank Ghana Limited.

The undersigned leadership of the HMB were hereby authorized to designate GCB Bank Ghana Limited as a depository for the funds of the Kakum HIA Management Board.

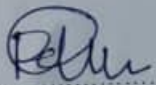
The HMB resolved that an Authority Note from the HIA Implementation Committee (HIC) will be required to authorize the HMB to effect bank transactions at every occasion on behalf of all beneficiary groups.

Therefore, the mandate on the Bank Account shall be valid if the Chairman who is the Principal Signatory to this Bank Account and either the Treasurer or the Secretary present: an Authority Note from the HIC and sign the cheque/document on the account.

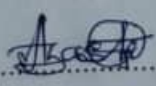
Please find below their names and respective signatures:

• The Chairman, Mr. Joseph Nicholas Nkrumah: 

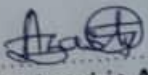
And either;

• The Treasurer, Madam Doris Pokua: 

Or

• The Secretary, Mr. John Azashie Ametsitre: 

The information provided for the opening of this account is true and correct in all material respect.

  
Mr. John Azashie Ametsitre  
Secretary  
Friday September 2, 2022

Cc: File

## AUTHORISATION FORM: CARBON PAYMENTS TRANSFER UNDER THE GHANA COCOA FOREST REDD+ PROGRAMME


As agreed amongst the implementation partners for the Ghana Cocoa Forest REDD Program (GCFRP), we, the REDD – Dedicated Account Steering Committee constituted by the provisions in the GCFRP Benefit Sharing Plan and having fully vetted the due diligence of the process leading to request of the transfer of funds authorize the transfer of funds to the Metropolitan, Municipal and District Assemblies (MMDAs) beneficiaries per the first Emission Reductions Performance Monitoring Period, 2019.


The details are:

• MMDAs Benefits within the 6 HIAs (Full payment)	<b>\$89,462.36</b>
Asunafo Asutifi	• \$22,365.59
Kakum	• \$17,395.46
Juabeso Bia	• \$17,395.46
Sefwi Wiawso	• \$14,910.39
Ahafo Ano	• \$12,425.33
Atewa	• \$4,970.13

These payments should be made in one tranche and fully documented along with beneficiaries duly screened and vetted proposals/workplans and performances.

Kindly find attached Annex 1 with the breakdown.

SIGNATURE   
 NAME YVONNE QUANSAH  
 DESIGNATION DIRECTOR, MOP  
 ROLE CHAIR, RDA SC

SIGNATURE   
 NAME Albert Kwabla  
 DESIGNATION FWA REP  
 ROLE RDA JC Member

		Atwima Mwhangya South Municipal Ahafo Ano South West District Ahafo Ano South East District Atwima Mponua District		
Atewa	6	Atewa East District, Atewa West District, Denkyembaour District, Abuakwa North Municipal Abuakwa South Municipal Fantseakwa South District	\$4,970.13	\$828.35

**ANNEX 1**

**DISTRIBUTION OF FIRST CARBON PAYMENT FOR MONITORING PERIOD,  
 2019**

**SUMMARY OF CARBON PAYMENTS TO METROPOLITAN, MUNICIPAL AND  
 DISTRICT ASSEMBLIES**

HIA	NO. OF ASSEMBLIES	MUNICIPAL AND DISTRICT ASSEMBLIES	CARBON PAYMENT FOR ASSEMBLIES	CARBON PAYMENT FOR EACH ASSEMBLY
Asunafo Asutifi	4	Asunafo North District Asunafo South District Asutifi North District Asutifi South District	\$22,365.59	\$5,591.40
Kakum	4	Assin South District Assin Central District Assin North District Twifo-Hemang Lower Denkyira District	\$17,395.46	\$4,348.86
Juabeso Bia	2	Juaboso District Bia West District	\$17,395.46	\$8,697.73
Sefwi Wiawso	4	Bibiani Ankwaso Bekwai Municipal Sefwi Wiawso Municipal Ankolentbra District Bodi District	\$14,910.39	\$3,727.60
Ahafo Ano	5	Ahafo Ano North Municipal	\$12,425.33	\$2,485.07



Our Ref: FC/A-10/2021/V-8/162

Your Ref: .....

# FORESTRY COMMISSION

(CORPORATE HEADQUARTERS)

P. O. BOX 383 ACCRA - GHANA  
Tel: (233-302) 401218 / 401216 / 401227

Fax: (233-302) 401197

E-mail: [info.hq@fcghana.org](mailto:info.hq@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address GA - 336 - 5326

July 14, 2023

MUNICIPAL ASSEMBLY  
AHAFO AND SOUTH EAST DISTRICT  
AHAFO AND

Dear Sir,

## RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000186 dated July 12, 2023 amounting to GHc26,910.53 (Twenty-one thousand, nine hundred & ten Ghana Cedis & fifty-three pesewas) being a cedi equivalent of US\$2,485.07 (Two thousand, four hundred & eighty-five US Dollars, seven cents) at an exchange rate of GHc10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generations and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX MB-434, ACCRA - GHANA  
TEL: (233-302) 491216 / 491217

Fax: (233-302) 491197

E-mail: [info.fc@ghana.org](mailto:info.fc@ghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address GA - 386 - 8326

July 14, 2023

Our Ref: *FC/A-10/SF-21/28/172*

Your Ref: \_\_\_\_\_

MUNICIPAL ASSEMBLY  
ASSIN NORTH DISTRICT  
ASSIN

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000175 dated July 12, 2023 amounting to GH¢47,093.37 (Forty-seven thousand & ninety-three Ghana Cedis & thirty-seven pesewas) being a cedi equivalent of US\$4,348.86 (Four thousand, three hundred & forty-eight US Dollars, eighty-six cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX MH 454, ACCRA - GHANA  
TEL: (233-302) 401219 / 401216 / 401227

Fax: (233-302) 401197

E-mail: [info.hq@fcghana.org](mailto:info.hq@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address GA - 396 - 5326

July 14, 2023

Our Ref: FC/A.LO/SF-21/N.8/167

Your Ref: .....

MUNICIPAL ASSEMBLY  
ANKOTOMBRA DISTRICT  
SEFWI WIAWSO

Dear Sir,

## RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000181 dated July 12, 2023 amounting to GH¢40,365.78 (Forty thousand, three hundred & sixty-five Ghana Cedis & seventy-eight pesewas) being a cedi equivalent of US\$3,727.60 (Three thousand, seven hundred & twenty-seven US Dollars, sixty cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

---

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.





Forestry Commission

Our Ref: FC/A/10/8f.21/V.8/152

Your Ref: .....

## FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX MB 434, ACCRA - GHANA

TEL: (233-302) 481230 / 481216 / 482227

Fax: (233-302) 481197

E-mail: info@fcghana.org

Website: www.fcghana.org

GPS Address: GA - 306 - 3336

June 27, 2023

AHAFO ANO  
HOTSPOT INTERVENTION AREA (HIA)  
AHAFO ANO

Dear Sir,


### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000163 dated June 26, 2023 amounting to GH¢2,659,158.54 (Two million, six hundred & fifty-nine thousand, one hundred & fifty-eight Ghana Cedis & fifty-four pesewas) being a cedi equivalent of US\$245,561.28 (Two hundred & forty-five thousand, five hundred & sixty-one US Dollars & twenty-eight cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments released to beneficiaries per the First Emission Reductions Performance Monitoring Period for the year 2019.

Thank you.

Yours faithfully,

  
SAMUEL ODEI  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX MB 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227

Fax: (233-302) 401197

E-mail: [info.hq@fcghana.org](mailto:info.hq@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address: GA - 306 - 5326

July 14, 2023

Our Ref: FC/PA-60/SF-21/1-8/163

Your Ref: \_\_\_\_\_

MUNICIPAL ASSEMBLY  
AHAFO ANO SOUTH WEST DISTRICT  
AHAFO ANO

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000185 dated July 12, 2023 amounting to GH¢26,910.53 (Twenty-one thousand, nine hundred & ten Ghana Cedis & fifty-three pesewas) being a cedi equivalent of US\$2,485.07 (Two thousand, four hundred & eighty-five US Dollars, seven cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



**FORESTRY COMMISSION**  
(CORPORATE HEADQUARTERS)

P. O. BOX MD 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227  
Fax: (233-302) 401397  
E-mail: info.hq@fcghana.org  
Website: www.fcghana.org  
GPS Address GA - 386 - 5326

Forestry Commission

Our Ref: FC/PA/10/SF/21/NR/175

July 14, 2023

Your Ref: \_\_\_\_\_

MUNICIPAL ASSEMBLY  
ASSIN CENTRAL DISTRICT  
ASSIN

Dear Sir,


**RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME  
(GCFRP) BENEFICIARIES**

Please find attached, a cheque No. 000174 dated July 12, 2023 amounting to GH¢17,093.37 (Forty-seven thousand & ninety-three Ghana Cedis & thirty-seven pesewas) being a cedi equivalent of US\$4,348.86 (Four thousand, three hundred & forty-eight US Dollars, eighty-six cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

  
**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN



Forestry Commission

Our Ref: FC/A-LO/SF.21/4-8/165

Your Ref: .....

# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P.O. BOX 516 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227

FAX: (233-302) 401197  
E-mail: info.fc@fghana.org  
Website: www.fghana.org  
GPN Address GA - 350 - 5323

July 14, 2023

MUNICIPAL ASSEMBLY  
AHAFO ANO NORTH MUNICIPAL DISTRICT  
AHAFO ANO.

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000183 dated July 12, 2023 amounting to GH¢26,910.53 (Twenty-one thousand, nine hundred & ten Ghana Cedis & fifty-three pesewas) being a cedi equivalent of US\$2,485.07 (Two thousand, four hundred & eighty-five US Dollars, seven cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



**FORESTRY COMMISSION**  
(CORPORATE HEADQUARTERS)

P. O. BOX MB 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227

Fax: (233-302) 401197  
E-mail: [info.fc@fghana.org](mailto:info.fc@fghana.org)  
Website: [www.fghana.org](http://www.fghana.org)  
GPS Address GA - 386 - 5326

July 14, 2023

Our Ref: FC/A-10/SC-21/18/174

Your Ref: .....

MUNICIPAL ASSEMBLY  
ASSIN SOUTH DISTRICT  
ASSIN

Dear Sir,

**RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME  
(GCFRP) BENEFICIARIES**

Please find attached, a cheque No. 000173 dated July 12, 2023 amounting to GH¢47,093.37 (Forty-seven thousand & ninety-three Ghana Cedis & thirty-seven pesewas) being a cedi equivalent of US\$4,348.86 (Four thousand, three hundred & forty-eight US Dollars, eighty-six cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

  
**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION

(CORPORATE HEADQUARTERS)

P.O. BOX MB 434, ACCRA - GHANA

TEL: (233-302) 401210 / 401216 / 401227

Fax: (233-302) 401297

E-mail: [info.hq@fcghana.org](mailto:info.hq@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address GA - 386 - 5326

July 14, 2023

Our Ref: FC/A.16/Sf.21/V8/179

Your Ref: .....

MUNICIPAL ASSEMBLY  
ASUNAFO NORTH DISTRICT  
ASUNAFO

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000169 dated July 12, 2023 amounting to GH¢60,548.68 (Sixty thousand, five hundred & forty-eight Ghana Cedis & sixty-eight pesewas) being a cedi equivalent of US\$5,591.40 (Five thousand, five hundred & ninety-one US Dollars, forty cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

---

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION

(CORPORATE HEADQUARTERS)

P. O. BOX 1602 436, ACCRA - GHANA  
TEL: (233-302) 481218 / 481216 / 481227

Fax: (233-302) 481257

E-mail: [info@fcom.gov.gh](mailto:info@fcom.gov.gh)

Website: [www.fcom.gov.gh](http://www.fcom.gov.gh)

GPS Address: RA - 386 - 3326

Forestry Commission

Our Ref: FC/A.10/SF.21/V.8/153

Your Ref: \_\_\_\_\_

June 27, 2023

ASUTFI ASUNAFO  
HOTSPOT INTERVENTION AREA (HIA)  
ASUNAFO

Dear Sir,


### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000164 dated June 26, 2023 amounting to GH¢4,786,485.34 (Four million, seven hundred & eighty-six thousand, four hundred & eight-five Ghana Cedis & thirty-four pesewas) being a cedi equivalent of US\$442,010.30 (Four hundred & forty-two thousand & ten US Dollars, thirty cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments released to beneficiaries per the First Emission Reductions Performance Monitoring Period for the year 2019.

Thank you.

Yours faithfully,

  
**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife environments than we inherited.



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX MD 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227

Fax: (233-302) 401197

E-mail: [info.fc@fcghana.org](mailto:info.fc@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address GA - 386 - 5326

July 14, 2023

Our Ref: FC/A-10/SC/21/48/178

Your Ref: \_\_\_\_\_

MUNICIPAL ASSEMBLY  
ASUNAFO SOUTH DISTRICT  
ASUNAFO

Dear Sir,

## RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000170 dated July 12, 2023 amounting to GH¢60,548.68 (Sixty thousand, five hundred & forty-eight Ghana Cedis & sixty-eight pesewas) being a cedi equivalent of US\$5,591.40 (Five thousand, five hundred & ninety-one US Dollars, forty cents) at an exchange rate of G¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

---

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.





**FORESTRY COMMISSION**  
(CORPORATE HEADQUARTERS)

P. O. BOX MB-034, ACCRA - GHANA  
TEL: (233-302) 401216 / 401216 / 401227

Fax: (233-302) 401167

E-mail: [info@fcghana.org](mailto:info@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address: GA - 386 - 5326

July 14, 2023

Our Ref: *FC/A.10/SF.21/N.8/170*

Your Ref: .....

MUNICIPAL ASSEMBLY  
BIA WEST DISTRICT  
BIA

Dear Sir,

**RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME  
(GCFRP) BENEFICIARIES**

Please find attached, a cheque No. 000178 dated July 12, 2023 amounting to GH¢94,186.85 (Ninety-five thousand one hundred & eighty-six Ghana Cedis & eighty-five pesewas) being a cedi equivalent of US\$8,697.73 (Eight thousand, six hundred & ninety-seven US Dollars, seventy-three cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION

(CORPORATE HEADQUARTERS)

P.O. BOX MB 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227

Fax: (233-302) 401097  
E-mail: [info.fc@fcghana.org](mailto:info.fc@fcghana.org)  
Website: [www.fcghana.org](http://www.fcghana.org)  
GPS Address GA - 386 - 5326

July 14, 2023

Our Ref: FC/FA/W/2023/148/161  
Your Ref: .....

MUNICIPAL ASSEMBLY  
ATWIMA MPONUA DISTRICT  
AHAFO ANO

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000187 dated July 12, 2023 amounting to GH¢26,910.53 (Twenty-one thousand, nine hundred & ten Ghana Cedis & fifty-three pesewas) being a cedi equivalent of US\$2,485.07 (Two thousand, four hundred & eighty-five US Dollars, seven cents) at an exchange rate of GH¢10.6289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX MH 434, ACCRA - GHANA  
TEL: (233-302) 402210 / 402216 / 402227  
Fax: (233-302) 400197

E-mail: [info@fcghana.org](mailto:info@fcghana.org)  
Website: [www.fcghana.org](http://www.fcghana.org)  
GPS Address GA - 386 - 5326

July 14, 2023

Our Ref: FC/A-101/EF.01/N.0/169

Your Ref: .....

MUNICIPAL ASSEMBLY  
BIBIANI ANWIASO BEKWAI DISTRICT  
SEFWI WIAWSO

Dear Sir,

## RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000179 dated July 12, 2023 amounting to GH¢40,365.78 (Forty thousand, three hundred & sixty-five Ghana Cedis & seventy-eight pesewas) being a cedi equivalent of US\$3,727.60 (Three thousand, seven hundred & twenty-seven US Dollars, sixty cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



**FORESTRY COMMISSION**  
(CORPORATE HEADQUARTERS)

P.O. BOX 3814, ACCRA - GHANA  
TEL: (233-302) 402218 / 402216 / 402217

Fax: (233-302) 402217

E-mail: [info.gh@forestry.gov.gh](mailto:info.gh@forestry.gov.gh)  
Website: [www.ghanaforest.com](http://www.ghanaforest.com)

CPS Address CA - 305 - 5336

Our Ref: **FC/IA-D/SF.21/V-8/157**

Your Ref: \_\_\_\_\_

THE CHIEF EXECUTIVE  
GHANA COCOA BOARD  
ACCRA

Dear Sir,

**RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME  
(GCFRP) BENEFICIARIES**

Please find attached, a cheque No. 000158 dated June 26, 2023 amounting to GHc968,778.95 (Nine hundred & sixty-eight thousand, seven hundred & seventy-eight Ghana Cedis & ninety-five pesewas) being a cedi equivalent of US\$89,462.36 (Eighty-nine thousand, four hundred & sixty-two US Dollars, thirty-six cents) at an exchange rate of GHc10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments released to beneficiaries per the First Emission Reductions Performance Monitoring Period for the year 2019.

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



Forestry Commission

Our Ref: *FC/TA/10/Sj-21/V-8/166*

Your Ref: .....

## FORESTRY COMMISSION

(CORPORATE HEADQUARTERS)

P. O. BOX 883-434, ACCRA - GHANA

TEL: (233-302) 40210 / 40216 / 40222

Fax: (233-302) 401897

E-mail: [info.fcg@feghana.org](mailto:info.fcg@feghana.org)

Website: [www.feghana.org](http://www.feghana.org)

GPS Address GA - 386 - 5326

July 14, 2023

MUNICIPAL ASSEMBLY  
BODI DISTRICT  
SEFWI WIAWSO

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000182 dated July 12, 2023 amounting to GH¢40,365.78 (Forty thousand, three hundred & sixty-five Ghana Cedis & seventy-eight pesewas) being a cedi equivalent of US\$3,727.60 (Three thousand, seven hundred & twenty-seven US Dollars, sixty cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

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**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION

(CORPORATE HEADQUARTERS)

P. O. BOX MH 434, ACCRA - GHANA

TEL: (233-302) 401216 / 401216 / 401227

Fax: (233-302) 401197

E-mail: [info.fcg@fgnana.org](mailto:info.fcg@fgnana.org)

Website: [www.fcgghana.org](http://www.fcgghana.org)

GPS Address GA - 386 - 5326

July 14, 2023

Our Ref: FC/FA/10/SP.21/18/177

Your Ref: \_\_\_\_\_

MUNICIPAL ASSEMBLY  
JUABOSO BIA DISTRICT  
JUABOSO

Dear Sir,

## RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000177 dated July 12, 2023 amounting to GHc94,186.85 (Ninety-five thousand one hundred & eighty-six Ghana Cedis & eighty-five pesewas) being a cedi equivalent of US\$8,697.73 (Eight thousand, six hundred & ninety-seven US Dollars, seventy-three cents) at an exchange rate of GHc10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

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**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



Forestry Commission

Ref: FC/A-10/SF: 21/158/154

See Ref: \_\_\_\_\_

# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P.O. BOX 404, ACCRA - GHANA  
TEL: (233-302) 40133 / 40126 / 40127  
Fax: (233-302) 401197

E-mail: [info@fcom.gov.gh](mailto:info@fcom.gov.gh)  
Website: [www.fcom.gov.gh](http://www.fcom.gov.gh)  
GHS Address EA - 506 - 5256

KAKUM  
HOTSPOT INTERVENTION AREA (HIA)  
KAKUM

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000161 dated June 26, 2023 amounting to GH¢3,722,821.94 (Three million, seven hundred & twenty-two thousand, eight hundred & twenty-one Ghana Cedis & ninety-four pesewas) being a cedi equivalent of US\$343,785.79 (Three hundred & forty-three thousand, seven hundred & eighty-five US Dollars, seventy-nine cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments released to beneficiaries for the First Emission Reductions Performance Monitoring Period for the year 2019.

Thank you.

Yours faithfully,

  
**SAMUEL ODET**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX MB 434, ACCRA - GHANA  
TEL: (233-302) 401216 / 401216 / 401227

Fax: (233-302) 461197

E-mail: [info.hq@fghana.org](mailto:info.hq@fghana.org)

Website: [www.fghana.org](http://www.fghana.org)

GPS Address GA - 386 - 5326

July 14, 2023

Our Ref: FC/A-LO/SF-21/N-8/168

Your Ref: \_\_\_\_\_

MUNICIPAL ASSEMBLY  
SEFWI WIAWSO MUNICIPAL DISTRICT  
SEFWI WIAWSO

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000180 dated July 12, 2023 amounting to GH¢40,365.78 (Forty thousand, three hundred & sixty-five Ghana Cedis & seventy-eight pesewas) being a cedi equivalent of US\$3,727.60 (Three thousand, seven hundred & twenty-seven US Dollars, sixty cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN





**FORESTRY COMMISSION**  
(CORPORATE HEADQUARTERS)

P. O. BOX MB 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227

Fax: (233-302) 401197

E-mail: [info.fc@fcghana.org](mailto:info.fc@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address GA - 306 - 5326

July 14, 2023

Our Ref: FC/A.10/Sf.2/N.8/164

Your Ref: .....

MUNICIPAL ASSEMBLY  
ATWIMA MWABIAGYA SOUTH MUNICIPAL DISTRICT  
AHAFO ANO

Dear Sir,

**RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME  
(GCFRP) BENEFICIARIES**

Please find attached, a cheque No. 000184 dated July 12, 2023 amounting to GH¢26,910.53 (Twenty-one thousand, nine hundred & ten Ghana Cedis & fifty-three pence) being a cedi equivalent of US\$2,485.07 (Two thousand, four hundred & eighty-five US Dollars, seven cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife environments than we inherited.



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX 318 324, ACCRA - GHANA  
TEL: (233-302) 40210 / 40216 / 40227

Fax: (233-302) 49857  
E-mail: info@fcghana.gov.gh  
Website: www.fcghana.gov.gh  
GPS Address: 66 - 366 - 5326

Our Ref: FC/A-10/5F-21/N-8/155

Your Ref: \_\_\_\_\_

JUABESO BIA  
HOTSPOT INTERVENTION AREA (HIA)  
JUABESO BIA

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000159 dated June 26, 2023 amounting to GH¢3,722,821.94 (Three million, seven hundred & twenty-two thousand, eight hundred & twenty-one Ghana Cedis & ninety-four pesewas) being a cedi equivalent of US\$343,785.79 (Three hundred & forty-three thousand, seven hundred & eighty-five US Dollars, seventy-nine cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments released to beneficiaries for the First Emission Reductions Performance Monitoring Period for the year 2019.

Thank you.

Yours faithfully,

  
SAMUEL OSEI  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



# FORESTRY COMMISSION (CORPORATE HEADQUARTERS)

P. O. BOX 1014 ACCRA - GHANA

TEL: (233-302) 40100/1 / 401216 / 401227

FAX: (233-302) 401257

E-mail: [info.fc@ghana.gov.gh](mailto:info.fc@ghana.gov.gh)

Website: [www.fcghana.gov.gh](http://www.fcghana.gov.gh)

GPS Address CA - 306 - 5325

Car Ref: FC/PA-10/SF-21/18/150

June 27, 2023

Your Ref: .....

SEFWI WIAWSO  
HOTSPOT INTERVENTION AREA (HIA)  
SEFWI WIAWSO

Dear Sir,

### RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000160 dated June 26, 2023 amounting to GH¢3,190,990.30 (Three million, one hundred & ninety thousand, nine hundred & ninety Ghana Cedis & thirty pesewas) being a cedi equivalent of US\$294,673.54 (Two hundred & ninety-four thousand, six hundred & seventy-three US Dollars, fifty-four cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments released to beneficiaries per the First Emission Reductions Performance Monitoring Period for the year 2019.

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN

**VISION:** To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.



**Forestry Commission**

Our Ref: FC/A-10/Sf.21/N-8/173

Your Ref: .....

# FORESTRY COMMISSION

(CORPORATE HEADQUARTERS)

P. O. BOX MD 434, ACCRA - GHANA  
TEL: (233-302) 401210 / 401216 / 401227

Fax: (233-302) 401497

E-mail: [info@fcghana.org](mailto:info@fcghana.org)

Website: [www.fcghana.org](http://www.fcghana.org)

GPS Address GA - 386 - 5326

July 14, 2023

MUNICIPAL ASSEMBLY  
TWIFO HEMANG LOWER DENKYIRA DISTRICT  
DENKYIRA

Dear Sir,

## RELEASE OF FUNDS TO GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP) BENEFICIARIES

Please find attached, a cheque No. 000176 dated July 12, 2023 amounting to GH¢47,093.37 (Forty-seven thousand & ninety-three Ghana Cedis & thirty-seven pesewas) being a cedi equivalent of US\$4,348.86 (Four thousand, three hundred & forty-eight US Dollars, eighty-six cents) at an exchange rate of GH¢10.8289 as at May 19<sup>th</sup>, 2023.

This is in respect of Carbon Payments for Metropolitan, Municipal and District Assemblies Hotspot Intervention Areas (HIA).

Thank you.

Yours faithfully,

**SAMUEL ODEI**  
DIRECTOR, FINANCE & ADMIN