

## Better Management of Krokosua Hills Forest Reserve as a Critical Biodiversity Hotspot for Green Development Initiative



By  
**Solidaridad West Africa**



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## Executive Summary

Krokosua is one of the major forest reserves in the Western Region of Ghana. It lies between latitudes 6015' and 6040' north and longitude 2040' and 3000' west. It is situated at the east bank of River Bia and bisected by the Sefwi-Wiawso-La Cote d'Ivoire border road. The gross area of the reserve is 481.61km<sup>2</sup> with a total external perimeter of 166.64km and composed of 151.14km cut lines, 12.30km streams and 3.20km road. There are 38 admitted farms in this reserve. These admitted farms have footpaths as routes connecting farms and huts scattered within the farms.

Incidentally, the Western Region is the largest producer of cocoa in Ghana. Cocoa thrives in most of the forest zones therefore cocoa cultivation which is the main source of livelihood of the people living around the reserve threatens the sustainability of the reserve. The cocoa farmers have over the years resorted to clearing forest lands due to scarcity of fertile land. Excessive use of the forest rent system to maintain and increase cocoa production in the past led to a considerable reduction of Ghana's forest cover (Ruf and Zadi, 1998; Ministry of Science and Environment, 2002).

The following are other factors that militate against the survival of the Krokosua forest reserve:

1. Lack of revenue flow from protected and conservation areas
2. Illegal exploitation of forest resources
3. Demand for forest lands for farming
4. Existence of admitted farms/settlement within the Reserve
5. Potential conflict between Forest Services Division and communities as a result of encroachments and admitted farm extensions
6. Perception that virgin forests are best lands for cocoa cultivation
7. Scarcity of farmlands for cocoa in adjoining lands off-reserve.
8. Potential fire outbreak during severe drought due to human agricultural activities
9. Pollution of water resources

The Krokosua Reserve is managed by the Forestry Commission of Ghana. The Commission has an area-based biodiversity management plan. However, effective implementation of the plan has been very challenging over the years due to lack of financial resources and technical capacity gaps. A review of the management plan and institutional capacity building would ensure adoption of environmentally sustainable practices by cocoa farmers which can promote biodiversity conservation and contribute to reduction of greenhouse gas emission. This would require mobilization of community stakeholders and local institutions to work together to improve the management of the reserves.

This proposal seeks to develop a more effective management plan to implement a GDI standard and certification system for land managers of the Krokosua Hills Forest Reserve and the surrounding cocoa farms currently undergoing UTZ certification in the Western Region of Ghana. It will also help to connect GDI to ongoing UTZ Certification and FSC Certification being implemented by cocoa farmers, John Bitar Company Limited, (a logging company) in the area under the initiative and technical guidance of Solidaridad and WWF. The Management Plan will provide a framework to facilitate increased biodiversity conservation and enhance sustainable management efforts of Solidaridad's Cocoa Agroforestry Project in the area. It will provide guidance to the stakeholders on how to ensure sustainable use of natural resources, particularly wildlife and timber/non-timber forest products. The Management Plan will also focus on diversification of livelihoods to serve as impetus for sustainable forest management.

## A. INTRODUCTION

Tropical deforestation is one of the largest sources of greenhouse gas emissions. Cocoa cultivation in the West African sub region has generally been dependent on clearing forest lands due to scarcity of fertile land (Ruf and Zadi, 1998). However, in recent years, the prospects of this practice have diminished drastically in most areas due to dwindled forest landscapes (Richard Asare, 2005). According to Niesten et al (2004), the remaining forest cover in West Africa constitute only one-fifth of its original extent. In Ghana for instance, an excessive use of the forest rent system to maintain and increase cocoa production in the past led to a considerable reduction of the country's forest cover (Ruf and Zadi, 1998; Ministry of Science and Environment, 2002).

The influx of farmers towards Western Ghana from the old cocoa growing frontiers over the years has increased the migration of many farmers from Ashanti, Volta, Brong Ahafo and Central regions to clear forestlands for cocoa farms establishment (Richard Asare, 2005).

Green Development Initiative (GDI) is promoting the establishment of biodiversity certification scheme for land management based on Conservation Biological Diversity guidance. This presents a perfect opportunity for better management of natural resources environmental sustainability, integrating best practices in ecosystem improvement and a business model for the environmental market.

This proposal seeks to implement GDI standard certification system by revising and implementing the management plan of the Krokosua Hills Forest Reserve and surrounding cocoa farms currently undergoing UTZ certification in the Western Region of Ghana. It will also create a linkage between GDI and UTZ Certification and FSC Certification being implemented by cocoa farmers, John Bitar Company Limited, (a logging company) in the area under the initiative and technical guidance Solidaridad and WWF.

The Management Plan will provide a framework to facilitate increased biodiversity conservation and enhance sustainable management efforts of Solidaridad's Cocoa Agroforestry Project in the area. It will give the conservancy and its members the guidance on how to best safeguard and sustainably use natural resources, particularly wildlife and timber/non-timber forest products. The impact on incomes and employment and the diversification of livelihoods will be included in the Management Plan to serve as impetus for sustainable development.

## B. AREA CHARACTERISTICS

Western Region of Ghana covers an area of 23,921 square kilometres, which is about 10 per cent of Ghana's total land surface. It is bordered by Ivory Coast on the west and on the south by 192 km of coastline of the Atlantic Ocean. Krokosua Hills Forest Reserve is one of the major forest reserves in the region. It is situated at the east bank of River Bia and bisected by the Sefwi Wiawso-La Cote d'Ivoire border road. The gross area of the reserve is 481.61km<sup>2</sup> with a total external perimeter of 166.64km and composed of 151.14km cut lines, 12.30km streams and 3.20km road. It lies between latitudes 6015' and 6040' north and longitude 2040' and 3000' west. It is a reserve in class L - Area in Ghana (West Africa) with the region font code of Africa/Middle East. It is located at an elevation of 228 meters above sea level. Its coordinates are 6°31'0" N and 2°45'0" E in DMS (Degrees Minutes Seconds) or 6.51667 and -2.75 (in decimal degrees). Its UTM position is WN22 and its Joint Operation Graphics

reference is NB30-07. The standard time zone for Krokosua Hills Forest Reserve is UTC/GMT+0 ([http://www.getamap.net/maps/ghana/ghana\\_\(general\)/\\_krokosuahillsforestreserve/](http://www.getamap.net/maps/ghana/ghana_(general)/_krokosuahillsforestreserve/)).

Krokosua Hills Forest Reserve is a moist semi-deciduous forest. It receives an annual rainfall of between 1250 mm and 1750 mm a year. The upper canopy consists of evergreen and deciduous tree species while the lower canopy consists mostly of evergreen species. The moist semi-deciduous forests contain the tallest trees, some of which can reach 50 to 60 meters in height. That is why these forests are sometimes called the “high forests”. These high forests are also less dense than the wet evergreen types. Additionally, these forests have many emergent trees. These are trees that stand above the general canopy level. This is important because, according to one study, Rowloway monkeys prefer emergent trees (<http://www.virtualexplorers.org/ghana/area.htm>). There are 38 admitted farms in this reserve. These admitted farms have footpaths as routes connecting farms and huts scattered within the farms. The huts are mainly built with mud and roofed with raffia. *Arthroleptis Krokosua* (otherwise known as Krokosua Squeaking Frog) is found in the reserve. This species is so far known only from the Krokosua Hills Forest Reserve and the neighbouring Sui Forest Reserve, both in south-western Ghana (Ernst et al. 2008, R. Ernst pers. comm. April 2010).

### C. AREA MANAGER

In Ghana, Forest reserves are fully vested in the state through the Forest Ordinance of 1927, and all forest and timber resources are held in trust by the government on behalf of the stool landowners. All naturally occurring timber trees belong to government. The Forestry Commission (FC) by an Act of Parliament (Forestry Commission Act 571 of 1999) is the manager of the forest.

But there are very serious weaknesses in the capacity of the land manager resulting in encroachment of the reserve through agricultural activities. The management plan needs a review to suit present circumstances and needs. The lack of funding, lack of ownership and low participation of community members and other stakeholders render implementation of the plans quite redundant. Furthermore, there is the need for institutional capacity development and capacity enhancement to create linkages to ensure biodiversity conservation in the two forests.

### D. RAPID ASSESSMENT AND ANALYSIS

In the 1950s, Ghana had a total of about 8.2 million hectares of tropical rainforest. In less than fifty years, Ghana's total forests cover to 1.6 million hectares. Rampant deforestation and poor policy by the Ghanaian government to effectively manage the country's wildlife have significantly reduced the country's forest cover leading to fears that bad times lie ahead. The causal factors include bush burning, logging, hunting, unsustainable cocoa farming.

Krokosua forest reserve used to cover a wider area than today. Unfortunately, inability to adhere to previous management plans, prevailing economic pressures and failure to include the immediate communities in the management of these forests have been the bane of these project sites. The effects of deforestation on the local communities have been immense. From dwindling farm yields, reduced

access to drinking water and massive exposure to the vagaries of the weather have been some of the effects on the local people. A total of 200 tree species have been recorded in the Reserve of which 64 are timber species. This figure falls far below the Moist Semi-deciduous North-west (MSNW) vegetation zone estimate, which stands at 335 tree species. Despite the lower diversity of tree species, many of the commonest species in Ghana especially the high value timber species achieve their greatest frequency here. The Forest Reserve contains several species found only rarely elsewhere in Ghana. Such species include *Guibortia ehie* a high value timber species heavily exploited in the late 1980s.

The 2002 inventory results indicate that the five most abundant tree species are *Celtis mildbraedii*, *Sterculia rhinopetala* and *pteriygota macrocarpa*. The fauna survey conducted during the establishment of the Krokosua GSBA indicated that the Reserve has a variety of fauna species. These include the Mona Monkey, the spot-nosed Monkey, the Black and white Colobus, the White mangabey and the Chimpazee. The Rufford's Grant for Nature also found the Lowe's Monkey in Krokosua. Hunters have intimated that the rare Red Colobus Monkey is present in this area. However, this is yet to be confirmed. Other mammalian species that could be located in this area include; Brush-tailed porcupine, Bushbuck; Cusimanse, Giant rat, Grasscutter, Maxwell Duiker, Pel's Flying Squirrel and the Tree Hyrax. Hunting and farming are identified as the most serious threat to the management and conservation of wildlife in this area. Bird life is also rich in the area and some of the common species of special interest include: the naked-faced barbet, the Ahanta Francolin, Green Fruit Pigeon, Allied Hornbil, Forked-tailed Drango, White-crested Hornbil, Blue-throated Roller, Green Turaco, Tamborine Dove among others.

### **Threats to the reserves and biodiversity conservation**

The reserve is faced with the following biodiversity threats:

- Scarcity of farmlands for cocoa in adjoining lands off-reserve
- Existence of admitted farms/settlement within the Reserve
- Potential conflict between FSD and communities due to encroachments and admitted farm extensions.
- Perception that virgin forests are best lands for cocoa cultivation
- Pollution of water resources
- Non commitment on the part of some stakeholders
- Lack of revenue flow from protected and conservation areas
- Potential fire out break during severe drought
- Illegal exploitation of forest resources
- Demand for forest lands for farming

### **The Problem**

Forested lands designated as critical biodiversity hotspots are now fragile ecosystems in Ghana making fringed communities extremely vulnerable to environmental and global change. The problems are severe and of large extent in Ghana's critical protected lands which support millions of rural poor across the country cocoa belt. For instance, the natural resource base of forest reserves in the western region of Ghana which the rural dwellers depend on for cocoa and other livelihoods is rapidly degrading, with as much as 70% of all land already degraded to some extent. Without urgent policy action there is a high

risk of further rapid environmental degradation and spiraling poverty. The level of degradation caused by cocoa farms expansion in the reserve would require reforestation, recycling of land to improve soil fertility and create shade for soil moisture conservation and carbon sequestration.

Solidaridad seeks to facilitate the development of a Green Development Initiative Certification to create of cocoa biological corridors to link fragmented biodiversity hotspots in the cocoa growing frontiers to enhanced sustainable cocoa livelihoods and biodiversity conservation in and around the Krokosua Hills Forest Reserve. It would also enhance cocoa farmers' capacity to adopt and create sustainable systems in pursuance of biodiversity hotspots conservation and improved cocoa livelihoods. By improving human capacity to tackle forested land degradation in the Western region of Ghana, there will be a direct contribution to the global objectives of the UNCCD, and other global environmental conventions that recognize the importance of addressing land degradation, including the Convention on Biological Diversity (CBD), and the United Nations Convention on Climate Change (UNFCCC).

## E. BioSWOT Analysis

Currently, the Krokosua reserve has been divided into two main management zones; Protection and the Production zones. Management zones have been maintained in accordance with their original boundaries. There has been regular disbursement of revenue to all stakeholders as indicated by annual control reports. The production zone of Krokosua forest reserve comprises 191 compartments covering an area of 23,639 ha. The protection zone covers an area of 24,521 ha with several protection functions.

These include:

- **Globally Significant Biodiversity Areas**

These are areas selected for biodiversity conservation and are of interest to the international community due to its high genetic index of 46. In this area the quality of the forest in terms of its condition (forest canopy cover, canopy height and species diversity) is to be conserved with stringent protection from logging and the commercial collection of NTFPs.

- **Hill Sanctuaries**

Forty (40) compartments of net area 4,526ha have been identified for this purpose. This portion of the reserve covers areas within the reserve where the slope is greater than 30%.

- **Convalescence Zone**

This zone is made up of compartments which is due to either the effects of past excessive logging or incidence of wild fire are now at a stage where it cannot be logged in the present management cycle. A guide of 15m<sup>2</sup>/ha basal area or less is indicative in this case.

### Production Zone

The zoning of the reserve seeks to address these objectives:

- To ensure full protection of areas of high conservation value including hill sanctuary, globally significant biodiversity area (GSBA), Province area, and wetlands.
- To ensure protection of both flora and fauna in order to maintain biodiversity for the wider national and international interest.

- To maintain the watershed services to the Draw river and its tributaries
- To generate revenue from the GSBA through promotion of eco-tourism
- To institute programmes and actions that guarantee adequate flow of benefits to the local communities without compromising the integrity of the forest
- To sustain the production of timber and non-timber products from the forest as a source of revenue and livelihood for the resource owners and fund for management whilst maintaining environmental quality and social cohesion.
- To ensure steady flow of timber revenue to stakeholders
- To ensure that, vested rights holders in the land owning communities have access to forest goods without compromising the integrity of the forest.

### SWOT Analysis

Strength	Opportunity
<ul style="list-style-type: none"> <li>• The forest is gazetted as protected area and permanent forest estate.</li> <li>• Located on a relatively hilly topography that harbours undisturbed forest ideal for habitation of diverse flora and fauna.</li> <li>• The hilly topography and the wide range of ornamental plants present scenic beauty in the area for tourism.</li> <li>• Existence of rare plant and animal species of international research concerns.</li> <li>• Large production area adequate to provide economically viable annual harvesting area during the forty years felling cycle.</li> <li>• Presence of highly skilled and competent staff of FSD to execute the plan.</li> <li>• Existence of well-defined framework including MOPs, and operational guidelines including harvesting schedule for timber management</li> <li>• Availability of productive soils to facility natural regeneration.</li> <li>• Old management plan in place for easy reference and guidance.</li> <li>• Existence of forest and wildlife policy that seek collaboration with the forest fringe communities</li> <li>• Existence of legal framework for benefit sharing</li> <li>• Increased awareness of forest governance by stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>• Human settlements permitted within the protected areas.</li> <li>• Interest of FSD staff is skewed towards timber production areas.</li> <li>• Presence of admitted farms.</li> <li>• Range supervisors are not fairly distributed and housed.</li> <li>• Absence of legal framework to charge fees for environmental services.</li> <li>• Prolonged rainy season resulting in under production during rainy season</li> <li>• Muddy nature of the soil makes road construction expensive</li> <li>• Proliferation of water bodies which makes accessibility difficult makes trucking of logs expensive.</li> <li>• Relatively low stocking level of FIP class one species.</li> <li>• Existence of numerous admitted farms</li> <li>• Existence of two villages in the reserve.</li> <li>• Inadequate funds for effective monitoring of logging activities.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Willingness of the government to submit to instruments, conventions, international protocols to support sustainable forest management.</li> </ul>	<ul style="list-style-type: none"> <li>• Activities of chainsaw operators.</li> <li>• Illegal logging</li> <li>• Illegal mining activities.</li> <li>• Illegal farming (extension of admitted farms and</li> </ul>

<ul style="list-style-type: none"> <li>• Donor funding to enhance effective management.</li> <li>• Avenue for collaboration between FSD and governmental organization as well as TUC holders, land owners and interested NGOs.</li> <li>• Existence of great potential for research.</li> <li>• Potential for ecotourism.</li> <li>• The willingness of the government to submit to instruments, conventions, international protocols to support sustainable forest management.</li> <li>• Continuous and rising demand for timber locally and internationally.</li> <li>• Existence of mechanism for arrest and prosecution for forest offence.</li> <li>• NGOs actively involved in forest governance issues</li> <li>• Willingness of some communities to collaborate in the management and protection of the reserve.</li> <li>• Fringe communities willingness to collaborate in forest governance</li> </ul>	<p>encroachment)</p> <ul style="list-style-type: none"> <li>• Excessive commercial NTFP collection.</li> <li>• Local people lack the understanding and usefulness of the protected areas.</li> <li>• Increased demand for wood and NTFPs and their subsequent supply through illegal means.</li> <li>• Potential conflict between FSD and communities due to encroachments and admitted farm extensions.</li> <li>• Incidence of wild fire.</li> <li>• Perception that virgin forests are best lands for cocoa cultivation</li> <li>• Scarcity of farmlands for cocoa in adjoining lands off-reserve.</li> <li>• Agitation of land owners to manage the forest resources on their own</li> <li>• Agitation by the land owners for larger share of the forest revenue</li> <li>• Failure of district assemblies to use part of royalties for projects in the forest fringe communities</li> </ul>
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### Potential Project Partners

A number of potential project partners are available in these areas and they are defined below:

- i. **WWF-Ghana:** Solidaridad is collaborating with WWF in the implementation of Cocoa Agroforestry Project in the Krokosua area through linkage between UTZ Certification and FSC certification. It has knowledge for restoring and maintaining biodiversity and engaging with local communities to ensure long term sustainable development. Already, this process has helped about thousand cocoa farmers in the area to attain UTZ Certified certification. It has also helped John Bitar Company limited to attain FSC Controlled Wood for forest reserves including Krokosua Forest Reserve and two (2) Chain of Custody certificates.
- ii. **District Assemblies (Sefwi Wiawso, Sefwi Akontombra, Amenfi West and Juaboso):** These are local government institutions that have legislative backings for the protection of the environment. They are also the representatives of the people and their assistance will be needed in the area of community entry and access to these fringe communities
- iii. **SRA Committees:** These are committees that ensure logging companies comply with the signed agreement and are involved in the collection and distribution of benefits from timber firms. These will assist in the management of benefits that will accrue from the management of the reserves.
- iv. **John Bitar Company:** This is a timber logging firm that is greatly involved in tree certification and protection of the forests. They also have a concession for logging in the Krokosua reserve. It is partnering with Solidaridad and WWF in the implementation of the Cocoa-Agroforestry Project and a beneficiary of the FSC Certification process.

- v. **Forestry Commission/Forestry Services Division:** The Forestry Commission is the legal manager of all forests in Ghana and have in depth knowledge of all management plans for all forests in Ghana and most especially, the project areas
- vi. **Ghana Wildlife Society:** It is Ghana's premier local conservation NGO for technical expertise.
- vii. **Individual Land Owners:** These are indigenous people that own lands/farms or operate agricultural activities off and within the reserves.
- viii. **Ministry of Food and Agriculture (MOFA):** Government agency in charge of Food Security
- ix. **Ghana Cocoa Board:** Government Institution mandated by government to ensure continuous growth of the cocoa sector.
- x. **Wildlife Division:** A subsidiary of the Forestry Commission for the protection and habitat/resource conservation.

## E. Work Plan for Planning and Registration

Step two of this proposed management area seeks to involve cocoa farmers, community members, Forestry Commission, Wildlife Division, Forest Services Division, relevant traditional and local government institutions and to collaborate and play active roles in the forest management. Implementation will focus on the following:

### **Institutional Capacity enhancement and stakeholder engagement**

Community sensitization and stakeholder engagements will be conducted. This will create a platform where institutional development and capacity enhancement among stakeholders will be ensured. This will be preceded by desktop stakeholder analysis to identify all relevant stakeholders. By so doing, a community forest management committee will be formed to foster partner cohesion and motivation in mainstreaming GDI Certification scheme for sustainable forest production.

In this action, community mapping will be carried out in order to properly manage catchment areas and enhance performance indicators. It is anticipated that once this is done, it will have positive effect on production practices and improve the economy of their communities.

The capacities of local institutions, farmers and community members in general will be enhanced through the establishment and strengthening of farmer associations/groups implementing voluntary standards. Community Resource Management Area (CREMA) will also be created in project sub-areas and will be managed by Community Forest management Committees. CREMA is an innovative mechanism for natural resource governance and landscape-level planning tool that authorizes communities to manage their natural resources for economic and livelihood benefits. This will serve as a platform for cocoa producers to discuss issues of common interest, develop action plans and engage with policy makers and people in authority at the community and district level to demand change and payment for environmental services. It is hoped that tree planting jobs will be created for community members as part of logging companies' sustainability programmes.

The stakeholder engagement process will include

1. Organize awareness creation and sensitization campaigns in the target communities and stakeholders on the need to create form Community Resource Management Areas and establishment of Community Forest Management Committees (CFC)
2. Conduct Participatory Learning and Action (PLA) to determine the form of the management structure at the grassroots level and roles of local institutions

3. Facilitate the development of modalities for selecting representatives on CFCs
4. Jointly formulate working modalities and programmes with CFC members and communities
5. Facilitate the development and implementation of Community Action Plans for the management of biodiversity
6. Provide technical backstopping to the CFCs and operations of the CREMAS

### **Advocacy and lobbying**

Advocacy and lobbying activities will be used as a process for the concerns of community members and producers to reach national policy and decision makers such as the Forestry Commission, Timber Logging Companies, Traditional Councils, District Assemblies and other relevant government institutions. This will ensure that the communities are included in such decisions in a manner that address the problems they face in their enterprise.

### **Community mapping and modeling**

- Participatory land use mapping for biodiversity management would be conducted using Participatory 3 D Modeling (P3DM) method.
- Re-demarcate and survey all admitted farms in the reserve, protected area in the reserve and production areas in the reserve.

### **Adapting Management Plan with GDI standard**

- Establish a planning team to lead the process and preparing all the relevant information and identifying the key stakeholders.
- Hold public meeting with representatives from a broad range of stakeholders using P3DM as reference to:
  - a. Agree on the overall "**Vision**" for the GDI Biodiversity Management Plan, and the principles by which it will be achieved.
  - b. Define and analyze the key problems or "issues" that will be addressed by the plan and the stakeholders involved in each of these key issues.
  - c. Agree on management priorities and objectives for defined zones and land use type (forest, cocoa farm, settlements).
- Conduct targeted consultation with a range of key stakeholder groups around critical issues.
- Modify management plans and internal control systems of zones currently undergoing FSC and UTZ certification to incorporate GDI principles for additional certification.
- Train stakeholder groups on the principles of GDI certification.

## **Monitoring and Evaluation**

### **Baseline Assessment**

A detailed baseline assessment and a monitoring system will be put in place to ensure implementation alignment with planned activities. The Baseline study will document demographics, natural resource base, and health conditions of the communities that the program will target. Data collected for the baseline study will support the indicators and will serve as a reference for data collection during mid-term and an independent final impact evaluation during the last quarter of the project's duration. The baseline levels of conditions in the communities will ensure accurate measurement of the impact of the

proposed interventions through the life of the project. During this baseline survey, questionnaires will be developed and tested for collecting biodiversity, household social and economic baseline data. This same survey will also be used during the impact survey at the end of the project. Household baseline information will be collected from each participant when they are recruited into the program. Solidaridad may supplement the data collected during the baseline survey through Participatory Learning and Action (PLA) methods in selected communities to refine and/or validate some of the baseline survey data. There will be periodic data collection on impact and monitoring indicators by project staff and consultants which will allow continuous evaluation of the project's progress for the required annual, mid-term and final reports. The baseline data will be used for evaluation and impact assessment.

## **Project Monitoring**

Monitoring provides project management and staff with the tools to determine if project activities are being implemented as planned, measure if performance targets are being met and the interventions are responding to the needs of GDI. Monitoring also serves to provide information to guide decisions to implement corrective action to improve the performance of the project, discover trends, keep activities on schedule, allocate staff and resources properly and meet reporting and accountability requirements of the donor. In this project, monitoring activities will be coordinated by the Monitoring and Evaluation Manager of Solidaridad West Africa. The M&E Manager will be responsible for the development of reporting forms, assignment of monitoring responsibilities to staff, set-up of the project's management information and data collection system and track progress based on the defined impact and annual monitoring indicators. The project records will provide the necessary data to measure progress of project interventions on a monthly, quarterly and annual basis. Actual progress will then be compared with targets established in the Indicator Performance Tracking table. All project field staff starting from the field and technical staff and the Program Manager, as well as staff of collaborating partners will be involved in the process of project monitoring.

Solidaridad's monitoring system will integrate data collection, analysis, reporting and use to enhance organizational learning and confirm whether the project-induced changes are resulting in anticipated benefits, and whether there are unanticipated changes resulting in adverse effects that require prompt mitigation. To ensure the achievement of project objectives, the Project Team may revise work plans that are derived from the annual performance tracking table every quarter based on monitoring information in consultation with donor and other relevant stakeholders. Through quarterly and annual program and financial reports generated by the project and other reports produced by Solidaridad's visiting technical advisors, the monitoring system will establish that program inputs, activities and outputs have occurred and on schedule.

## Work Plan (12 months)

No.	Project Component	1	2	3	4	5	6	7	8	9	10	11	12
1.	Development of project team	→											
2.	Institutional capacity enhancement and stakeholder engagement (Consultations and Sensitization Workshops)	→	→										
3.	Community Mapping & Modeling: 1. Participatory Land use planning using P3DM (2 Models) 2. Re-demarcation	→	→	→	→	→	→						
4.	Baseline Assessment: Participatory Development of Biodiversity/Land Management Plans and Internal Control System		→	→									
5.	Development of Biodiversity/Land Management Plans					→	→						
6.	Implementation of Management Plan (Registration and training of land managers) 1. Training on GDI Mgt. Plans for GDI, 2. Linkage with UTZ & FSC 3. Establishment of CFCs and CREMAS							→	→	→	→	→	→
7.	M&E, backstopping	→	→	→	→	→	→	→	→	→	→	→	→
8.	Reporting			→			→			→			→

## Biodiversity Outcomes

### Biodiversity-Positive Outcomes

- Willingness of the government to submit to instruments, conventions, and international protocols to support sustainable forest management.
- Existence of UTZ and FSC certification
- Donor funding to enhance effective management.
- Avenue for collaboration between Forest Services Division (FSD) and governmental organization as well as TUC holders, land owners and interested NGOs.
- Continuous and rising demand for timber locally and internationally.
- Existence of mechanism for arrest and prosecution for forest offence
- Willingness of some communities to collaborate in the management and protection of the reserve.
- Conservation of sizeable (1001 ha) forest resources to meet the current and future needs of society
- Development of management plan
- Fringe communities willingness to collaborate in forest governance
- Development of an inventory for fauna and flora
- Re-forestation of the reserves

### Conservation outcome

The conservation outcomes that will emanate from the project for this area will be enormous.

- Water resources would be well protected from the use of chemicals on farms
- Fringe communities would be made to appreciate the value of virgin forests in terms of the benefits to the farmer, country and community
- Forest and biodiversity would be protected
- Potential wild fires created as a result of human settlements within the reserves will be minimized through sensitization and the adoption of stringent wildlife management measures.
- Potential conflicts between forest managers and fringe communities will be averted by the awareness that will be created to the extent that the work being done by the land managers will be beneficial to all stakeholders
- The adoption of UTZ code of conducts by cocoa farmers would go a long way to conserve biodiversity.
- Degraded forest areas restored

### Sustainable Use

- Desirable forest tree species regenerated.
- Hunting activities regulated through awareness creation and licensing
- NTFPs collection regulated

- Land use (protected forests, productive forests, regenerative lands, farms, settlement) re-demarcated using participatory approach and managed using GDI principles.

### **Social equity**

- Community Forest Committee (CFC) established that would include representative of all stakeholders and largely by community members.
- Community would be facilitated to map their and share their concerns and rights using Participatory 3 D Models (P3DM).
- Internal Control System (ICS) for cocoa farmer groups established
- Women are given platform to hold positions within the CFC and ICS
- Judicious use of revenue from forest for development projects.
- Payment of appropriate compensation to land owners ensured.
- Institutional structures, ICS and CFC would be strengthened to share benefits equitably and judiciously.

### **Development outcome**

This project aims as meeting the general government of Ghana's desire to provide a critical intervention for the resuscitation of forest resources in order to prevent Ghana becoming a net importer of wood.

It is also aimed at achieving the following in relation to Ghana's Medium Term Development Goals:

#### Environmental sustainability

- Enhanced biodiversity and conservation of protected areas
- Eco-tourism promoted
- Improved livelihoods of the fringe communities through the creation of alternative income sources, provision of farmer business skills and good agricultural practices
- Intensification of cocoa farming for increased productivity and reduced tendency to expand to the reserves

## Budget

No.	Project Component	Unit Cost €	Qty	Total €
<b>1</b>	<b><i>Development of project team</i></b>			
	Consultants (Biodiversity Status)	4,000	1	4,000
	Project Coordination costs	1000	12	12,000
	District Level Team	7,000	1	7,000
<b>2</b>	<b><i>Institutional Capacity enhancement and stakeholder engagement</i></b>			
	Stakeholder Sensitization Workshops	3,500	1	3,500
	Sensitization and engagement within all 38 Admitted and Fringe communities	300	38	11,400
<b>3</b>	<b><i>Community Mapping and Modeling</i></b>			
	Participatory Land use planning using P3DM	8,000	1	8,000
	Re-demarcation	5,000	1	5,000
<b>4</b>	<b><i>Baseline assessment</i></b>	6,000	1	6,000
5	<i>Participatory Development of Biodiversity/Land Management Plans and Internal Control System</i>	15,000	1	15,000
<b>6</b>	<b><i>Implementation of Management Plan</i></b>			
	Registration and orientation of land managers (Admitted farm owners, cocoa farmer groups, FSD, logging company)	2,500	1	2,500
	GDI training of land managers, CFCs and CREMAs	12,000	1	12,000
	GDI certification	3000	1	3000
	M & E and backstopping – borne by Solidaridad	7,000	1	7,000
	Reporting	3,000	1	3,000
	<b>Sub total</b>			<b>99,400</b>
<b>7</b>	<b>Overheads (7%) – borne by Solidaridad</b>	<b>6958</b>	<b>1</b>	<b>6958</b>
<b>8</b>	<b>OVERALL TOTAL</b>			<b>106,358</b>
	<b>Total: Solidaridad</b>			<b>6958</b>
	<b>Total: GDI</b>			<b>106,358</b>

Photos of Krokosua Hills Forest Reserve



Figure 1: Landscape of Krokosua Hills Forest Reserve



Figure 2: Krokosua Hills Forest Reserve



Figure 3: A Lowe's Monkey (*Cercopithecus Campbelli*)  
Picture by Emmanuel Ackom



Figure 4: Flora Image in Krokosua Forest Reserve