



Completion report

ITTO project RED-PD 093/12 Rev.3 (F)

**ADVANCING REDD+ IN GHANA: PREPARATION OF REDD+  
PILOT SCHEMES IN OFF-RESERVE FORESTS AND AGRO-  
FORESTS**



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The Government of Ghana

Executing agency:

CSIR-Forestry Research Institute of Ghana

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#### Disclaimer:

The views expressed in this report are those of the authors and do not necessarily reflect the views of ITTO or the Government of Ghana. The materials contained here are based on the authors' knowledge of the subject and how they can contribute to the sustainable management of the off-reserve forests and agroforests in and outside Ghana.

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### ***List of abbreviations***

DSA	Daily Subsistence Allowance
FC	Forestry Commission
FSD	Forest Services Division
FAO	United Nations Food and Agricultural Organization
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program
FORIG	Forestry Research Institute of Ghana
FORUM	Forest Protection and Resource Use Management Project
FPRI	Forest Products Research Institute
GHG	Green House Gas
GoG	Government of Ghana
GPRS	Ghana Poverty Reduction Strategy
HFZ	High Forest Zones IUCN - International Union of Conservation of Nature
ITTO	International Tropical Timber Organization
KNUST	Kwame Nkrumah University of Science and Technology
NAMA	Nationally Appropriate Mitigation Action
NRWG	National REDD+ Working Group
NTFPs	Non-Timber Forest Products
PADP	Protected Area Development Programme
PRA	Participatory Rural Appraisal
REDD	Reduction of Emission from Deforestation and Degradation
REDDES	Reducing Deforestation and Forest Degradation and Enhancing Environmental Services in Tropical Forests
R-PP	REDD Readiness Preparation Proposal
SECO	Swiss State Secretariat of Economics
SFM	Sustainable Forest Management
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Voluntary Partnership Agreement

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## **Executive Summary**

The challenge of implementing REDD+ in Ghana is in preserving natural resources so that they continue supporting economic growth. The major crop in Ghana's high forest zone - cocoa - is mostly produced by small-holders and has shaped the zone for a long time. Recently, the development of medium and low-shade cocoa varieties has increased the rate of tree cover loss. It is widely agreed that the reinstatement of traditional varieties, which depend on much more shade and humidity, would have a positive impact on the carbon cycle in Ghana. The principal drivers of deforestation and degradation as identified in the R-PP are agricultural expansion (50%); Wood harvesting (35%); Urban sprawl and infrastructure development (10%); and Mining and mineral exploitation (5%). The RPP identified 14 potential REDD+ strategic actions, including the mitigation of agricultural expansion, reduction of unsustainable timber harvesting and clarification of tenure and rights regime.

The project focused on one main element of the R-PP that develops on off-reserve forests, agroforests and other carbon conservation activities that have the potential to become a pillar of Ghana's REDD+ strategy. As such the project contributed to the development and/or enhancement of sustainable off-reserve production systems, so that Ghana will be able to benefit from future carbon trading schemes. Furthermore, the project addressed the challenge of deforestation and forest degradation within the processes of the REDD+ programme to enable the alignment of the project outputs with national policies. The project supports Ghana in the preparation of its low-carbon development strategy and its efforts to reduce GHG-emissions through REDD+ activities.

The project aimed at strengthening Ghana's capacities to prevent and reduce deforestation and forest degradation and enhancing carbon stocks (REDD+). The specific objective of the REDDES project is to lay out the ground work for the development or enhancement of off-reserve production systems under REDD+ schemes, in line with its efforts to reduce GHG emissions in forests. The strategies used in the project's implementation include multi-stakeholder consultations; awareness and knowledge on REDD+ at local and regional levels through training workshops; and specific baseline research studies. No change was made to the development objective, specific objective and the outputs. Most of the planned activities were unchanged and the planned results and outputs of the project were all achieved.

The tangible outcomes of the project included the proposal that aims to support Ghana in the implementation of REDD+ in off-reserve areas (outside forest reserve) while enhancing export potential for selected crops cultivated in biomass-intensive multi-year production systems. The specific objective of the project proposal is to develop best practices for carbon management in a variety of agricultural production systems in Ghana that have the potential to be scaled up as effective means in Ghana's REDD-readiness process. In addition, the project developed a guide containing criteria and modalities for developing and implementing REDD+ programme in Ghana. The guide aims to broadly describe and explain the concept of REDD+ to anyone who is interested in learning more about the idea or the opportunity in Ghana. It is specifically intended to help project proponents, stakeholders, decision makers, researchers, forest resource users, and members of the NGO community gain a practical understanding of what it means to implement a REDD+ project or programme. Also, relevant stakeholders from FSD, MOFA, local communities, and the private sector were identified and trained on climate change issues. The objectives for the training workshop were to: (i) create awareness about global climate change and Reducing Emissions from Deforestation and Forest Degradation and enhancing carbon stocks (REDD+) in local communities, (ii) provide communities with information on opportunities and risks associated with trees/forest protection under a REDD+ regime, and (iii)

discuss the rights and responsibilities of communities to ensure successful forest/trees protection (and REDD+ projects).

In order to ensure sustainability, the project were carried out in close collaboration with the relevant stakeholders in the country including the local communities, the National REDD+ Secretariat at the Forestry Commission of Ghana, COCOBOD, District Authority and Traditional Authority. Especially the National REDD+ Secretariat (NRS) was a key partner in the implementation of the project activities. It is expected that the NRS will continue to incorporate the lessons learnt and the outputs from the project in the further development of REDD+ activities in the country. In all, the project sought to identify strategies that simultaneously reverse agriculture's adverse effects on forests and trees (and therefore carbon emissions) and enhance the environmental services that off-reserve forests and trees provide.



## 1. Project Identification

### 1.1. Context

Roughly 2 million people in Ghana depend on forests for their subsistence as well as for maintaining traditional and customary lifestyles and hence for strengthening identity. A report of FERN<sup>1</sup> estimates that 60% of Ghana's population, (some 12 million. people), depend on forests for making a living. This part of the population suffers the most from the degradation of forests, as it negatively affects the natural resources needed for cultivation (water and soil degradation), as well as the availability of NTFPs for various purposes. As smallholders' educational and literacy levels lie below Ghanaian average, it is also very difficult for them to have a common voice against timber exploitation like illegal chainsaw activities, or to restrain from small gains from own extraction.

In 2009, around 45% of the population was under 18, and Ghana's population is expected to grow at around 2.5% per annum over coming decades. Currently, about 50% of the population is urbanized and this is growing at around 4% per annum. Both immigration and emigration have small but significant impacts on demographic issues with around 8% of Ghanaian residents having been born elsewhere and 1.5 - 3 million Ghanaians living abroad. Remittances from Ghanaians resident overseas are an important source of foreign currency. Internal migration is also significant with a drift of population towards the more developed south of the country.

Gross National Income per capita was around US\$700 in 2009 and government policies aim to increase this to \$3,000 by 2020. Ghana's ambitious economic plans are based on macroeconomic stability, enhancing the competitiveness of Ghana's private sector, agricultural modernization, sustainable natural resource management, and development of oil and gas resources. Communal ownership is the main feature of land tenure in most of Ghana. Such land is controlled by lineage or clan based land-owning groups and allocated to individuals or households on a usufruct basis. Those without usufruct rights may also gain access to land through customary sharecropping agreements. Under this traditional system both men and women can access land as long as they are recognized members of the local communities. The national Land Policy published in 1999 stipulates that all traditional sources of land tenure and rights are recognized as legitimate sources of land titles and the law protects such tenure rights. Leaseholds may be granted for a maximum duration of 49 years, renewable. The policy document provides a framework for access to land by all Ghanaian men and women, including internal migrants, as well as foreign potential investors, provided that: a) customary practices governing the disposal of the land, b) the individual agrees to put the land to a use that conforms to the land use plans for the area and to principles of sound land use management<sup>2</sup>. Ghana is notable in that all forest and savannah woodland reserves are owned by the local communities and traditional authorities, and managed by the government in trust for the people. Trees are not always transferred together with the land. In principle, families within a given clan retain the right to trees, especially those with economic value, even when the right to the use of the land has changed hands. In other cases, however, clan families may agree with tenants, arrangements for revenue sharing for some of these trees. In forest reserves and other lands, right to naturally occurring timber trees is vested in the state President and in accordance with

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<sup>1</sup> Forest Governance in Ghana, An NGO perspective. FERN/Forest Watch Ghana, March 2006

<sup>2</sup> The GoG seeks to secure landrights with the support of WB and other donors:

<http://www.ghanalap.gov.gh/index1.php?linkid=47&sublinkid=97>. Presently, the state of implementation is unclear.

the Concession Act of 1962, the state is empowered to manage and regulate the use of Vested Lands on behalf of the communities.

Households are often dependent on fuelwood for their daily energy needs. As the population is rapidly growing, this poses a high pressure on the forests and is an important factor to forest degradation. Another ITTO-Project is working on “efficient charcoal and briquette production” (OD 612/11 Rev.2). This project has the potential of complementing the approach here proposed. A further aspect has to be considered regarding forests in Ghana, which is the one of spirituality. Often, a combination of religious beliefs exists among the population, while traditional beliefs and customs can be said to be more vivid in rural areas. Traditional beliefs can be a very strong incentive to protect forests, as has been testified in various cases<sup>3</sup>. 59,037 ha of Ghana’s forests can be classified as “primarily for social services “, as the FAO Forestry Assessment 2010 puts it. Within the present REDDES project, the study of the potential effects of REDD+ implementation on local people’s existing land use practices and their control over natural resources will be one of the activities. Also in the other studies, traditional and local knowledge shall be integrated into the findings and analysis.

The challenge of implementing REDD+ in Ghana is in preserving natural resources so that they continue supporting economic growth, as forestry, wildlife and mining account for almost 15% of gross domestic product. As about 70 % of the population highly depends on the utilization of natural resources for their livelihood, environmental governance has a vital role for the future of the country. There is thus a need for continuous improvement of the policy, regulatory and institutional framework in the area of natural resources, while strengthening the consultation processes in order to include stakeholders with potentially different interests as part of the process. The legal regime concerning trees can be regarded as an institutional factor among the drivers of deforestation and forest degradation, as benefits from logging do not reward the small farming population who consequently has no economic incentive to grow trees. This aspect is a major issue for the development of REDD+ mechanisms, considering the fact that sustainable land-use systems must be developed with and to the benefit of local populations.

The major crop in Ghana’s forest zone, cocoa, has shaped the zone for a long time. It is mostly produced by small-holders of the high forest zone. Recently, the development of medium and low-shade varieties has increased the rate of tree cover loss. It is widely, agreed that the reinstatement of traditional varieties, which depend on much more shade and humidity, would have a positive impact on the carbon cycle in Ghana. The viability of the reintroduction of traditional varieties however depends on the development of systems that offer the population new possibilities for revenue, as e.g. with trees for fruit, fodder, medicine or fuel wood production.

The condition of Ghana’s forests has been in decline for many years, particularly since the 1970s. Many forest reserves are heavily encroached and degraded, and the off-reserve stocks are being rapidly depleted. Immediate drivers include: forest industry over-capacity; policy/market failures in the timber sector; burgeoning population in both rural and urban areas; increasing local demand for agricultural and wood products; high demand for wood and forest products on the international market; heavy dependence on charcoal and fuelwood for rural and urban energy; limited technology development in farming systems and continued reliance

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<sup>3</sup>E.g. [http://pdf.usaid.gov/pdf\\_docs/PNACA562.pdf](http://pdf.usaid.gov/pdf_docs/PNACA562.pdf),  
<http://ir.ucc.edu.gh/dspace/bitstream/123456789/947/1/Awuah-Nyamekye.pdf> , 10.4.2012.

on ‘slash and burn’ methods to maintain soil fertility and fire as a tool in land management (Forestry Commission 2010).

Deforestation in Ghana usually commences with the degradation of well-stocked forests by excessive (often illegal) logging, slash-and-burn agriculture, mining and quarrying, and fuelwood collection. Degraded forests are then often completely deforested by wildfire, illegal occupation and/or land-use changes. These destructive forces are influenced by population pressure and poverty and also by infrastructure and economic development programs. Road construction near or within forest reserves facilitates encroachment. Internal migration to the western forests for cash-crop cultivation accounts for the high rate of forest degradation in those areas. An estimated 395 000 hectares of primary forest remain in Ghana, but no estimates were available of the area of degraded primary forest, secondary forest or degraded forest land. Almost all forests have suffered depletion, creating eroded hillsides in some cases and destroying/destroyed genetic diversity in others. FAO (2010) reported a change in natural forest area of 677 000 hectares between 2005 and 2010, an annual average loss of 135 000 hectares. An estimated 66 500 hectares of wet evergreen, moist evergreen and moist semi-deciduous forest (southwest) in the PFE were formally converted to agriculture in the most recent five-year reporting period.

Forest fires affect an estimated 500 000 hectares of forest per year, the majority (80%) of which are unplanned (FAO 2010). Excessive logging can make the forests more vulnerable to fire by causing the accumulation of residues, which become readily flammable when dry. Illegal forest activities, including the use of portable chainsaw mills, are widespread in the high-forest zone, particularly in off-reserve areas. The invasion of woody weeds affects an estimated 50 000 hectares of forest lands.

Around 2,555,900 ha of Ghana’s forests are protected areas (forest reserves and national parks). These areas, despite being designated “protected” and still hosting high biodiversity, are considered as “partly to mostly degraded”, as stated in the FIP. The remaining forest areas are considered “off reserve” and comprise a variety of land use types. However, in the high forest zone, mixed patterns with cocoa, food crops and fallow are dominant. Agricultural land use has dramatically expanded at the expense of forests over the past decennia. According to the Cocoa Board, cocoa production expanded almost 150% between 1999 and 2002 and is still expanding.

The Economic Sector Work (ESW) in Ghana in 2006 led by the World Bank noted that there was an annual cost of deforestation and forest degradation of about 3.5 percent of Ghana’s GDP. Data across 46 forest reserves and comparisons with inventories in the 1950s, 1970s, and 1990s, shows that the forest is degrading with a negative basal area of  $-0.13 \text{ m}^2 \text{ ha}^{-1} \text{ year}^{-1}$ , thus damage from logging is greater than new growth. Off-reserve forest loss also arises from the combined expansion of farming (especially cocoa) and demand for timber from the timber industry, while on-reserve, degradation has accelerated dramatically in the last few decades from excessive logging, encroachment, illegal logging by chainsaw operators and bushfires. Only 1.64 million hectares of forests in Ghana remain in a reasonable to good condition from an initial area of 8.2 million hectares (FIP, p. 12). According to the R-PP, drivers of deforestation are estimated to be about 50% agricultural expansion, 35% harvesting of wood, 10% population and development pressures, and 5% mineral exploitation and mining.

## **1.2. Origin and problem**

The principal drivers of deforestation and degradation as identified in the R-PP are agricultural expansion (50%); Wood harvesting (35%); Urban sprawl and infrastructure development (10%); and Mining and mineral exploitation (5%). The RPP identified 14 potential REDD+ strategic actions, including the mitigation of agricultural expansion, reduction of unsustainable timber harvesting and clarification of tenure and rights regime. Ghana considers REDD+ as a win-win strategy which reduces global greenhouse gas emissions through the reduction of inappropriate forest conversion and degradation which leads to positive co-benefits like poverty alleviation and biodiversity conservation. In order to be successful, REDD+ needs to target the underlying drivers of deforestation and forest degradation which interact in a complex structure. FCPF has already provided funds to support the implementation of the REDD+ strategic actions. On the other hand, SECO and FIP have committed funds to support the operationalization of the Strategic Actions pending the submission and approval of Investment Plans and Project Proposals. The stakeholder consultation processes for these projects have identified the need for in-depth analysis in order to develop the perceived best strategy and the associated challenges and risks for implementing the REDD+ strategic actions. Addressing such challenges, Ghana engaged in some of the major international processes to develop its readiness for REDD+ at national level.

First of all, the strength of the current ITTO project is that it lays the foundation for the effective utilization of the three main funding sources for the implementation of the R-PP. Secondly, the present project also complements the structured effort of the Ghana Government and its development partners in implementing the Readiness Preparation Process. This process has been outlined in the Readiness Preparation Proposal (RPP) that has been approved by the Participants Committee of the Forest Carbon Partnership Facility (FCPF) during its fifth meeting held in Gabon in March 2010. Its conclusion was to move ahead with the preparation for REDD+ readiness in three steps: 1. analysis and preparation, 2. pilot project implementation, 3. technical preparation for readiness for REDD+. The major objective in the R-PP implementation phase is to build substantial technical and institutional capacity that is essential for Ghana to fully participate in the REDD+ mechanisms, which requires new legislations as well as new political and institutional approaches on a cross sectoral level. Thirdly, the present REDDES project is focused on one main element of the RPP that develops on off-reserve forests, agroforests and other carbon conservation activities that have the potential to become a pillar of Ghana's REDD+ strategy. As such the REDDES project contributes to the development and/or enhancement of sustainable off-reserve production systems, so that Ghana will be able to benefit from future carbon trading schemes. In preparing the implementation arrangements of the RPP, a number of gaps have been identified that need to be addressed through an additional support element in order to achieve REDD readiness. This includes options for benefit sharing schemes, long-term forest resources assessment and dynamics, forestry economics and scenario analysis as well as a description of the mechanism for the selection of REDD+ pilot projects.

Due to a longstanding and trustworthy cooperation between Ghana and Switzerland, not the least in the ITTO and FCPF, it was proposed to formulate a project through ITTO to undertake a number of analytical studies and to prepare a main support project to the RPP. For this purpose, a partnership arrangement has been formed between Ghanaian and Swiss institutions in advancing REDD+ in Ghana through a REDDES project proposal, including the Forestry Research Institute of Ghana (FORIG), the REDD+ Working Group in Ghana and the Bern University of Applied Sciences. The project intends to undertake selected studies so that in the main phase of supporting -RPP implementation, adequate pilot activities as proposed in the

REDD+ strategy can be carried out. Also, it is expected that the project, will be able to inform authorities regarding adequate policies for the REDD+ arrangements. Such results from Ghana in off-reserve forest areas are of wider interest to ITTO member countries. Outreaching the approach and results of the current project to other ITTO countries was thus an important rationale of the present proposal.

## **2. Project objectives and implementation strategy**

### **2.1. Rationale**

The project will be implemented under the supervision of the National REDD+ Secretariat of Ghana. In executing the project, the National REDD+ Secretariat will build on the capacities of the Forestry Research Institute of Ghana (FORIG) and the School of Agricultural, Forest and Food Sciences of the Bern University of Applied Sciences (HAFL), both with proven knowledge, research and capacity building skills in REDD+ development, agriculture and economic benefit sharing models. One set of activities is the preparation of a main supporting programme to develop on pilots in the framework of the Readiness Preparation Process of Ghana for REDD+.

This project is directed at supporting the government of Ghana in its efforts to implement effective policies and programs in forests and woodlands under the REDD+ programme. Therefore, governmental agencies working in the environmental sector and specifically those in the forest sector are the primary stakeholders of this project. They will be able to develop institutional as well as technical capacities that are adamant to progress, as previous attempts to reform the forestry sector have not prompted decisive results. Communities located in the target area of the project are equally important secondary stakeholders in this project, as the vast analytical work is aimed at contributing to the development of sustainable production systems. In addition, local communities and authorities shall take part in the investigations particularly in issues regarding benefit sharing. Considering the uncertainty of (the amount of) income from the carbon markets for local communities, the focus on community level is on securing income from forest resources, be it timber or non-timber products. This is critical not only to sustainability, but to REDD+ acceptance in the population.

There are two problem fields at the origin of this project that are located on different levels but are still closely interconnected. First, there is the great challenge of deforestation and forest degradation in Ghana, accentuated through global climate change. Secondly, on a technical level, there are the challenges of the internationally prompted REDD+ programme, which calls for new institutional schemes that need to be developed and implemented. This project thus needs to produce results that address the challenge of deforestation and degradation within the processes of the REDD+ programme and the corresponding goals. This also enables the alignment of the project with national policies.

Regarding the basic problem of deforestation and forest degradation, a useful analysis can be found in the FIP (p. 15-22). The analysis distinguishes between principal and underlying drivers. Principal drivers of deforestation and forest degradation thus are agricultural expansion (50%), harvesting of wood (35%), population & development pressures (10%) and mineral exploitation and mining (5%). The factors affect geographical zones in different intensities. All these factors result in a decline of forests through land conversions and a low rate of rehabilitation of degraded forest lands. The challenge is to define land-use practices that are sustainable (economically, socially and environmentally viable) for small-scale farmers and other actors using land-resources in the light of climate change. Potential REDD+ mechanisms present a new opportunity to be taken into account.

The fast decline of the off-reserve tree stock in the humid zone of Ghana is of particular concern. This was formerly government policy (off-reserve areas being earmarked for progressive conversion to agriculture and other non-forest uses), but a policy change in 1994 in favour of sustainable production has failed to detain the decline. Rights over trees are held by the state in trust for the nation, and income is distributed according to a Constitutional formula in which revenues (net of Forestry Commission and Office of the Administrator of Stool Lands charges) are shared between District Assemblies, Stool and Traditional Authorities. This does not adequately incentivize the small farming population who would rather keep economic timber trees off their land than risk collateral damage from timber operations to their beverage and food crops. Reform of the tree tenure regime is widely viewed as a necessary precondition for reinvigoration of the off-reserve stock, and will be addressed in the REDD+ strategy. This is made all the more urgent by the huge scale of unregulated chainsaw logging (all of it officially illegal). While this does fill an important gap in supplying the local market, it is a major contributor to forest degradation. Increased incentives to tree plantations are also likely to be requested by the commercial timber industry for it to survive. A new commercial plantations policy and a modified *taungya* programme have recently been put in place.

For over a century, cocoa has been the major driver of land use change in the high forest zone, and the new full-sun varieties which are now widely adopted have accelerated the pace of deforestation. The traditional varieties require much denser crown cover and, in the past, their need for high atmospheric humidity encouraged the farming population to support the forest reserve policy. Their reinstatement would have much to commend it.

Agricultural technologies are generally under-developed, particularly in the smallholder sector which dominates the rural economy, and low purchasing power is a major constraint. Farm and livestock management practices are characterised by low-input technologies and risk-aversion strategies. Fire is integral to the agricultural cycle in many areas, and the major means of land preparation and plant diseases control. Agro-industrial enterprise has had a poor record to date, though development of the sub-sector is a government priority. A major programme of investment will be required to develop the agricultural and pastoral economies in more carbon-friendly directions, balancing the interests of the smallholder and industrial sectors.

## **2.2. Development Objective**

The wider development perspective of this proposed project is to contribute to the strengthening of Ghana's capacity to prevent and reduce deforestation and forest degradation. Despite many initiatives taken for forests and woodlands, Ghana's forests continue to decline in size and quality. This has negative economic, social and not at least long-term environmental impacts. REDD+ as a new framework has the potential to combine important forces in the area, as far as adapted to the Ghanaian context. Better management of the remaining amount of forest and for the restoration of degraded forests is a major concern that can be addressed through well-developed REDD+ mechanisms.

## **2.3. Specific Objectives**

The proposed project supports Ghana in the preparation of its low-carbon development strategy and its efforts to reduce GHG-emissions through reducing deforestation and forest degradation and enhancing of carbon stocks (REDD+), an approach that has been endorsed by the UNFCCC in a number of major decisions since 2008. Specifically, *the project aims at providing Ghana*

*with proposals for the enhancement of sustainable off-reserve production systems under REDD+ schemes with a focus on local livelihood improvement.*

The proposed project is aimed at providing the background information for the review and implementation of the REDD<sup>+</sup> pilot projects. Thus the outcome indicators will include the following (i) Several communities apply production systems that are sustainable and contribute to carbon sequestration (ii) Increased participation of local community groups participating in the implementation of REDD<sup>+</sup> pilots. (iii) Change in behavior of local communities as a result of participating in REDD<sup>+</sup> projects developed, (iv) Enhanced positive impact of successful REDD<sup>+</sup> implementation on local people, (v) Effective benefit sharing and incentive mechanism that can be easily applied to support the implementation of REDD<sup>+</sup> projects (v) Successful implementation of REDD<sup>+</sup> pilots.

#### **2.4. Implementation Strategy**

The REDDES project is embedded in the framework that is already established for the Readiness Process aiming at the REDD+ implementation. This guarantees, in the first place, that the consultation processes with relevant stakeholders will be assured and that full coordination with the ongoing work in readiness (Phase 1 of the RPP) is taken place.

The Executing Agency, the **REDD<sup>+</sup> Secretariat of the Forestry Commission (FC)**, will oversee the project activities in view of the preparation of the main project to support pilots in the framework of the RPP. The REDD+ Secretariat has been set up to facilitate the REDD<sup>+</sup> agenda of the country. The Secretariat forms part of the overarching Sector Implementation Committee known as the Natural Resources and Environmental Governance Technical Coordination Committee (NREG TCC) which has been operational for three years to broadly facilitate the implementation of all natural resources and environment donor funded programmes. The NREG TCC will form the basis for overall guidance of the REDD<sup>+</sup> programme in Ghana. The REDD<sup>+</sup> Secretariat will be responsible for the overall administration of the project, and coordinate all activities undertaken by collaborating agencies. The REDD<sup>+</sup> Secretariat has already coordinated and undertaken numerous projects which indicate its capacity to carry out this particular work.

Collaborating Agencies and responsibilities: Both public and non-governmental agencies as well as local communities will be involved at various levels in the implementation of the project. The collaborating partners in the public sector will be i) Forestry Research Institute of Ghana (FORIG) and the Faculty of Renewable Natural resources (FRNR) of the Kwame Nkrumah University of Science and technology (KNUST). The latter will contribute towards the project through FORIG.

**The Forestry Research Institute of Ghana (FORIG)** will, together with the team of the School for Agricultural, Forest and Food Sciences of the Bern University of Applied Sciences (HAFL) be responsible for delivery of the outputs to the REDD+ Secretariat. FORIG has the mandate to undertake forest and forest products research to ensure sustainable management and utilization of Ghana's forest resources and to engage in the commercialization of research results and services. FORIG has over the years developed a number of technologies to support the development of the forest sector in Ghana. These include ecophysiological requirements for regeneration of indigenous species, improved seeds and seedlings for planting, vegetative propagation techniques for indigenous species and silvicultural techniques for optimum growth of forest species. The Institute is very much endowed with facilities and expertise for efficient execution of research and development activities. FORIG has over the years executed many

ITTO funded projects. FORIG with its experience in executing ITTO projects will help with project planning and implementation.

***Participation of Local Communities and Non-governmental agencies:*** Local communities will be heavily involved in various stages of the execution of the project, including inception workshop to introduce the project to the participating communities in their respective districts, formation of community based REDD+ project management, capacity building and education on importance and threats to forests. The project will further provide support for training and skills development, natural resource management expertise, and awareness creation for communities.

In addition, other strategies to be employed in achieving the project objectives will include:

***Public forums:*** Multi-stakeholder consultations will be used to take stock of REDD+ initiatives in place so far, as well as to concretely analyze promising strategies for pilot projects in Ghana. This is particularly important in the development or enhancement of off-reserve production systems under REDD+ schemes in Ghana.

***Capacity building:*** The capacity of institutions responsible for REDD+ implementation will be built in the following areas; resource management planning, monitoring and evaluation, negotiations and conflict management, assessment of carbon stocks and emissions. These skills will be needed for effective resource management and the enforcement of regulatory policies.

***Awareness creation and knowledge on REDD+ at local and regional levels:*** Approaches here would involve organization of workshops at the local and regional levels. Information delivery through community radio broadcast will also be employed. Brief education materials on REDD+ in simple and easy to read languages will be published and distributed to relevant stakeholders.

***Partnership building:*** Two key institutions in the management of forests in Ghana, the Forestry Research Institute of Ghana (FORIG) and the Forestry Commission (FC) are partners in the implementation of this project. FORIG is the institution in Ghana mandated to carry out research in forestry and relevant sectors while the FC is responsible for the utilization, conservation and management of forest and wildlife resources, and the coordination of related policies. Their roles will strengthen the technical and other relevant aspects of the project. Their involvement will also ensure an institutional linkage between public sector institutions and other international collaborating institutions.

## **2.5. Assumptions and Risks**

The project is part of the R-PP process – a national strategy that has been developed in close collaboration with all interested stakeholders and development partners in Ghana in order to minimize risks and to avoid unbearable trade-offs. Broad consultations and the implementation of a full social and strategic safeguard process have been conducted prior to the approval of the R-PP, taking into consideration experiences with the VPA. The main remaining risk is the uncertainty at the international level on the feasibility of the introduction of an implementable REDD+ strategy for the countries and the insecurity in respect to the further development of the World's carbon market. However, even if the implementation of the R-PP is delayed, or the decision on REDD+ being a market instrument will not be taken at UNFCCC, the project is fully in line with low carbon strategies and brings additional other benefits for poverty alleviation. On the national level, coordination among the different initiatives in the field of



climate change and mitigation can become an issue. Yet the responsibility for coordination is clearly assigned to ENRAC, which has access to information of the committees overseeing particular programs. The political will that is addressed as a potential risk by the GFIP is not a direct issue in this project, as the work to be done under REDDES could on the contrary be an instrument to encourage measures. In the long-run, the political processes that should support the implementation of sustainable land-use practices are a challenge to the existing projects. However, pilots will be geared at practical solutions in the field and therefore less dependent on long-run political processes regarding REDD+. This project is also aimed at minimizing the risk of “resistance to change” that exists for larger projects as the complete REDD+ implementation and the FIP in that it launches studies that make the experiences and knowledge of local people available for the implementation of the mentioned programs. In addition, a risk that is mentioned in the RPP is that different expectations with respect to the benefits and risks associated with REDD+ could exist among stakeholders within and outside of the Government. As REDDES has not the aim to implement REDD+, but to assess potential challenges of REDD+ implementation, the risk does not apply here. Finally, it is assumed that there is enough support among local authorities and communities for the collaboration with national and international researchers, as concrete projects are proposed. Research plans are discussed with national and local authorities so that the undertakings are in line with local requirements.

### 3. Project Performance (Project elements, planned and implemented)

#### 3.1 Planned versus realized project elements

The planned specific objective, outputs and associated activities did not change as shown in Table 1. These activities have all been completed within schedule but with extension of additional 4 months with no extra budget from ITTO (Table 1).

**Table 1: Realization of project elements based on yearly plan of activities with 4 months extension (April to July 2014)**

Description of output/activities	Realization	Remarks
Objective: Development objective: To contribute to the strengthening of Ghana’s capacity to prevent and reduce deforestation and forest degradation  Specific objective: To provide Ghana with proposals for the enhancement of sustainable off-reserve production systems under REDD+ schemes with a focus on local livelihood improvement.		
<b>Output 1</b> <b>Analysis of possible pilots for REDD+ activities</b>		
Classify a set of potential REDD project types	100%	
Develop set of criteria for ‘successful’ REDD projects	100%	
Select high potential project types	100%	
Analytical studies for the development of REDD+ agroforest pilots - Off-reserve crop and tree production and combinations	100%	

- Cost-benefit analyses along the value chain of different wood products - Fair Trade labeling of cacao: Impact regarding small-scale farmers under specific consideration of agroforest carbon management - Analysis of potentials and limits to enhance carbon pools and avoid emissions from deforestation and degradation in different biozones of Ghana		
<b>Output 2. Identification of effective REDD+ implementation mechanisms in management and governance</b>		
Impact study of REDD+ implementation on local people	100%	
Elements for access & benefit sharing mechanisms	100%	
Options for incentive mechanisms for sustainable land use practices	100%	
<b>Output 3. Capacity building in view of improving the institutional capacities needed for effective resource management and the enforcement of regulatory policies</b>		
Capacity building for community groups about the potential of forest/tree protection	100%	
Workshops for the sharing of results and conclusions of studies	100%	Completed within extension period
Publication and dissemination of studies' results	100%	Completed within extension period
<b>Output 4. Design of a main implementation project for piloting REDD+ in the framework of the RPP Implementation</b>		
Analysis of the actual REDD preparations and of possible off-reserve schemes	100%	
Project formulation and design of the main project proposal	100%	
Discussion Workshops for Verification/Feedback of stakeholders	100%	
Defining further role of ITTO in implementing the pilots in RPP	100%	

### 3.2 Project duration

The project commenced in April 2013. The planned duration was 12 months while the realized duration was 16 months.

### 3.3 Project budget

The total budget for the project is US\$366,954.00. Out of this, ITTO contributed US\$ 297,205.00 and the Government of Ghana (GOG) contributed US\$69,749.00 for the purpose

of the project implementation. Of the ITTO contribution, US\$267,190 was realized and applied in the project implementation. The remaining amount of US\$30,015 was used by ITTO for i) ITTO monitoring and review (US\$8,000); and ii) ITTO programme support cost (US\$22,015). The realized amount from the ITTO contribution for the project implementation was released in three installments each to CSIR-FORIG and HAFL. CSIR-FORIG received a total of US\$154,490 whereas HAFL received a total of US\$112,700. All installments were released following the submission of satisfactory project progress reports to ITTO by the executing agency.

#### **4. Project Outcome, target beneficiaries' involvement**

##### **4.1 Specific objective achieved**

The achievement of the specific objective has been assessed following the intended outcome as specified in project document. The preparation of further off-reserve REDD+ activities in Ghana needs to provide realistic solutions for people who rely heavily on the land for their livelihoods. The case studies carried out under the project aim to contribute to the development of approaches that generate short-term revenues in combination with longer-term gains from tree resources. The completion report describes the outcomes of empirical and literature studies exploring the potential of off-reserve REDD+ in Ghana as detailed below:

##### **4.1.1 Off-reserve land use and implications for REDD+ in various ecological zones of Ghana**

Five emission reductions and removal enhancement activities may be implemented under a REDD+ strategy in off-reserve areas in Ghana. These are:

- 1) avoided deforestation (planned and unplanned)—e.g. halting the rate of primary and secondary forest conversion;
- 2) avoided degradation (planned and unplanned)—e.g. avoiding authorized logging in natural forests (primary and secondary), in particular in sacred groves and relict forests;
- 3) sustainably managing production forests;
- 4) forest CSE—e.g. agroforestry interventions, especially the use of shade trees and the management of natural regeneration leading to the development of secondary forests, woodlots and afforestation; and
- 5) conservation of forest carbon stocks—e.g. the conservation management of sacred groves and other dedicated forests and gallery forests.

There are also options for combining strategies to create a particular methodology at a landscape (or jurisdictional) level, such as for carbon accounting in project activities that reduce emissions from mosaic deforestation and degradation. Nevertheless, Ghana's off-reserve areas are characterized by diverse land uses and drivers of land-use change, including conflicts over land-use rights, land and tree tenure and stakeholder interests. Therefore, the potential for REDD+ projects in off-reserve areas require careful analysis of a wide range of factors to ensure project feasibility. To achieve major impacts, REDD+ projects in Ghana's off-reserve areas should always be considered at a landscape scale.

##### *REDD+ potential in different ecological zones in Ghana*

The savanna and transitional zones of Ghana consist of vast areas of woodlands and grasslands, with few forest patches as per Ghana's forest definition. Land tenure is generally clear, with few or no disputes over land; ownership is mostly held by a single paramount chief. This is particularly true for most parts of Gonja and Dagomba lands and the Upper West Region, where most of the remaining savanna forests and woodlands are located.



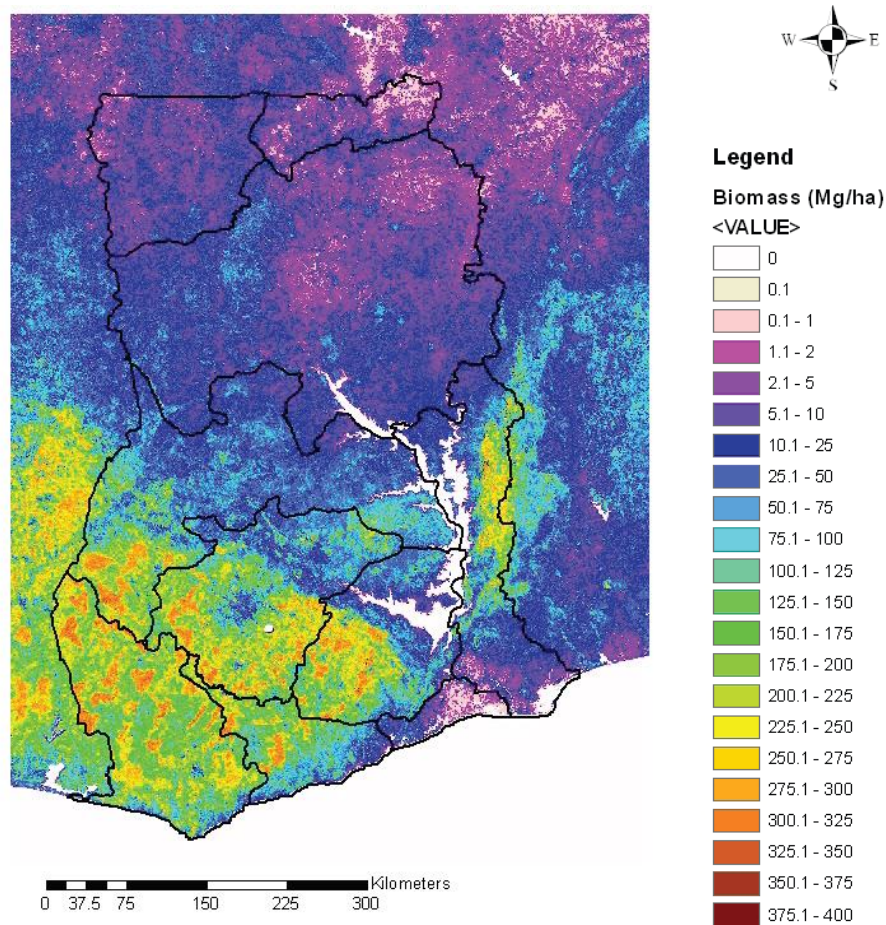
*Cocoa farm*

Drivers of deforestation and degradation in savanna forests and woodlands can be described as largely mosaic rather than frontier; they include: the practice among hunters and Fulani herdsman of setting fire to vegetation; the illegal logging of precious lumber, such as rosewood and mahogany; slash-and-burn agriculture; and unregulated charcoal production. The charcoal production chain is a particularly significant driver of land-use change in savanna/transition landscapes. For example, it is estimated that 7 kg of wood is required to produce 1 kg of charcoal (Mombu et al. 2007). However, any attempt to regulate and streamline charcoal production should be examined carefully because it is a major component of rural livelihoods in savanna/transition landscapes.

Ghana has one of the highest rates of deforestation in Africa—up to 2% per year within the high forest zone (HFZ) (FAO 2006)—and the country has lost more than 85% of its forest cover in the last 100 years (Hansen et al. 1999). Cocoa production has been one of the prime deforestation drivers in this zone since the 1950s, and other factors include the conversion of forested lands to annual crop agriculture (slash-and-burn agriculture); illegal logging; and the uncontrolled harvesting of non-timber forest products (NTFPs) (Republic of Ghana 2010).

The increase in cocoa production in the past decade has been due largely to an expansion in the area of land under cocoa rather than to improved productivity. In Ghana, agroforestry, tree crops (such as cocoa and cashew) and agriculture are just as important as the forest sector in

determining options for REDD+, because most deforestation is due to conversion for these purposes. The cocoa sector presents interesting opportunities for REDD+, with potentially major impacts given its dominant position in the HFZ. Aitken (2009) observed no significant effect of cocoa variety on carbon stocks or the number of shade trees on farms growing new and old varieties.<sup>4</sup> On their own, few cocoa farmers are likely to adopt shade-tolerant cocoa varieties (i.e. Amazon and Amelonado/“Tetteh Quarshie”), but an effective off-reserve REDD+ project could provide incentives<sup>5</sup> to induce such farmers to plant shade trees, irrespective of the cocoa variety they use (because the new varieties are known to tolerate appreciable levels of shade).



**Figure 1: Map of Ghana showing differences in biomass**

### Savanna zone

Based on the biomass map of Ghana (Asare et al. 2012), the carbon stocks of forests in the savanna zone have been judged to be “medium”, with high drivers of exploitation and

<sup>4</sup> Amazon and Amelonado/“Tetteh Quarshie” are old varieties, and new varieties are hybrids.

<sup>5</sup> Incentives could include the review and practical enforcement of tree tenure regimes; awareness-raising and sensitization to favourable laws and policies that encourage trees in farming systems; and adequate compensation for farm damage and conflict management associated with off-reserve timber exploitation.

conversion due to illegal logging, agriculture and charcoal production. There is also high potential for additionality and co-benefits for wildlife habitat, the provision of NTFPs, etc., but a major constraining factor for REDD+ projects (i.e. avoided deforestation or degradation and the conservation of forest carbon stocks) is that the areas could be too small to be viable. Most forest patches in the savanna zone are located in forest reserves and protected areas, with few remaining off-reserve patches. There is a need to quantify the area of these forests before concrete decisions are taken.

Croplands have been judged to have low carbon stocks because they mostly comprise annual crops, which have low biomass (Adu-Bredu et al. 2010). Croplands have huge potential for forest CSE (assuming that CSE is applicable on lands not classified as forests) because of the high additionality, limited constraining factors and the potential for the implementation of crosscutting measures such as good governance interventions. Grasslands and woodlands also have huge potential for CSE, but these cannot be classified as forest. Interventions are needed, however, to reduce the high threat of exploitation of grasslands and woodlands for charcoal, agriculture and unregulated logging, including strategies to boost forest recovery. Wetlands and other lands have limited potential for emission reductions.

#### Transitional zone

There are appreciable areas of forest in the transitional zone with “medium” carbon stocks. There is also enormous pressure on these forests from charcoal production, agriculture and unregulated logging, as well as from frequent wildfires. Such forest areas have high additionality because they are not under any form of regulation and there are also high potential co-benefits and a relatively high chance of successful crosscutting measures. Project interventions to halt deforestation and avoid degradation are possible, but a major constraint is a lack of clear land tenure. Most landholdings are fragmented, and efforts will be required to ensure the permanence of emission reductions and carbon stocks.

Forest CSE has greater potential in cropland areas in the transitional zone compared with grasslands/woodlands, which lack sufficient scale despite other favourable factors. Wetlands and other lands in the transitional zone lack the necessary scale for REDD+ interventions.

#### High forest zone

Forests in the HFZ have high carbon stocks, which are threatened mainly by the expansion of cocoa and other tree crops, as well as by agriculture and illegal logging (Republic of Ghana 2010). It is not clear, however, if there is sufficient remaining off-reserve forest for viable REDD+ projects, given that the off-reserve resource is highly fragmented and exists in small patches; a lack of clear land tenure is also a major constraint. Most land is held under various traditional authorities and families. There are concerns about land disputes, which could hinder the permanence of emission reductions. There is a need to properly quantify the off-reserve forest resource to enable an assessment of the viability of avoided deforestation/forest degradation projects. Some forests in off-reserve areas may be sacred groves and relict forest, potentially providing options for forest carbon stock conservation (assuming that the total area of these forests is sufficient for a viable REDD+ intervention and also that a methodological approach is available for forests in small patches). This potential arises because many communities are losing their traditional governance and law enforcement mechanisms, which previously restricted people from using these forests.

Land-tenure issues will limit the smooth implementation of forest CSE projects in the HFZ, even though scope exists for additionality, co-benefits and crosscutting measures such as good

governance interventions. Grasslands have potential for forest CSE, but major constraints such as a lack of clarity on land tenure and a lack of scale could make such projects unviable. Wetlands, on the other hand, have favourable criteria for the implementation of REDD+ strategies: they have very high carbon stocks compared with terrestrial forests (Asante and Jengre 2012) and huge options for co-benefits due to the ecological roles played by mangroves in fish spawning, etc., and they face massive exploitation, mainly for woodfuel.

### ***Conclusion***

The potential for REDD+ implementation is mixed in off-reserve areas in the three ecological zones. Forestlands in the savanna zone have a number of favourable characteristics, but REDD+ interventions are highly unlikely because of a lack of scale. Grasslands and savanna woodlands have the potential for interventions at a larger scale, but they are constrained by the fact they cannot be considered forests (based on Ghana's national definition of forests). Thus, the only viable REDD+ mechanism in the savanna zone that could qualify for the compliance and/or the voluntary market is forest CSE.

On the other hand, the transitional zone appears to have relatively high potential for REDD+ in off-reserve areas, but only if an integrated landscape approach is adopted. This is because the drivers of deforestation and forest degradation are mosaic in nature and not frontier, with charcoal production and unsustainable farming systems the dominant anthropogenic activities in the landscape. In the HFZ, the viability of REDD+ projects in off-reserve areas is uncertain because it is unclear if cocoa qualifies under the national definition of forests. If cocoa is considered to be an agricultural land use, then the only REDD+ intervention in off-reserve areas would be forest CSE. If cocoa is classified as forest (a position that would contradict the reality on the ground and the Ghana readiness preparation proposal), REDD+ interventions could be possible at a huge scale.

#### **4.1.2 REDD+ benefit-sharing and its opportunities in Ghana**

REDD+ aims to compensate governments, communities, companies and individuals in developing countries for achievements in reducing emissions from deforestation and forest degradation. The aim of REDD+ is to make forest protection more attractive than forest reduction (Global Witness 2010). As an idea, REDD+ could be considered a success story because it has generated excitement for its potential to quickly and cost-effectively mitigate climate change. The REDD+ concept has been subject to an intensive process of conceptualization, design and implementation, but it is yet to bring about large-scale emission reductions (Angelsen et al. 2012).

Benefit-sharing for REDD+ can be defined as agreements between stakeholders about the distribution of monetary benefits from the commercialization of forest carbon. It can also be referred to as the distribution of benefits—both monetary and non-monetary—generated through the implementation of REDD+ projects. The non-monetary benefits (i.e. benefits that are difficult to assess in financial terms) may include the empowerment of communities, enhanced natural assets, and increased skills and employment (Angelsen et al. 2012). From an economic standpoint, the main categories of revenues that could be shared in REDD+ schemes are the compensation of opportunity costs, funding for productive activities, and REDD+ rent (Peskett 2011).

There are two main reasons for sharing benefits. One is to create effective incentives for the implementation of REDD+ schemes by rewarding individuals, communities, organizations and

businesses for actions that change land uses and reduce emissions. This provides benefits somewhat in excess of the cost of their sacrifices to change otherwise legal behaviour. The second reason is to build wider national (and international) legitimacy and support for the REDD+ mechanism. This can only be achieved if people who are directly affected by REDD+ actions and the wider public are treated fairly and equitably, which may mean sharing benefits more widely than a strict focus on incentives would dictate (IUCN 2009). Another reason for sharing benefits may be the empowerment of marginalized groups in society (e.g. the landless poor) who would otherwise miss out on such benefits.

While REDD+ benefit-sharing is important for creating positive incentives for reducing carbon emissions, stakeholders must perceive it to be fair; otherwise, it could threaten the legitimacy of, and support for, REDD+. For the REDD+ mechanism to be effective in altering land-use practices, changes in behaviour that reduce emissions should be rewarded, either individually or collectively. Note, however, that the incentive will be diluted if too many people benefit from it who have not contributed. This, in turn, is likely to result in fewer emission reductions and overall benefits to share. On the other hand, certain actors may feel marginalized and unfairly treated and may view the mechanism as illegitimate if only certain groups or geographic areas are rewarded (IUCN 2009).

For any benefit-sharing mechanism to work it must address what are generally and widely known as the 3Es: effectiveness, efficiency and equity. Effectiveness deals with ensuring that REDD+ benefits reach those actors who contribute to reduced or sequestered emissions and create the right incentives for them to continue doing so in the long term. Efficiency is about ensuring that the benefit-sharing mechanism maximizes the return on each unit of investment by minimizing transaction and implementation costs and delivering benefits in a reasonable timeframe. Equity means ensuring that the benefits are distributed among all legitimate actors who have contributed to results in a manner that is widely perceived to be fair (USAID 2012).

According to Lindhjem et al. (2010), any REDD+ benefit-sharing mechanism is likely to have two main funding channels: a national REDD+ fund, and a project-based fund that goes directly to projects. The inclusion of both types of funding channels is known as a nested approach, in which a national REDD+ fund may be set up within or separately from the national administration or as an integrated part of state budgets. Benefit-sharing mechanisms can be organized along two main axes: a vertical axis of benefit-sharing across scales, from national to local; and a horizontal axis of sharing within scales, including within and across communities, households and other local stakeholders, and at the subnational and national levels (Angelsen et al. 2012).

Although there are several benefit-sharing arrangements in the agricultural and forest sectors in Ghana, benefit-sharing under a REDD+ regime is a new concept that is yet to be tested. The existing benefit-sharing schemes have limitations, and the extent to which they can be adapted to REDD+ projects is unknown. Foli and Dumenu (2011) proposed three benefit-sharing options for the implementation of REDD+ in Ghana: a community-managed revolving credit scheme; an individual payments scheme; and a hybrid/combination of these two options. Dumenu et al. (2014, unpublished) also identified three options for the distribution of REDD+ benefits in Ghana: a national approach; a subnational/project approach; and a nested/hybrid approach. The proportions of benefits that should be assigned to each of the identified benefiting stakeholders (i.e. government, communities, farmers and traditional authorities) involved in REDD+ are yet to be determined and would require extensive consultation among



all stakeholders. In the interim, it is unclear which benefit-sharing mechanism should be adopted for the REDD+ projects currently under way in Ghana.

#### **4.1.3 Farmers' expectations and potential livelihood outcomes from REDD+ implementation**

If REDD+ is to be effective in mitigating climate change, its potential positive and negative impacts need to be identified (Bell et al. 2012). This need is highlighted in Ghana's readiness preparedness proposal and readiness plan information note (Bamfo 2010).

Evaluating the impacts of REDD+ on local welfare, farming practices and natural resource use is critical for understanding the broader social implications and long-term political feasibility of REDD+. The aim of the case study summarized here, which involved six project communities, is to understand the potential implications of REDD+ implementation for livelihoods, farming practices and conflicts in natural resource use at the farm level in Ghana. The study also aimed to provide information on farmers' perceptions of REDD+ as a contribution to the design of Ghana's REDD+ strategy.

##### *Theoretical background*

The analysis in this work was based on four theoretical concepts: 1) the livelihood framework; 2) benefit analysis; 3) auction theory and conservation contracts; and 4) the framework for identifying potential forest conflicts under REDD+ implementation. An auction is a market institution with a clear set of rules for determining resource allocation and prices on the basis of bids from participants in the market (McMillan and McMillan 1987). In the auction process, contracts are awarded using competitive bidding to obtain goods and services that do not have well-established markets (Latacz-Lohmann and Van der Hamsvoort 1997). In the award process, the buyer announces a contract for the procurement of a specified item and calls for bids from potential market participants.

Ghana is following a three-phase approach for the development and implementation of its REDD+ approach (Angelsen et al. 2009) and has reached stage two with financial support from the World Bank's Forest Carbon Partnership Facility. A number of activities are being undertaken with a view to developing viable strategies for moving into the third phase, one of which is the development of a REDD+ registry. Pilot projects have also been identified, although they are yet to be implemented. A detailed analysis of Ghana's REDD+ architecture, including policy, legal and technical requirements, has been conducted (Asare et al. 2013).

##### *Study area, questionnaire design, sampling and data collection*

The study was conducted in two communities in each of three administrative districts in different regions: the Adonikrom and New Yakasi communities in the Aowin Suaman district, Western Region; the Bedum and Brakwa communities in the Asikuma-Odoben-Brakwa district, Central Region; and the Attakura and Tahirukura communities in the Kintampo North Municipal district, Brong Ahafo Region. Individual interview questionnaires were used to collect the data, and the sample units were farm household heads in the study areas. Random sampling was used to select the household heads for face-to-face individual interviews, which were conducted in May 2013; focus group discussions were also convened, for which a checklist of issues to be discussed was prepared from the literature. In the study communities, household heads were organized into groups for the focus group discussions and the group responses were recorded according to the checklist. For the collection of auction data, farmers in the study communities who were also landowners were identified and invited to participate

in an auction exercise. Farmer groups were asked to indicate their bids (that is, the price at which they would be willing to plant and maintain 20 trees on 1 hectare of land).



*Farmers in their restored degraded forests*

*Potential for REDD+ funding to effect changes in farming practice and increase carbon stocks on farmlands*

The least net revenue per farmer per ha per year derived from cash (cocoa) and food (rice and yam) crop farming is US\$216 in the Asikuma-Odobeng Brakwa district; US\$970 in the Aowin Suaman district; and US\$782 in the Kintampo North Municipal district (a non-cocoa-growing area). Although these net revenues were observed at only one point in time and may not constitute a suitable basis for comparison with the expected earnings from a REDD+ intervention, it is still useful to make that comparison. This is particularly so for the net revenue per farmer per year in the cocoa-growing area in Aowin Suaman, which is exceptionally high (US\$5822) compared with the average cocoa farmer's expected income of US\$1500 (Mann et al. 2010). The net earnings from REDD+ interventions on cocoa farms in Aowin Suaman has been estimated at US\$200 per hectare per farmer per year (Mann et al. 2010), which is approximately 5 times less than the net revenue from cocoa farming, according to the survey in Aowin Suaman. Thus, a larger REDD+ incentive may be required to encourage farmers to change their farming practices in a way that would reduce deforestation and increase carbon stocks on farmlands.

The requirement for greater payments from REDD+ interventions is reinforced by the auction results in the present study. The amount a farmer would require (mean bid per farmer) for a

REDD+ intervention is US\$6404.40 per acre (0.4 hectare) in the Tahirukura Kintampo community, US\$4669.67 in Aowin Suaman and US\$81.22 in Asikuma-Odobeng Brakwa. In comparison with the value of a REDD+ intervention, these values are very high, with the exception of the amount required in Asikuma-Odobeng-Brakwa district. The low bid values in Asikuma study communities may be due to farmers understanding that they were only quoting what they would take for incorporating trees on their farmlands. On the contrary, farmers in Aowin Suaman and Kintampo communities probably thought they were giving out their farmlands for the trees, hence the high the bid values.

#### *Potential effect of REDD+ implementation on livelihoods*

Capital assets comprise human, social, financial, natural and physical capital (FAO 2000). Farmers acquire these assets through various livelihood activities and use them to improve their living standards according to their quantity and quality. Farm households in the study communities possess similar basic assets, and REDD+ implementation could have potential favourable and negative effects on each of the five asset types in all the study communities. In the social capital assets category, farmers in all the study communities expect to have enhanced social relationships, while in the financial asset category, increased savings are expected to arise as a result of an increased presence of financial institutions in the study communities to accommodate the direct and indirect transactions created by REDD+. Potential perceived negative effects are a reduction in the production of food and cash crops and an increase in crop pests. Conflicts may arise over the use of tree resources created under REDD+ implementation—farmers fear that such resources may attract legal and illegal loggers, which could cause the destruction of crops and confrontations with loggers; this issue is perceived to be particularly important in the Kintampo North Municipal district.

#### *Conclusion*

This study sheds light on the potential effects of REDD+ implementation on rural livelihoods, changes in farming practices and conflicts in natural resource use in six communities in three study districts—Aowin-Suaman, Asikuma-Odobeng-Brakwa and Kintampo North Municipal. The study's key findings are as follows: farmers in all the study communities expect REDD+ to enhance social relationships; increased savings are expected as a result of an increased presence of financial institutions; and farmers perceive that the adoption of low-carbon-emitting farming practices will lead to a reduction in food and cash production (although Rainforest Alliance experiments with shade-tolerant cocoa varieties indicate that the opposite may be true). Potential conflicts in relation to natural resource use include the use of agricultural lands for crop production (instead of planting trees for more carbon); and the potential for an increase of trees on farmlands to attract legal and illegal loggers, leading to the destruction of food crops and confrontations with loggers.

Strategies to reduce the negative effects of REDD+ implementation could include: the establishment of woodlots for charcoal and fuelwood production; and the planting of shade-tolerant crop varieties and non-shady trees on farmlands. Thus, a combination of land-sharing (agriculture with biodiversity elements) and land-sparing (agriculture spatially separated from biodiversity/conservation landscape elements) is proposed. The legal, property rights' and institutional implications of such arrangements will need to be assessed thoroughly in the design of REDD+ strategies. An important coping strategy in the HFZ would be the introduction of a shade-tolerant variety of cocoa to enable farmers to retain or plant more trees on their land and still obtain optimum cocoa yields. In the drier forest zones, where most crops are light-demanders, farmers will require sufficient compensation to enable them to retain trees on farmlands.

A further study may be needed to provide a more accurate comparison of net revenues from cash (cocoa) and food (yam and rice) crop farming and the revenue generated by REDD+ interventions to help policymakers in making informed decisions. Also important would be a comparison of the mining and logging sectors and their contributions to the national economy. In the short term, REDD+ revenues may need to be higher than currently projected if they are to provide a sufficient incentive for farmers to change their farming practices in ways that will reduce deforestation and increase carbon stocks on farmlands.

#### **4.1.4 Potential and impacts of a shea pilot project for off-reserve REDD+ in the Kintampo North district**

Agriculture and forestry, two highly climate-sensitive sectors, contribute almost half of Ghana's gross domestic product (GDP), agriculture accounting for 40% and forestry for 6% (Central Intelligence Agency 2012). A sustainable management strategy for these two sectors, including climate-change adaptation and mitigation, should therefore be of primary importance.

It has been estimated that the degradation of natural resources costs Ghana 5–10% of its GDP, with forestry accounting for 63% of this cost (Forestry Commission Climate Change Unit 2010). The country has recognized the problem and is promoting SFM and climate-smart agricultural management systems<sup>6</sup> designed to make the primary sector “ready” for the future climatic environment. Remaining state-managed forest reserves are under serious threat of degradation; currently, only 8% (0.4 million ha) can be considered to be highly biodiverse and carbon-dense primary forest (FAO 2010). Forest land outside these forest reserves, known as “off-reserve”, occupy about 4.5 million ha; off-reserve areas have a landscape mosaic structure of various agroforestry systems and are also under pressure of “flipping” from wood-dense to wood-poor landscapes.

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<sup>6</sup> See also the National Climate Change Policy Framework, with its three main objectives: 1) adapting to and reducing vulnerability to climate change; 2) mitigating the impact of climate change; and 3) low-carbon growth (IIED 2012).



*Mixed cultivation with shea trees in Kintampo*

Considering that climate change will further challenge the country's capacity for economic development, it is necessary to find new development pathways that offer potential win–win–win scenarios: the mitigation of greenhouse gases; improved climate resilience; and socioeconomic development. This chapter analyzes whether shea nut production (*Vitellaria paradoxa*; karité) constitutes a viable off-reserve REDD+ strategy capable of fulfilling these three objectives.

#### *Objectives and methodology*

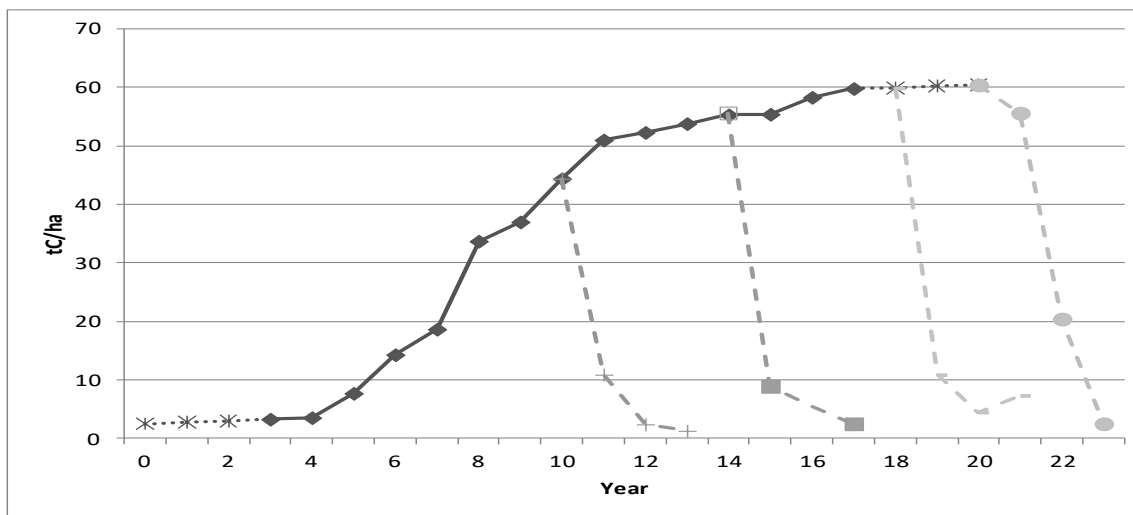
The overall objective of this study was to assess the potential of enhanced shea nut production in the upper transitional zone of Ghana considering factors such as carbon relevance and the impacts on farming systems and people's livelihoods. The underlying hypothesis was as follows: "intensification of shea nut production in the Kintampo North district, supported by a tailor-made REDD+ mechanism, is possible and has the potential to sustainably increase people's income and reduce net greenhouse gas emissions from agricultural and forestry practices". This hypothesis was addressed by analytical work and field data. The analytical part of the study involved an in-depth literature review to determine the aspects that must be integrated in a pilot project. The strategy and impact of the proposed activities is based on socioeconomic data collection and biophysical measurements of nine case-study households selected using stratified case-study sampling.

#### *Results and discussion*

The results of the research show that five framework conditions need to be in place prior to project implementation to enable a transition in the farming system: 1) security of land, tree and carbon tenure; 2) an equitable, effective and efficient benefit-sharing system; 3) a long-

term-oriented MRV system; 4) a market with advantageous terms of trade for shea collectors; and 5) private and public sectors able to provide technical knowhow on shea production aspects. If these conditions are in place, and long-term planning can be undertaken to guarantee that leakage and permanence are addressed, the research indicates that semi-intensive shea agroforestry systems can have positive impacts on both climate-change mitigation and people’s livelihoods. The study shows that the extensive rotational agroforestry system that most farmers currently practise maintains carbon stocks at a stable but low level, with an average of 4.5 tC per ha in the last cropping year prior to fallow. Secondary forest before re-conversion to cropland often does not exceed 45 tC per ha. This land-use system can lead to emissions due to land-use change of up to 67 tC per ha (Figure 2).

Intensifying the shea production system to the extent that no annual crop yield is reduced (i.e. 25 fully established shea trees per ha) creates a carbon stock of at least 11.5 tC per ha in the cropping years. Under the model assumptions and a 20-year pre-pay system, this increment would generate an average compensation payment of US\$17.9 per ha per year. Even without any direct payment for compensated emission reductions, the gross margins for annual cropland would increase by 12–44% (assuming 2013 yields and prices). On the basis of the forecasted impact of global climate change on crop production in West Africa, we can additionally say that the resilience of households will increase if the importance of shea as a cash crop to total household income rises, because the risk of a “flip” from cropland to rangeland is not negligible. It is possible to identify all primary and most secondary stakeholders (beneficiaries, the private sector and the public sector) in implementing a shea production system, enabling the development of an initial project outline to decarbonize the sector, such as through rotational agroforestry.



**Figure 2: Average carbon stock changes during fallow and the first three cropping years after conversion from fallow to cropland in four farm households in the Kintampo North district, Ghana**

*Conclusion*

The optimization of shea nut production through a system transition from exclusively wild harvest to a semi-intensive agroforestry system has the potential to achieve a “triple win” that offers climate-change mitigation, improved resilience to climate change, and socioeconomic development benefits. The likelihood of success depends on how successfully a range of

challenges can be addressed, which depends in turn on local rules and regulations and the future market environment for both carbon and tradable shea butter. Beyond the mostly technical findings given above, some more general conclusions of the study are as follows:

- **Land and tree tenure** must be considered as a cornerstone and needs to be addressed at an early stage of implementation. Carbon rights are more complex to address because they are not yet defined by Ghanaian law. To incentivize participation, a pilot-based tree tenure agreement could be a first step in avoiding predatory use during the pilot phase. The legal pluralism nature of land tenure adds considerable complexity to this activity and is stamped by past failures of attempts at resolution.
- **Agricultural intensification** alone will not yield the desired effect. Indeed, it risks accelerating deforestation because it does not address the root causes.
- The suggested activities **do not refer to a reference level**. This has the advantage of allowing faster implementation but considers additionality to be “just” the additional carbon in shea trees. This is problematic because it risks either the over- or under-estimation of additionality.
- The **opportunity costs for REDD+ are low** in the Kintampo North district. A concentration of pilot activities in the transitional zone in a first stage makes sense because direct foreign investment in crops (as in the south) is unlikely.
- The wild shea tree is a slow-growing species, which is an obstacle to the participation of rural farmers in projects that intend to increase the shea population. The use of **domesticated varieties** (obtained from the Cocoa Research Institute or the University for Development Studies) is a central success factor because it provides early yields as well as yield stability and reliability and disease tolerance, which incentivize the participation of farmers. Helvetas Swiss Intercooperation’s Shisun Project in Mali could serve as an example in the transplanting of young seedlings, direct seeding, grafting, practices of assisted natural regeneration, and sanitary and rejuvenation cutting.

#### **4.1.5 Incentive mechanisms for the adoption of sustainable land-use practices by farming communities**

Various (formal and informal) fiscal and financial incentive schemes are in place to encourage farmers to sustainably manage forests and agricultural lands (Lindhjem et al. 2010). Among them are the modified taungya system, which aims to rehabilitate degraded forest reserves with food and tree crops to improve farmer livelihoods and the environment; and a system for sharing the stumpage fees generated by the sale of commercial timber species in and outside forest reserves. In the agricultural sector, existing sharecropping systems are examples of benefit-sharing because crops are shared in agreed parts: one-half in “abunu” farming systems, and from one-third to two-thirds in “abusa” systems. Although these schemes and systems generate benefits for farmers, the activities of non-titled and tenure-insecure farmers continue to contribute to deforestation in Ghana (Damnyag et al. 2012; Leach and Fairhead 2000).

The adverse impacts arising from informal farmland benefit-sharing arrangements are not restricted to tenants and migrant landholders: it appears that the landowners themselves are not satisfied with formal arrangements for sharing the revenue generated by trees on their lands. The constitutional beneficiaries (stools/chiefs) complain of the low level of benefits they derive from trees on their farmlands, and leasehold and sharecrop farmers receive no benefits at all under the prevailing timber revenue-sharing system (Damnyag et al. 2012). Despite policy reform under Ghana’s Forest and Wildlife Policy (Forestry Commission 2012), a number of challenges remain, including the distributional mechanism for, and weighting of, REDD+ payments among landowners and users at the farm level (Damnyag et al. 2012; UNCCD 2012).

The study reported here was prepared under Activity 2.3 of ITTO project RED-PD 093/12 Rev. 3 (F) in an effort to fill part of this knowledge gap in the REDD+ payment distribution at the farm level. The study's specific objectives were to analyze farmer perceptions of REDD+ benefits distribution using six communities in three proposed national REDD+ pilot project sites; and to provide guidance on REDD+ benefit-sharing at the forest and farm level.



*Young yam and cassava farm*

### *Methodology*

The study was conducted in two communities each in the Aowin-Suaman (New Yakasi and Adonikrom) district in the Western Region, the Asikuma-Odobeng Brakwa (Bedum and Brakwa) district in Central Region, and the Kintampo North Municipal (Dawadawa no. 1 & 2 and Tahiruu and Attakuraa) district in Brong Ahafo Region. The criterion used in selecting these districts and communities was participation in one of the three proposed national REDD+ pilot project communities. A questionnaire was used to collect data through individual interviews conducted in June 2013. Data were collected to determine, among other things, the socioeconomic characteristics of the respondents; suitable beneficiaries of REDD+; reasons why stakeholders should benefit; the preferred forms of benefit; and how REDD+ compensation could be used to reduce deforestation and forest degradation.

### *Farmer perceptions of REDD+ benefit distribution*

In all three districts, farmers appear to be the most important beneficiaries of REDD+. This may be justified on the grounds that they are engaged directly in REDD+ activities and work on the land on which such activities take place. Other important beneficiaries in the Aowin-Suaman and Asikuma Odobeng Brakwa districts are the communities and landowners. In the Kintampo North Municipal district, the beneficiaries include the traditional rulers, opinion leaders and the community as a whole. Taking care of the wealth fare of the community and land ownership were two reasons provided to justify the inclusion of opinion leaders in the list of beneficiaries of REDD+. The question arising from such a wide range of beneficiaries is whether payments would be sufficient to encourage the adoption of conservation agricultural practices (MLNR–FIP 2012). Another key result is that most surveyed farmers indicated that



benefits should be distributed on the basis of the quantity of greenhouse gas emissions reduced through REDD+ activities. Equal payments—where all households receive the same amount irrespective of their contributions to emission reductions—was the least preferred option among surveyed farmers. The preferred level for the transfer of REDD+ benefits was the household, while the community was the least preferred level. Reasons for preferring households for the distribution of REDD+ benefits were: that households work on the land where the emission reductions are achieved; to avoid the misappropriation of funds; and to motivate farmers to nurture trees on farmlands.

#### *REDD+ benefits to minimize deforestation and forest degradation*

Activities carried out in the study districts to enhance forest conservation varied widely. Important measures were forest plantation establishment on farmlands and agroforestry in the Aowin-Suaman district; nurturing trees on farmlands in the Asikuma-Odobeng-Brakwa district; and afforestation in the Kintampo North Municipal district. An important implication of this result is that the distribution of REDD+ compensation could be targeted at farmers who engage in such conservation activities. On the other hand, actors who degrade the environment through activities such as bush fires, charcoal production and illegal chainsawing and farming would have to be managed and their activities curtailed (Lindhjem et al. 2010).

#### *Guidelines for REDD+ benefits distribution*

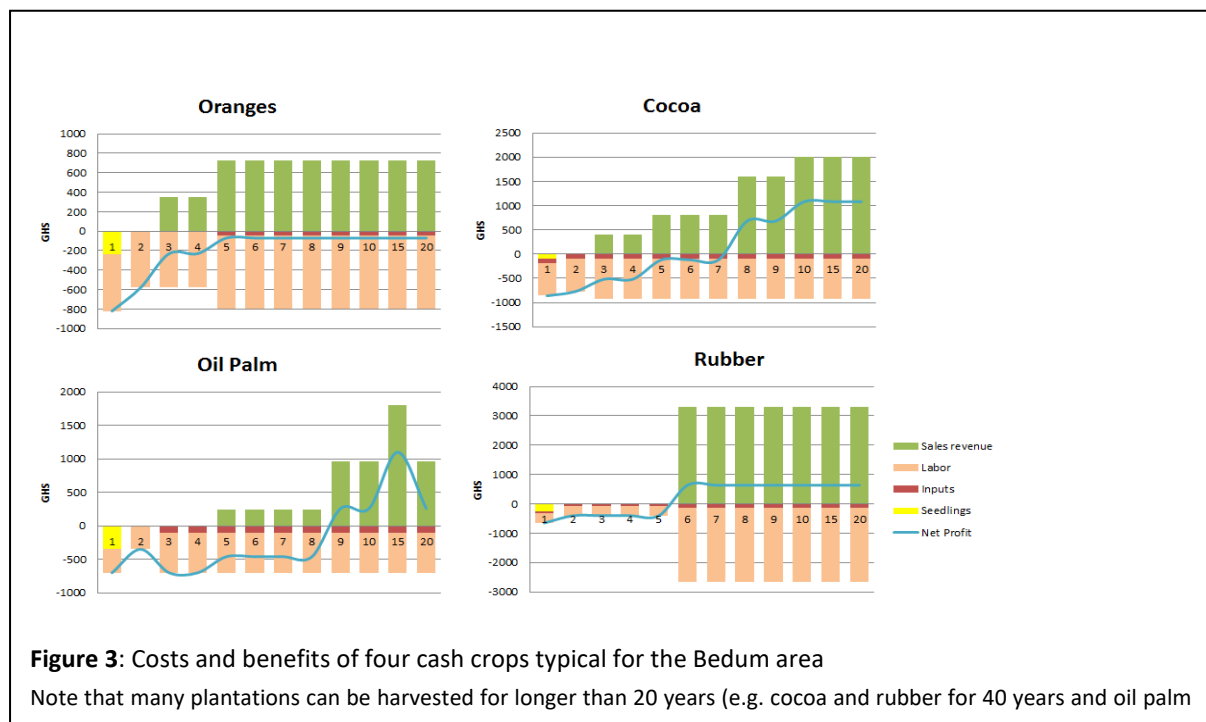
The effective distribution of REDD+ benefits involves the following steps: identifying the actors/beneficiaries of REDD+; determining existing processes that could be used in the allocation of REDD+ benefits; and deciding the most appropriate means for delivering benefits. The distribution process must ensure the inclusion of all social groups that have a stake in REDD+ benefits and co-benefits. The current wide range of beneficiaries implies that some key actors, such as migrant farmers, may not be benefiting adequately from REDD+, and measures may be needed to ensure their involvement, including in decision-making processes on REDD+. Benefits should be weighted on the basis of the performance of households that undertake REDD+ activities (Mwayafu et al. 2011).

#### *Concluding remarks*

This chapter sheds light on the distribution of REDD+ benefits at the farm level. The main findings are that there is a wide range of beneficiaries of REDD+ compensation at the farm level; and REDD+ intervention and benefit distribution should focus on the household, while not overlooking the community as a whole and the composition of the household. Economic feasibility, local institutional capacities and governance structures, and the effects on local economies, should carefully be weighed and assessed to assist in the identification of an all-inclusive REDD+ benefit-distribution scheme. Given that community preferences may change over time, they should be assessed periodically and the distribution mechanism adjusted accordingly (Mohammed 2011).

#### 4.1.6 Cost–benefit analysis of potential REDD+ pilots with *Cedrela*, ylang-ylang and shea

This case study investigates the financial viability and potential of benefit-sharing options for the Bedum and Nkoranzaman REDD+ pilot projects. The Bedum project addresses the potential for cedrela (*Cedrela odorata*) plantations and ylang-ylang (*Cananga odorata*) essential-oil production in combination with an outgrower scheme, and the Nkoranzaman project focuses on shea nut production. The study site of the Bedum project is located in the Asikuma-Odoben-Brakwa district, where the predominant economic activity is the farming of staple and cash crops, particularly oil palm, cocoa, citrus (oranges) and rubber. Data on the costs and benefits of these four crops were collected through exploratory interviews with six farmers and verified in discussions with district extension service staff. Data on the costs of labour, inputs and seedlings, as well as average sales revenues, provide a baseline against which alternative crops can be compared. Figure 3 depicts the expected development of costs and benefits over the first 20 years.



In the current situation, orange plantations are not profitable, partly because of low sales prices and the unreliable purchasing strategies of a local fruit juice company, and partly because of an infestation of fruit flies. Cocoa, by contrast, is perceived to be a very profitable crop that benefits from state support and bears little risk. Pests and diseases are significant issues, however, the control of which entail the use of high amounts of pesticides; moreover, income is irregular because the workload is seasonal according to harvesting times. Benefits of oil-palm plantations include market stability and the possibility of harvesting side-products such as mushrooms for home consumption. However, farmers also mentioned the high workload associated with oil-palm plantations and the lack of potential for intercropping due to early canopy closure. Rubber plantations are perceived to be very profitable and labour-intensive, but farmers were hesitant to develop such plantations because of concerns about market stability and a lack of experience. Thus, rubber may be suitable as a diversification strategy for large cocoa farmers who have sufficient liquidity to hire tappers.

New alternatives considered in this study are cedrela and ylang-ylang. Data on the costs and benefits of these options were obtained from a local entrepreneur in Bedum district. For a 10-year-old plantation of cedrela, outgrowers could expect to receive GHC3600 per acre (US\$4386/ha), but accumulated costs are likely to exceed GHC6100 per acre by the time the plantation is mature. Intercropping with plantain, chilli, cowpeas, corn and ginger are viable options that would add to potential income. There is less clarity on the expected sales revenue for ylang-ylang; for it to be profitable, prices would need to cover the sizeable harvesting cost (GHC113 320 per acre) plus an annual maintenance cost of GHC360 per acre and an initial investment in seedlings of GHC666 per acre. Ylang-ylang is seen as a pro-poor crop because it can be grown in backyards and does not require much upfront investment, but farmers expressed concern over the high dependency on a single buyer of ylang-ylang flowers.

The Nkoranzaman project aims to conserve and enhance agroforestry systems, mainly by conserving remaining shea trees and possibly by fostering the planting of single trees in croplands. Farmers currently lack incentives to plant trees because the government has property rights over individual trees and charcoal producers also exert considerable pressure on tree resources. The proposition investigated in this study is the implementation of a Community Resource Management Area (CREMA), which would decentralize management rights and offer better prospects for sustainable income from natural resources. Because women predominantly collect and process shea nut, the community's women's group could establish a CREMA. The group could even obtain full property rights for the trees by planting an entire registered plantation rather than individual trees. Furthermore, the establishment of a community-based nursery for shea trees by the women's group has been discussed and approved as worthy of further consideration. The results of this discussion are summarized as a SWOT analysis in Table 2.

**Table 2: SWOT analysis for the establishment of a tree nursery by the women's group**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Availability of low-cost seedlings</li> <li>▪ Sufficient water available for nursery</li> <li>▪ Approval of village head and willingness to provide land for a nursery</li> </ul>	<ul style="list-style-type: none"> <li>▪ Government ownership of trees on farmland</li> <li>▪ Concern over delayed benefit flows</li> <li>▪ Group membership fee of GHC1/month</li> <li>▪ Exclusion of women unable to attend meetings</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Access to seedlings, additional income</li> <li>▪ Opportunity to grow cashew and mango</li> <li>▪ Group is well-established, with strong leaders</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cattle raiding newly planted trees</li> <li>▪ Theft of trees for charcoal/wood production</li> <li>▪ Village head is only a tenant</li> <li>▪ Youth may lack interest in plantation work</li> </ul>

The study concluded that ylang-ylang and rubber in the south, and shea trees in the north, are potentially good sources of diversification for local (women) farmers under a REDD+ system. However, ylang-ylang and shea butter are still niche products and demand depends on only a few buyers. Rubber has the disadvantage of price fluctuations, which can affect small-scale farmers disproportionately. In combination with potential REDD+ performance payments for ylang-ylang or shea cultivation, farmers will need adequate technical assistance in business and crop management. In addition, stakeholder involvement needs to be assured and tree tenure issues clarified.

#### **4.1.7 Lessons learnt from cocoa certification for REDD+ implementation**

The study summarized in this chapter assessed if and how the certification of cocoa in Ghana could inform the implementation of REDD+ projects in off-reserve areas. There has been an increase in the implementation of cocoa certification because the cocoa industry is trying to secure its supply base from smallholder farms with generally low productivity. Given that cocoa agroforestry systems can be viewed as an opportunity for REDD+ projects, the study analyzed the following:

- What are the hindering factors in the context of carbon stock enhancement on cocoa farms?
- How could the two initiatives complement each other?
- What certification challenges can help inform REDD+ implementation at the farmer level?

##### *Context of tree management on cocoa farms*

Traditionally, cocoa has been cultivated under shade-giving plants, especially when plants are young. More recently, however, low-shade systems have been advocated, and young farmers in particular seem to prefer hybrid full-sun systems (Ruf 2011). Official recommendations are to keep 15–18 trees per ha on mature cocoa farms, or about 40% shade (CRIG 2010). In our survey, farmers assessed the number of trees on their cocoa farms at an average of only 11 trees per ha (although the range was large). Thus, there is potential for more trees on cocoa farms, especially in the Western Region (where the current average is 8 trees per ha), combined with appropriate pruning to avoid overshadowing.

The incentive for farmers to keep timber trees on their farms is limited, however, by at least two observed factors. One of these is the damage caused by logging on cocoa farms. The extent of logging differs among the studied communities: in two villages, around 50% of respondents reported that logging companies or small-scale chainsaw operators had taken timber trees from their cocoa farms at least once; the percentage was 15–20% in three other villages and below 10% in two. In areas with extensive logging, farmers perceive certain timber tree species as a risk to their cocoa farms and often choose to eliminate them.

The study assessed the extent to which farmers take advantage of opportunities offered by the Timber Resource Management Act (617/2002). This legislation was enacted to encourage farmers to grow timber trees by giving them the right to benefit from harvesting timber if they register the trees they plant with the local Forest Services Division offices. Naturally occurring trees are viewed as a government-owned natural resource. The study concluded that the need to register planted timber trees to claim ownership in the future is not yet common knowledge, thus, limiting the incentive for farmers to grow timber trees on the land they cultivate. Of 185 survey respondents in the Ashanti, Eastern and Western regions, only six had actually registered timber trees they had planted. The principal reason for this lack of registration was a lack of knowledge, and the cumbersome nature and costs of the process were also mentioned. The legislation is thus not yet in practical use.

It is therefore unsurprising that respondents prefer to plant fruit trees rather than timber trees because fruit trees have immediate economic value. In addition to the difficulty of obtaining appropriate seedlings, the risks involved with timber trees on cocoa farms are higher. Two conclusions can be drawn. First, the preference for fruit trees means that multiple-use trees need to be integrated in carbon-enhancing strategies. Second, REDD+ in off-reserve areas needs to be developed in an environment in which the agricultural and forest sectors work together to accomplish common goals.

##### *Complementing REDD+ and certification*

The idea of combining REDD+ with cocoa certification is not new, and several initiatives are already under development. Our study showed that surveyed certified farmers estimate a significantly higher number of trees on their farms compared with conventional farmers ( $p=0.036$ ). For timber trees only, the significance is even higher ( $p=0.012$ ). Certified farmers also show a greater willingness to plant trees and a higher awareness of the importance of shade trees on cocoa farms. We can therefore say that certified farmers' groups, which are already organized for knowledge dissemination and which have a higher awareness of the importance of shade trees, could be an interesting entry point for REDD+ projects. Training schemes are already established and could be enhanced with CSE modules on cocoa farms. Farmers appreciate the training of certification implementers because it helps them to considerably increase yields. In addition, certification schemes already have premium sharing systems. In the communities where farmers are satisfied with the system, such schemes could be used in a similar way for the distribution of benefits (monetary and non-monetary, such as seedlings, equipment or community enhancement projects) arising from REDD+ projects.

#### *Challenges of combining REDD+ with cocoa certification*

Surveyed farmers perceive certain challenges in the system used to distribute benefits of certification to them. Often, this has to do with the (lack of) transparency and communication in the system. Farmers find that their needs are not adequately taken into account and perceive a gap between what has been promised to them and what they actually receive. In some cases, the lack of information and communication may have been an effect of the rapid growth in the number of certified groups. The conclusion for REDD+ is that, taking into consideration the potential of REDD+ as well as the uncertainties associated with carbon markets and the costs of implementation, it is advisable to not raise hopes about monetary benefits that might be difficult to fulfill, at least in the short run. Cocoa certification implementers have lost the trust of farmers in this way, and unfulfilled promises are held against them. The capacity of local implementers to establish good, regular communication in a two-way process (in contrast to the top-down dissemination of information) is crucial, therefore, for the implementation and maintenance of a functional benefit-distribution system.

Cocoa certification also shows that the organization of farmer groups—which will be necessary for REDD+ schemes if they are to attain sufficient scale—is no simple task. A first step would be to understand existing social structures and identify organized groups in which trust is already established. The study also found that the category “farmers” needs differentiation so that farm-owners are not privileged over sharecroppers, who are common in some cocoa-growing regions.

Finally, a community approach must be sought that does not contribute to social imbalances within communities. As demonstrated in the case of cocoa certification, benefit-distribution systems run the risk of aggravating inequalities when certain people do not have access to organized groups because they lack basic education or have difficulties with the credit systems on offer. This underlines the need for the careful implementation of REDD+ safeguards.

#### **4.2 Involvement of project beneficiaries**

The primary beneficiaries of the project are the Government of Ghana (especially the Forestry Commission) and the local communities in the project sites. Their involvement is summarized as follows:

- The Forestry Commission (the National REDD+ Secretariat, the FSD) participated in the implementation of almost all the project activities. They were involved in carrying out the individual studies under the project as well as the capacity building activities.

They were also involved in the collection of important information that guided the development of the follow up proposal to further REDD+ development in the country. They were part of all PTC meetings.

- The local communities participated in the implementation of the activities of the project. They were involved in all the capacity building workshops, survey data collection by responding to questionnaire and participating in focus group discussions. They were also involved in the project steering committee meetings and project monitoring missions undertaken by ITTO.

#### **4.3 Existing situation at project completion vs pre-project situation**

The tangible outcomes of the project are;

- i) A project proposal that aims to support Ghana in the implementation of REDD+ in off-reserve areas (outside forest reserve) while enhancing export potential for selected crops cultivated in biomass-intensive multi-year production systems. The specific objective of project is to develop best practices for carbon management in a variety of agricultural production systems in Ghana that have the potential to be scaled up as effective means in Ghana's REDD-readiness process. The project strives to achieve 4 specific outcomes after 3 years of implementation: (1) Well-defined pilots for low-carbon agricultural production and trade are developed, analyzed and fully integrated in the national carbon MRV system; (2) Ghana's REDD+ Readiness preparation is fully informed about the potential of carbon management in productive agricultural landscapes ("off-reserve REDD+"); (3) A measurable contribution to the development of policies, measures and investments for REDD+/Forest NAMA is made; and (4) A monitoring system that captures carbon stocks in forests and agricultural landscapes, biodiversity and safeguards at the regional level is developed and proposed for implementation.
- ii) Policy brief that considers carbon rights in Ghana. It reviews natural resources management governance structures and implications for defining carbon assets and sharing benefits.
- iii) A guide containing criteria and modalities for developing and implementing REDD+ programme in Ghana. The guide aims to broadly describe and explain the concept of REDD+ to anyone who is interested in learning more about the idea or the opportunity in Ghana. It is specifically intended to help project proponents, stakeholders, decision makers, researchers, forest resource users, and members of the NGO community gain a practical understanding of what it means to implement a REDD+ project or programme.
- iv) A book entitled "REDD+ in agricultural landscapes: evidence from Ghana's REDD+ process", that aims to contribute to the development of approaches that generate short-term revenues in combination with longer-term gains from tree resources. It also describes the outcomes of empirical and literature studies exploring the potential of off-reserve REDD+ in Ghana.
- v) The relevant stakeholders from FSD, MOFA, local communities, and private sector have also been identified and trained on climate change issues. The objectives for the training workshop are to: (i) create awareness about global climate change and Reducing Emissions from Deforestation and Forest Degradation and enhancing carbon stocks (REDD+) in local communities, (ii) provide communities with

information on opportunities and risks associated with trees/forest protection under a REDD+ regime, and (iii) discuss the rights and responsibilities of communities to ensure successful forest/trees protection (and REDD+ projects).

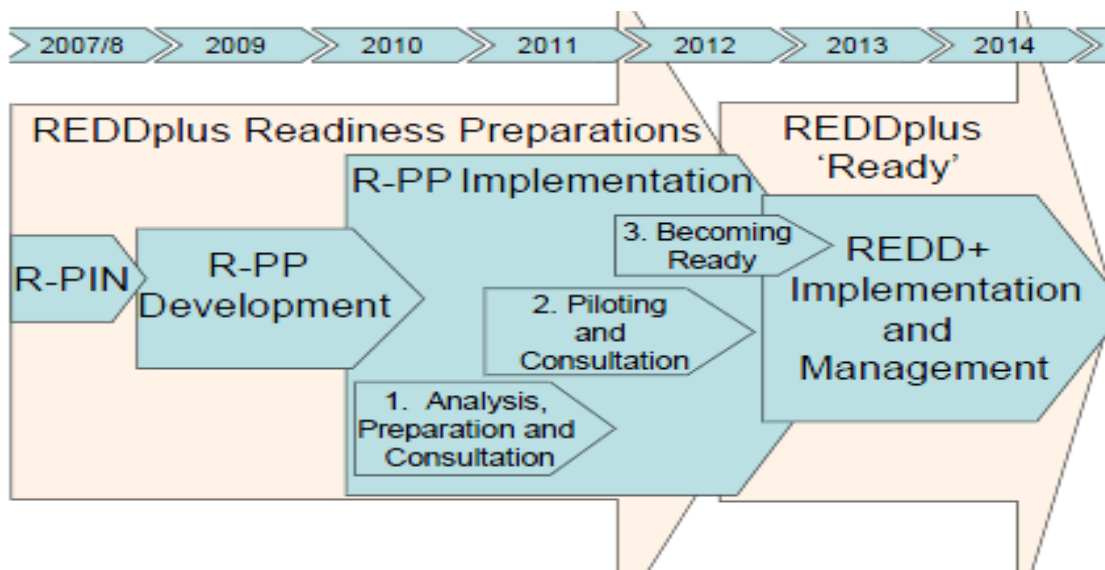
#### 4.4 Project sustainability after completion

The executing agency has worked very hard to realize all the activities specified in the project document. These have been done through detailed studies, training workshops, development of guides, policy briefs and other publications. These have been done in close collaboration with the relevant stakeholders in the country including the local communities, the National REDD+ Secretariat at the Forestry Commission of Ghana, COCOBOD, District Authority and Traditional Authority. Especially the National REDD+ Secretariat (NRS) has been a key partner in the implementation of the project activities. It is expected that the NRS will continue incorporate the lessons learnt and the outputs from the project in the further development of REDD+ activities in the country. In addition, continued publication and dissemination of the research results of the project is being done by the executing agency and its collaborators to ensure replications and scaling up of research to address deforestation and forest degradation especially in off-reserve areas in Ghana and elsewhere.

### 5. Assessment and analysis

#### 5.1 Project rationale and identification process

The project was implemented under the supervision of the National REDD+ Secretariat of Ghana. In executing the project, the National REDD+ Secretariat will build on the capacities of the Forestry Research Institute of Ghana (FORIG) and the School of Agricultural, Forest and Food Sciences of the Bern University of Applied Sciences (HAFL), both with proven knowledge, research and capacity building skills in REDD+ development, agriculture and economic benefit sharing models. One set of activities is the preparation of a main supporting programme to develop on pilots in the framework of the Readiness Preparation Process of Ghana for REDD+. Regarding monitoring and evaluation, as well as the key project staff and the responsibilities of each project collaborator/organisation. The present REDDES project is inscribed in the overall process of developing Readiness for REDD+ in Ghana under the activity of 1, Analysis, Preparation and Consultation for R-PP Implementation, as outlined in the REDD+ Readiness process (see Figure 4).



## Figure 4: The Phases of Ghana's Process towards REDD+ Readiness (R-PP)

### 5.2 Problem addressed, objectives and implementation strategy

There are two problem fields at the origin of this project that are located on different levels but are still closely interconnected. First, there is the great challenge of deforestation and forest degradation in Ghana, accentuated through global climate change. Secondly, on a technical level, there are the challenges of the internationally prompted REDD+ programme, which calls for new institutional schemes that need to be developed and implemented. This project thus needed to produce results that address the challenge of deforestation and degradation within the processes of the REDD+ programme and the corresponding goals. This also enables the alignment of the project with national policies.

The fast decline of the off-reserve tree stock in the humid zone of Ghana is of particular concern. This was formerly government policy (off-reserve areas being earmarked for progressive conversion to agriculture and other non-forest uses), but a policy change in 1994 in favour of sustainable production has failed to detain the decline. Rights over trees are held by the state in trust for the nation, and income is distributed according to a Constitutional formula in which revenues (net of Forestry Commission and Office of the Administrator of Stool Lands charges) are shared between District Assemblies, Stool and Traditional Authorities. This does not adequately incentivize the small farming population who would rather keep economic timber trees off their land than risk collateral damage from timber operations to their beverage and food crops. Reform of the tree tenure regime is widely viewed as a necessary precondition for reinvigoration of the off-reserve stock, and will be addressed in the REDD+ strategy. This is made all the more urgent by the huge scale of unregulated chainsaw logging (all of it officially illegal). While this does fill an important gap in supplying the local market, it is a major contributor to forest degradation. Increased incentives to tree plantations are also likely to be requested by the commercial timber industry for it to survive. A new commercial plantations policy and a modified *taungya* programme have recently been put in place.

For over a century, cocoa has been the major driver of land use change in the high forest zone, and the new full-sun varieties which are now widely adopted have accelerated the pace of deforestation. The traditional varieties require much denser crown cover and, in the past, their need for high atmospheric humidity encouraged the farming population to support the forest reserve policy. Their reinstatement would have much to commend it. Agricultural technologies are generally under-developed, particularly in the smallholder sector which dominates the rural economy, and low purchasing power is a major constraint. Farm and livestock management practices are characterized by low-input technologies and risk-aversion strategies. Fire is integral to the agricultural cycle in many areas, and the major means of land preparation and plant diseases control. Agro-industrial enterprise has had a poor record to date, though development of the sub-sector is a government priority. A major programme of investment will be required to develop the agricultural and pastoral economies in more carbon-friendly directions, balancing the interests of the smallholder and industrial sectors.

The greatest potential for REDD+ in Ghana is in carbon enhancement, which means better management of the remaining relatively small amount of forest and in restoring degraded forests. The potential so far has been regarded as mostly within the High Forest Zone (HFZ), including shade-grown cocoa (cocoa culture is primarily carried out in the HFZ) although there is no reason that REDD+ could not be extended to the savanna woodlands of Northern Ghana. In developing its pilots, the project needs to take into account that there are parallel challenges



that remain to be addressed before REDD+ will be successful, including land and tree tenure issues, carbon rights, benefit sharing, illegal logging, current methods of cocoa production, and carbon measurement, reporting, and verification methods. Moreover, there are technical issues that arise when considering how Ghana will implement REDD+, namely; setting a baseline (reference scenarios), carbon accounting, and monitoring, reporting and verification (MRV). Another issue is that the national definition of forests so far has tended to exclude most of the savanna areas as not being forests under REDD+ definition. During the REDDES project, relevant information shall be produced in view of the further implementation of agricultural and secondary forest productions schemes that feature climate smart practices, not the least in view of likely benefits accruing from a potential carbon market. Through the combination of technical and institutional development, applicable knowledge shall be produced in view of improving Ghana's carbon balance.

The present REDDES project aims at producing results in four fields, summarized as follows:

- 1) Analysis of possible pilots for REDD+ activities in agricultural and secondary forest systems
- 2) Identification of effective REDD+ implementation mechanisms in management and governance
- 3) Capacity building in view of improving the institutional capacities needed for effective resource management and the enforcement of regulatory policies
- 4) The previous results will be fed into the design of a project document for a main phase, including its institutional setting.

In the main phase following this REDDES project, the ITTO-SECO collaboration is foreseen to support the further implementation of Ghana's REDD+ strategy through piloting concrete actions in the fields of off-reserve value chain development, sustainable energy and fuel wood production, low-carbon development schemes as well as benefit sharing mechanisms.

### **5.3 Critical differences between planned and actual project implementation**

No change was been made to the development objective, specific objective and the outputs. Most of the planned activities were unchanged and the planned results and outputs of the project were all achieved.

### **5.4 Adequacy of time and project inputs**

The project was implemented according to the planned schedule. The project duration was initially planned for 12 months. It started in April 2013 and ended in July 2014. The actual duration was extended for 4 months to enable the successful execution of the project activities, particularly relating to publication and workshop for dissemination of project results.

The total budget for the project is US\$366,954.00. Out of this, US\$69,749 was the expended amount from the GOG contribution and US\$ 297,205.00 from the ITTO contribution. Of the ITTO contribution, US\$267,190 was realized and applied in the project implementation. The realized amount from the ITTO contribution for the project implementation was released in three installments each to CSIR-FORIG and HAFL. CSIR-FORIG received a total of US\$154,490 whereas HAFL received a total of US\$112,700. The monies received were spent accordingly on the execution of the project's activities. All payment of the installments was done timely and the amounts spent on the specified project activities.

### **5.5 External influences**

The assumptions made concerning the implementation of the project were valid during the duration of project implementation. It was assumed that at the national level, coordination among the different initiatives in the field of climate change and mitigation can become an issue. Yet the responsibility for coordination is clearly assigned to ENRAC, which has access to information of the committees overseeing particular programmes. The political will that is addressed as a potential risk by the GFIP is not a direct issue in this project, as the work to be done under REDDES could on the contrary be an instrument to encourage measures. It was also assumed that there is enough support among local authorities and communities for the collaboration with national and international researchers, as concrete projects are proposed. Research plans are discussed with national and local authorities so that the undertakings are in line with local requirements. The measures of mitigation outlined in the project document were effective in minimizing any potential conflict.

### **5.6 Project beneficiaries**

The primary beneficiaries of the project are the Government of Ghana (especially the Forestry Commission) and the local communities in the project sites. The REDD+ Secretariat of FC has been set up to facilitate the REDD+ agenda of the country. The Secretariat forms part of the overarching Sector Implementation Committee known as the Natural Resources and Environmental Governance Technical Coordination Committee (NREG TCC) which has been operational for three years to broadly facilitate the implementation of all natural resources and environment donor funded programmes. The NREG TCC will form the basis for overall guidance of the REDD+ programme in Ghana. Local Communities and Non-governmental agencies would also benefit from the project. Local communities were heavily involved in various stages of the execution of the project, including inception workshop to introduce the project to the participating communities in their respective districts, formation of community based REDD+ project management, capacity building and education on importance and threats to forests. The project further provided support for training and skills development, natural resource management expertise, and awareness creation for communities.

### **5.7 Sustainability**

This project was based on needs assessed during the implementation of the REDD+ Readiness Preparations. It is linked to a main phase, where the support of pilot projects under the REDD+ framework will concretely be implemented to ensure technical sustainability. In putting a focus both on technical as well as institutional issues, it acknowledges the challenges arising from establishing the new framework for REDD+. Institutional sustainability is achieved through the project execution by the National REDD+ Secretariat which reports to the Forestry Commission. CSIR-FORIG on the implementation level can directly feed the experiences into the R-PP process. In focussing on the development of means to select the most adequate carbon schemes, forest-dependent communities shall be enabled to benefit from alternative sources of livelihoods, which are one of the reasons for deforestation and forest degradation. Supporting the country in its preparation of instruments for the management of carbon certificates is one of the objectives of the project, in view of an enhancement of opportunities in non-traditional export sectors. Approaches for poverty alleviation necessarily have to take into account different needs that may exist between genders and social groups of the population. Different interests were discussed in transparency so that the best possible long-term solution could be found. Political sustainability was achieved through the alignment with national policies. The implementation of REDD+ is one of Ghana's NAMAs.

## **5.8 Institutions involved**

The institutions involved in the project implementation were the National REDD+ Secretariat, The CSIR-FORIG, and HAFL. Other institutions were the local communities, traditional authorities and District Assemblies all with the responsibilities of supporting local farmers and engaging in the training workshops.

## **6. Lessons learned**

### **6.1 Project identification and design matters**

While the protection of forests is regarded as one of the most promising measures for combating climate change, the expected carbon-offset payments are only a part of the advantages that forest and tree conservation can bring in developing countries. Forests and trees can enhance biodiversity, protect watersheds, and improve local livelihoods and forest governance—functions often called co-benefits under REDD+.

The multiple advantages that increased tree density can provide is clearly recognized in Ghana's national strategy for REDD+, which goes beyond forest boundaries to include trees and woodlots outside forests in agricultural landscapes. From a REDD+ perspective, this zone is called "off-reserve" (officially classified forests in Ghana are called "forest reserves"). This approach of seeking REDD+ opportunities outside official forest boundaries makes sense in a country where agricultural zones traditionally include a relatively high density of tree cover and where agricultural and forest zones are understood as parts of a continuum. The opportunity to increase tree density in agricultural and agroforestry systems means that the forest and agricultural sectors need to collaborate and work together at a landscape scale. It also means that increasing tree stocks on farms must be endorsed by the women and men of farming communities and by both the agricultural and forest services. Therefore, the preparation of further off-reserve REDD+ activities in Ghana needs to provide realistic solutions for people who rely heavily on the land for their livelihoods. That has been the focus for this project aiming to contribute to the development of approaches that generate short-term revenues in combination with longer-term gains from tree resources.

### **6.2 Operational matters**

The Forestry Research Institute of Ghana (FORIG) executed the projected activities and acted as the project coordinator. In addition, FORIG provided expertise and necessary logistics for the project. Also under contract from ITTO, the Swiss School of Agricultural, Forest and Food Sciences (HAFL), in close coordination with FORIG conducted the work mainly for outputs 1 and 4. The REDD+ Secretariat Ghana which is responsible for the R-PP provided oversight lead for the REDDES project.

FORIG and HAFL worked closely together to implement the REDDES project activities. The work was coordinated by the REDD+ Secretariat, based on a work plan that was prepared by FORIG and HAFL and endorsed by the REDD+ Secretariat in a first meeting. FORIG and HAFL established close working relationships with SECO projects in Ghana, in particular with CRIG related cocoa program and with the IUCN implemented Allanblackia project.

Monitoring and evaluations have been held satisfactorily, within the PTC meetings, chaired by the Representative of the Forestry Commission. The PTC meetings have always been attended by members of the PTC to provide important guidance for the project operations. The inputs of the project were timely transferred to the executing agency based on the submission of the yearly plan of operations and one sustainability plan to ITTO secretariat. The funds transfer

which was sufficient in quantity and quality was done in a total of three installments each to FORIG and HAFL.

## **7. Conclusions and recommendations**

In conclusion, the project results and output shed light on the ongoing and dynamic process of REDD+ implementation in Ghana, including the development of a legal framework for managing carbon rights in the country. The concluding remarks outline the way forward, from a policy perspective, for REDD+ pilot implementation in Ghana for the benefit of people and the land.

### *Evolving the REDD+ landscape in Ghana*

REDD+ is a dynamic and continuously evolving space in Ghana, especially given that the country is still engaged in the very first phase of REDD+, “REDD+ readiness”, which involves developing and building the needed architecture, systems, processes and guidelines for REDD+ implementation. The REDD+ readiness phase is expected to be completed by the end of 2015, which will signal the beginning of full-scale implementation. Already, new opportunities and thinking are influencing the likely structure and manner in which REDD+ will be implemented and the way in which it will work. This chapter provides an overview of important developments and initiatives.

### Reference level

REDD+ countries must designate national or subnational reference levels. A national reference level quantifies a country’s total carbon stocks and emissions, whereas subnational reference levels account for emissions and enhancement at smaller scales, typically those of a subnational state, region or landscape; taken together, the subnational reference levels add up to a national reference level. Ghana has opted to establish subnational reference levels that will be differentiated according to the country’s different ecological zones due to the widely varying carbon stocks, deforestation rates and drivers in those zones. A reference level is like a project baseline except that it covers a much larger area. The benefit of having an established reference level is that it takes out much of the technical work of project development because the “baseline” carbon values, deforestation rate and emission reduction potential have already been determined. With an established reference level, projects simply have to adopt the associated values at their project scale. By coordinating with the national secretariat, a “cookie-cutter” approach can be used to determine the total potential emission reductions that a project can adopt. The key point here is that the total emission reductions of all projects operating within the reference-level area cannot exceed the total potential emission reductions of that area. Although Ghana has committed to developing its national reference level for deforestation via subnational reference levels, it is possible it will also establish national and subnational reference levels that account for forest degradation and CSE. When CSE is included, it is technically referred to as a “forest reference level”.

### Jurisdictional and programmatic REDD+

Two issues have come to the forefront of REDD+ discussions in recent times: the question of how to deal with the sovereignty of subnational states within national REDD+ initiatives being implemented in federal systems; and the recognition among the many proponents of REDD+ that implementing at the project scale is exceedingly complex and costly and is unlikely to furnish significant mitigation benefits in the short to medium term. The second issue, project-scale implementation, has proven to be a challenge in Ghana, largely because funds to support early actions such as piloting are limited, difficult for many local proponents to access, and

rarely made available in a timely manner. In addition, the necessary in-country capacity and technical resources are still low.

Among thought-leaders in the REDD+ space, discussions around jurisdictional, nested and programmatic approaches have gained significant ground as a means of resolving both issues. Although the terms used to describe it vary, the basic premise is the same—pursuing REDD+ at a landscape or jurisdictional (state) scale provides an efficiency of scale that is highly attractive from financial, policy, technical and legal standpoints.

According to the Verified Carbon Standard, a jurisdictional, nested framework offers many important benefits for participants (VCS 2013), including the ability to:

- monitor, quantify and reward emission reductions across an entire jurisdiction, maintaining environmental integrity;
- increase the potential for emission reductions as a result of working at a larger scale;
- provide incentives to drive REDD+ through government policies and programs as well as projects;
- build on project experience and provide a pathway for the recognition of “early action” projects and programs;
- create potential for harmonizing market and public REDD+ funding streams by serving voluntary, bilateral, multilateral, pre-compliance and potentially compliance markets through the use of a consistent, independent framework; and
- increase the funding available for REDD+ implementation.

Ghana is now one of the leading countries on programmatic REDD+ because it was selected to enter the pipeline of the Forest Carbon Partnership Facility Carbon Fund Emission Reductions Program. The Carbon Fund will provide performance-based payments (up to US\$50 million) to about five countries that have made significant progress in their REDD+ readiness endeavours. Ghana’s Emission Reductions Program for the Cocoa Forest Mosaic Landscape proposes to cover the entire HFZ with the aim of reducing emissions driven by cocoa farming and other agricultural activities. It would adopt an integrated strategy that includes collaboration between major government institutions, policy reforms, and the implementation of strategic activities with communities, traditional authorities, the private sector, non-governmental organizations and other key stakeholders. If REDD+ readiness is completed successfully and the Emission Reductions Program for the Cocoa Forest Mosaic Landscape is well designed, Ghana will have the opportunity to enter into an Emission Reductions Purchase Agreement with the Carbon Fund.

This would mean that any project-scale effort within the area of the Emission Reductions Program for the Cocoa Forest Mosaic Landscape would have to be integrated with the Program. In so doing it would benefit from the Program’s reference level, forest monitoring system, policy work and heightened importance and attention among multiple stakeholders and donors.

### *Carbon rights legislation and management*

Ghana's legal framework presents a complex environment for REDD+ because ownership and management rights to land and natural resources do not align and carbon is yet to be legally defined. The 1992 Constitution decoupled land and natural resources (Republic of Ghana 1992), resulting in a scenario in which private land is owned by stools but the management rights to the resources on the land, such as forests and timber, rest with the government. For REDD+ to work, however, ownership and management decisions—both formal and informal—must come together. The landowners must consent to a REDD+ action, but stools would not have the ability to influence the formal management of trees or forests because this is the domain of the Forestry Commission, and nor could it fully influence the deforestation and degradation occurring informally as a result of agricultural expansion or illegal timber harvesting. Consequently, REDD+ initiatives will need to take into account multiple stakeholders and ensure that benefits are distributed adequately among landowners, resource managers and other land and resource users.

Ghana has approximately 1.6 million ha of gazetted forest reserves, for which the Forestry Commission has the management authority, although the land is still recognized as belonging to stools. This land is referred to as “on-reserve”. Private land outside forest reserves is called “off-reserve” and comprises roughly two-thirds of the land in Ghana. It is largely owned by stools and managed and used according to traditional norms that support multiple user rights. Landowners and land users, however, do not have economic rights to naturally regenerated trees (timber) because management rights rest with the Forestry Commission. Consequently, there is nothing in the law that prohibits the felling of off-reserve trees for non-economic purposes, such as to clear land for agriculture, but legally farmers and forest users are not allowed to harvest and sell timber without a permit.

In the event that natural resources are harvested from forest reserves or private land, the government shares a proportion of the revenue with the landowner under a legally backed benefit-sharing arrangement. The benefit-sharing arrangement, however, does not compensate the actual land user, who in many instances is not the same as the landowner. Consequently, the land users who make *de facto* decisions about trees and forest patches do not benefit from their efforts and are not compensated for their losses. In the case of timber harvesting on stool lands, the Forestry Commission takes 50–60% of the stumpage fees, depending on whether the trees harvested are off-reserve or on-reserve. The remaining revenue is divided according to a constitutionally agreed formula between the Office of the Administrator of Stool Lands, the stool, the traditional authority and the district assembly.

From a REDD+ standpoint, the benefit-sharing arrangements for plantation development or modified taungya systems are more agreeable because they directly compensate or allocate rights to the actors that are responsible for planting and managing trees. To date, there is neither a legal definition of carbon nor legislation affecting the right to manage or transact carbon. Even though the 2012 Forest and Wildlife Policy emphasises the non-consumptive values of forests, it only cites the need to take strategic policy and legislative action on these issues and gives no indication of how carbon assets and rights are to be allocated, what types of tax structures could be implemented, or how REDD+ benefit-sharing regimes would need to be structured to support the development of REDD+ projects.

The existing complexity of land and tree tenure and the lack of clarity on carbon are barriers to progress on REDD+ at a project scale. In the short to medium term, however, mechanisms exist to help create pathways towards REDD+ implementation. The CREMA mechanism is a

community-based platform that devolves natural resource management rights to communities through a CREMA authority or board, which in principle aligns with the land ownership of the traditional authority. CREMA is a landscape-level planning and management tool that gives communities the right to manage their natural resources for economic and livelihood benefits. This management authority is transferred to a fully functional CREMA in the form of a certificate of devolution that is signed by the minister (CRMU 2004).

Originally developed by Ghana's Wildlife Division as a community-based platform for wildlife management, the CREMA concept has evolved to allow the management of other types of natural resources, products and economic revenue streams, including NTFPs and ecotourism. Nationally, approximately 26 CREMAs have been approved officially or are in various stages of development (Asare et al. 2013). On average, CREMAs cover about 25 000 hectares, but they can range in size from a few thousand hectares up to a few hundred thousand hectares (Asare et al. 2013). Each CREMA has a constitution and bylaws that guide and regulate activities within the CREMA area. Each CREMA is managed by an executive committee or management board, and revenue is shared among the members, with typically 5–10% going to the executive committee and the remainder to the communities for development purposes (Asare et al. 2013).

CREMAs are officially articulated in Ghana's readiness preparation proposal, and early thinkers on REDD+ in Ghana have noted that it could help solve many of the challenges to developing early REDD+ projects, including by: providing clearly defined project boundaries; aggregating smallholders across a landscape; ensuring free, prior and informed consent; ensuring permanence of the carbon assets; preventing leakage outside the project area; and informing equitable benefit-sharing arrangements (Asare et al. 2013).

CREMA may also help bridge some of the legal gaps with respect to carbon ownership and rights. The argument has been made that because the CREMA devolves management authority and economic rights to CREMA communities (as represented by their management boards), the carbon rights are, by default, transferred to the CREMA, too. The extent to which the CREMA mechanism can clarify carbon rights is still limited, however, because no legislation provides specifically for the establishment of CREMAs. CREMAs do not derive their structures from the Constitution or from any law and therefore they are not directly recognized as legal entities to the same extent as companies or associations incorporated under Ghanaian law. CREMAs can fit into existing corporate forms, however, and nothing prevents them from registering as legal corporate entities, including as cooperatives, community-based organizations, companies limited by guarantee, or limited or unlimited companies (Agidee 2011).

In the short to medium term, the question of carbon's definition and the legal rights to manage and transact carbon remains a significant risk for the development of REDD+ projects. Therefore, a serious effort is needed to explore the legal options and to move legislation forward in a reasonable timeframe. The government, especially the Forestry Commission, may be eager to think of carbon as a natural resource, but it should weigh the liability (non-permanence of carbon and challenges in demonstrating emission reductions/CSEs against projected reference levels) it may bear associated with such a definition, as well as its capacity to "manage" carbon storage or sequestration. Alternately, the government could define carbon as an ecosystem service.

**Concluding remarks on the way forward for off-reserve REDD+**

Reducing deforestation and forest degradation requires that: existing forest stocks are legally protected and kept healthy; no more than the average of a forest's net growth is removed; and there is a means of enhancing regeneration and growth. These technical requirements must be complemented with appropriate socio-political and economic arrangements that make SFM rewarding and attractive to stakeholders. However, both the technical and governance arrangements for sustainably managing Ghana's off-reserve forest resources are presently minimal and largely ineffective. The underlying factors that have fuelled the rapid conversion of off-reserve forests include insecure tenure rights; government policies that favour the conversion of off-reserve forests to other land uses; population increases; and institutional weaknesses.

Ghana's readiness preparation proposal suggests that one of the major weaknesses of the forest management framework is the lack of an appropriate mechanism to incentivize the conservation of native trees in off-reserve areas. REDD+ offers an opportunity for the requisite policy reforms and incentive scheme to be put in place to confront and overcome the driving factors that account for forest loss in off-reserve areas. Thus, the ITTO project that generated the case studies presented in this report sought to identify strategies that simultaneously reverse agriculture's adverse effects on forests and trees (and therefore carbon emissions) and enhance the environmental services that off-reserve forests and trees provide.

In recent years, key policy reforms have been undertaken in Ghana that aim to enhance environmental integrity and incorporate the objectives of REDD+ in forest management and climate-change strategies. Ghana's revised Forest and Wildlife Policy (2012) recognizes the importance of REDD+ in the enhancement of livelihoods and the achievement of SFM. The policy also acknowledges the importance of restructuring tree tenure in off-reserve areas for the effective management of off-reserve forests. The national Climate Change Policy (2013) incorporates REDD+ as a key component of Ghana's mitigation, adaptation and low-carbon growth agendas. Ghana's Strategic Growth and Development Agenda (2010–2013) encourages the reforestation of degraded forests and off-reserve areas.

Initiatives focused on SFM that complement Ghana's REDD+ efforts will enhance the implementation of REDD+ in off-reserve areas. The Voluntary Partnership Agreement with the European Union under its Forest Law Enforcement, Governance and Trade Action Plan, and the Non Legally Binding Instrument on All Types of Forests, could both complement future REDD+ interventions, particularly in off-reserve areas where deforestation and forest degradation are particularly problematic.

In 2010, Ghana submitted 55 nationally appropriate mitigation actions (NAMAs) to the United Nations Framework Convention on Climate Change. Eight of these NAMAs are forestry-based and include REDD+-related activities. Much work has been done since 2010 to make REDD+ a key component of Ghana's climate-change mitigation and adaptation strategy. Ghana's REDD+ readiness process is nearing completion, and a REDD+ package that will outline Ghana's REDD+ strategy and framework for safeguards, among others, will be completed by 2015. Thus, with the anticipated global climate-change agreement in 2015, Ghana will be in a good position to incorporate REDD+ as a key mechanism for climate-change mitigation (and adaptation) in its commitment to the post-2020 implementation of such a global agreement.



**Responsible for the Report**

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