3.3 A landscape approach to climate-smart agriculture in Ghana

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Introduction

Deforestation in the tropics is a significant cause of global climate change (Murdiyarso, Hergoualc'h and Verchot 2010). Where land conversion is fuelled by commodity agriculture, it is imperative to engage farmers in climate-smart agriculture (CSA) practices that include the conservation of forests. For smallholder cocoa producers in Ghana, increasing on-farm carbon storage and reducing greenhouse gas (GHG) emissions must also be linked to enhancing productivity. This increases the resilience of production systems in the face of a changing climate.

The Rainforest Alliance introduced CSA at a landscape scale in the Juabeso-Bia District of western Ghana. The aim was to improve the capacities of farmers to mitigate and adapt to climate change while simultaneously increasing productivity. The project focused on organizing individual farmers, establishing landscape management structures, diminishing pressures to further encroach on surrounding forestlands, and restoring ecosystems within cocoa agroforests and other degraded land-use systems while increasing cocoa production.

The landscape approach also establishes a business case for private-sector investment to generate significant co-benefits.

The landscape

Historically, deforestation in Ghana's Western Region has been driven by cocoa production. Ghana is the second largest producer in the world (Gockowski and Sonwa 2011) and more than half of the country's production comes from the Western Region. The consequences are significant: forest cover in Ghana decreased from 7.5 million hectares (ha) in 1990 to around 5 million ha in 2010 (FAO 2010). In Juabeso-Bia, only 8% of total land cover remains open or closed canopy forest (Figure 1).

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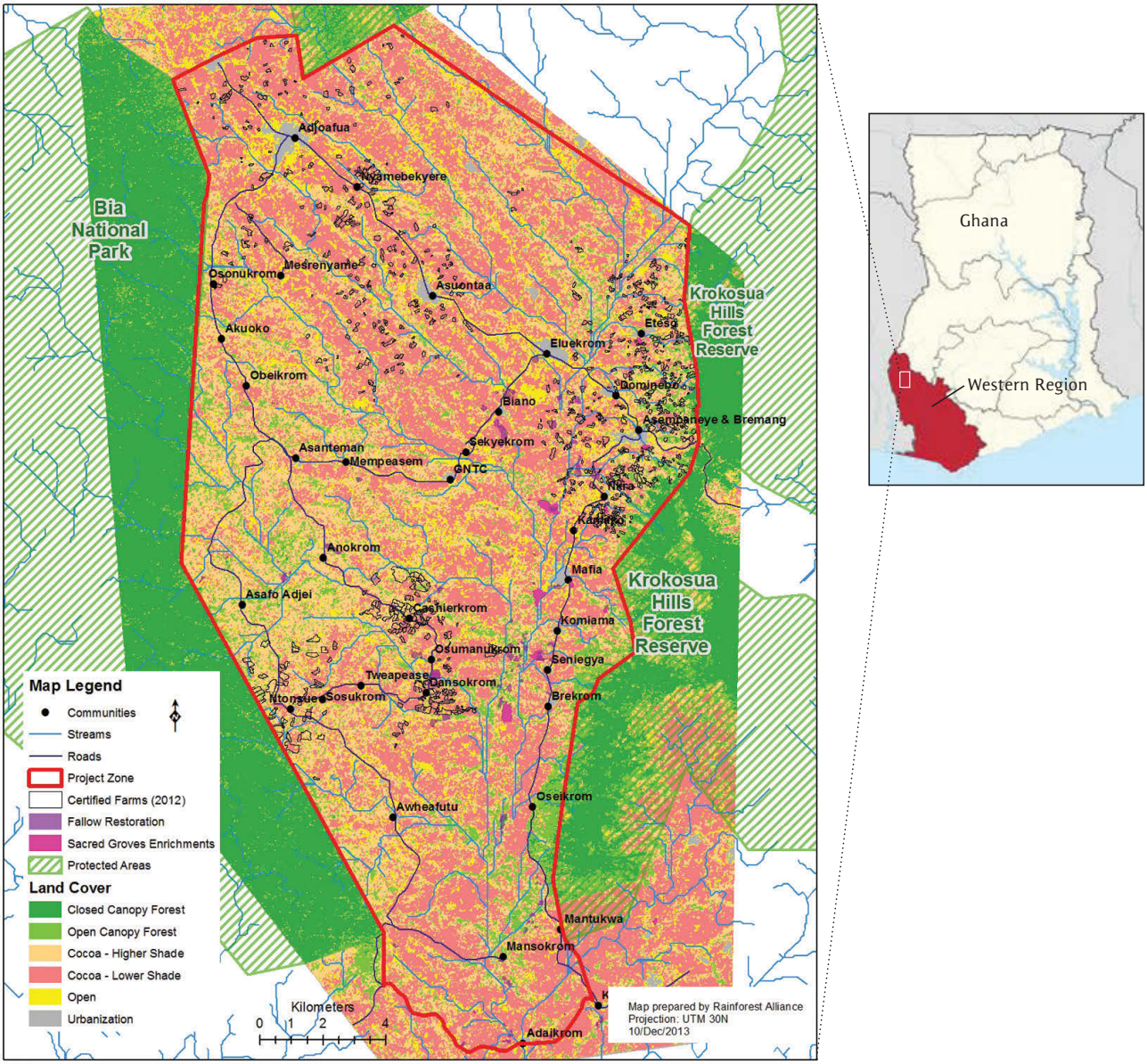
Figure 1. The Juabeso-Bia landscape, including certified farms and land cover classes



The 36,000-ha landscape is made up of a mosaic of cocoa agroforest with various degrees of shade cover, croplands and remnant forest. It is situated between Bia National Park (a Globally Significant Biodiversity Area) and the Krokosua Hills Forest Reserve in the high forest zone of Ghana (Figure 1). The project landscape is a corridor for many species, although both the park and reserve are threatened by cocoa expansion, and by illegal logging in the reserve and poaching in the national park (Fumey-Nassah and Adum 2013). Mining and oil palm production also pose a threat to the park and the reserve, but at a much smaller scale than cocoa expansion (Modern Ghana 2011; Ghanaweb 2010).

The challenges

Under today's business-as-usual scenario, extensive low-input agriculture production is commonplace; cocoa in the Juabeso-Bia area often produces low yields (Dormon et al. 2004; Gockowski and Sonwa 2011). From 1988 to 2010, cocoa cultivation in Ghana

expanded by almost one million ha, much of that occurring in the Western Region, including the Juabeso-Bia District (Gockowski et al. 2010). At the same time, per-hectare production of cocoa has decreased because of poor management practices and the increasing age of the cocoa trees, which, like most perennials, need to be renovated periodically (Dormon et al. 2004).

Landscape composition has been severely affected by land-use change: from tropical forest with closed canopies to cocoa production systems, which are less structurally and floristically diverse (Rainforest Alliance 2013). Rainforest Alliance identified a need for increased community involvement in governing forest resources. This would demonstrate that forests are not obstacles, but rather opportunities to create a diversified economy based on sustainable farm and forest management. Local and regional land-use planning was perceived to be weak, with little involvement from traditional chiefs and cocoa farmers in framing a long-term vision of Ghana's cocoa farming lands. In addition, structured discussions and planning between the Forestry Commission (FC), which manages a large number of forest reserves across this cocoa landscape, COCOBOD (Ghana Cocoa Board) and other cocoa-sector entities had not taken place. Other issues needed to be addressed through a multi-stakeholder process: farmers' lack of legal ownership of trees growing on their land; inequitable benefit sharing; and low compensation to farmers for damages caused to crops through timber harvesting.

Climate change also poses a significant risk to the landscape. Climate change predictions for the region and for the country as a whole indicate that the climate for growing cocoa is subject to change, with conditions in some parts of the cocoa belt expected to decline (Läderach et al. 2013). Cocoa trees are susceptible to changes in the seasonal distribution and total volume of rainfall (Anim-Kwapong and Frimpong 2008). Pests, diseases and the likelihood of forest fires could also increase. The resulting strain on cocoa production might further encourage cocoa expansion to offset the shortfall in yield and quality, or a shift to other forms of agriculture.

A landscape approach

Rainforest Alliance developed a landscape-level project centred on sustainable practices that conserve biodiversity, increase productivity, provide greater long-term stability to all value chain participants and increase the income of smallholder farmers. The goal was to create a sustainable landscape that harnessed the transformative power of markets. Olam International, a leading food company, made commitments to source climate-smart cocoa; connecting to the company's supply network and consumer base helped engage thousands of farmers.

The project, which started in 2010, emphasized improvements in cocoa agroforestry production systems through certification and broader engagement of supply chain

stakeholders. Technical assistance was provided to assist farmers in meeting the rigorous standards of the Sustainable Agriculture Network, or SAN (SAN 2010). SAN encourages farmers to analyze and consequently alleviate environmental and social risks caused by agricultural activities. Many of the SAN criteria necessary for certification already promote CSA practices and can further be enhanced through the voluntary Climate Module of the SAN Standard (SAN 2011), the requirements of which were also met by participating farmers.

Landscape activities implemented under the project were directly linked to Ghana's national agricultural and environmental policy for cocoa production and biodiversity conservation (Gockowski et al. 2010; Government of Ghana 2012). The project was designed as an agribusiness model, the results of which fed into the national Reducing Emissions from Deforestation and Forest Degradation (REDD+) strategy. It also aligned with COCOBOD's goal of achieving one million tonnes of cocoa production without degrading biodiversity or the natural environment (ODI 2007). The project was developed in collaboration with the Wildlife Division of the Ministry of Lands and Natural Resources. The division's policy for collaborative community-based wildlife management aims to support the devolution of management authority to defined user communities and encourage the participation of other stakeholders (Government of Ghana 2012).

Pursuing private-sector collaboration to ensure a market-driven approach was a top priority for the project. In addition to donor support from the United States Agency for International Development and the Norwegian Agency for Development Cooperation, Olam International provided funds to Rainforest Alliance for technical assistance aimed at achieving SAN certification for cocoa as the basis of a REDD+ project. Olam agreed to pay premium prices for the certified cocoa and more importantly offered predictable market access. This builds reliability in the supply chain, which could help support climate finance.

Results

The project has laid the foundation for a landscape approach that focuses on improving livelihoods through an integrated set of activities. These include sustainable land management (including agroforestry, enrichment planting, climate education, REDD+ documentation and timber production on farms) and local enterprise development such as beekeeping and small livestock rearing. The activities have increased economic opportunities for marginalized farmers through an integrated approach to sustainable agriculture and forest management, which in turn has led to significant emissions reductions.

Training and capacity building in climate-smart agroforestry

To date, approximately 2,000 farmers from 34 communities have been trained. This has resulted in more than 6,000 ha of land achieving SAN certification and Climate Module

verification. Through a "train the trainers" approach, 68 lead farmers served as extension agents to facilitate farmer field schools. As part of the SAN standard requirements, forest area was restored through the provision of native tree seedlings, leading to increased on-farm carbon stocks. The project has also helped farmers organize into 12 cooperatives, which improved the coordination of activities such as enrichment planting, farmer field schools and overall training delivery.

Improved economic opportunities

The project developed additional livelihood enterprises around beekeeping and rearing of the greater cane rat (grasscutter, or *Thryonomys swinderianus)*. Beekeeping income is expected to provide alternative revenue, particularly during the lean times between seasonal cocoa harvests. Similarly, grasscutter raising is a promising source of additional revenue in the local market for meat. An important offshoot of the development of these two enterprises was the involvement of local small-scale carpenters. The project provided training to five local carpenters in the construction of beehives and grasscutter cages, resulting in a steady carpentry business during the term of the project.

Increased carbon stocks through restoration

The project also improved the protection of remnant natural forests ("sacred groves") in the landscape and restored forests on nearly 300 ha of abandoned fallow lands. This is estimated to contribute 140,000 tonnes CO2e of sequestered carbon over 20 years. Tree species were selected based on recommendations from the Forest Services Division (FSD) of Ghana's Forestry Commission (FC) and in participatory stakeholder workshops. The Rainforest Alliance facilitated the establishment of two nurseries, where 300,000 seedlings were raised. The project is further assisting communities and individuals in obtaining ownership rights over newly planted trees by registering them with the district FSD officer.

Improved governance

At the start of the project, the Rainforest Alliance identified several potential project risks, including insufficient internal organizational capacity on the part of communities, lack of clarity on the tree ownership rights of smallholders, and marginalization of key stakeholders. The project addressed many of these organizational and administrative capacity issues through the development of cooperatives and a local authority for land management, the Landscape Management Board, or LMB (Box 1).

This governance model has been structured to ensure that the LMB is involved in each step of the project cycle: planning, approving, implementing and monitoring activities. This is expected to guide the development of REDD+ activities after the close of the project and improve coordination with other stakeholders, including the FC, District Assemblies, traditional authorities and the private sector.

Box 1. The Landscape Management Board

The Landscape Management Board (LMB) was set up to build community governance capacities at the landscape and community level and organize farmers in the Juabeso-Bia landscape. The LMB oversees and co-manages the implementation of the project, resolves disputes, and develops and oversees rules and regulations related to natural resource management. The LMB also focuses on increasing wider participation in the project and extending benefits to more communities and farmers.

The LMB executive committee consists of 14 members drawn from the community and represents community interests. As part of the project and the establishment of the LMB, committee members have been trained in climate change education; they lead the climate education campaign in their respective communities.

REDD readiness

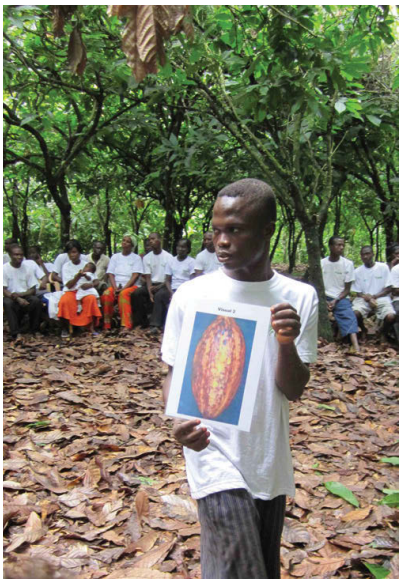
In preparation for piloting REDD+ in the Juabeso-Bia landscape, the project focused on capacity building at the community and landscape scale. Rainforest Alliance climate education modules were adapted for use in Ghana to educate students and teachers on climate change, forests and related environmental issues. The project also developed training materials and disseminated information on REDD+ through more than 20 training sessions for LMB members, nearly 100 community forums, and training for more than 2,000 community members, 12 science teachers and 15 schools, with a combined student population of 4,000.

As a result of these training and capacity-building activities, an estimated 80% of residents in the 34 communities have greater awareness of REDD+ issues, processes and forest carbon standards. In addition, teachers implemented Rainforest Alliance's climate change curriculum within their classrooms and formed "Save the Environment" clubs with students.

Carbon project development

The project was designed to demonstrate net positive climate benefits at the landscape scale in line with the Climate, Community and Biodiversity Standards, or CCBS (CCBA 2008). The project undertook a range of studies – on land-use in Juabeso-Bia, on-farm and landscape-level biomass and carbon stock estimation, socio-economic and biodiversity assessments – to prepare a Project Design Document (PDD). The PDD includes investments in agroforestry and in ecosystem restoration, fallow enrichment and sacred grove protection. It also serves as a landscape management planning tool, complete with baselines and monitoring protocols that can be used to negotiate additional financing through the sale of certified cocoa. The governance bodies that are established, strengthened and trained by the project during project

execution are the owners of the document. It should be noted, however, that verification against the CCBS or a carbon crediting standard such as the VCS or Gold Standard has not been carried out to date; therefore, the project has not yet generated or transacted carbon credits or offsets.



Lessons learned

Cocoa farming and timber harvesting are a crucial part of Ghana's national economy and form the basis of the livelihoods of millions of smallholder farmers. Yet these practices continue to drive deforestation, land degradation and climate change, all of which threaten livelihoods. With the demand for cocoa and timber on the rise, a landscape approach is necessary in order to secure the future of Ghana's forests, significantly improve livelihoods opportunities for farmers and forest users, encourage agroforestry, and secure long-term resource security for the private sector. It will also establish a results-based multi-actor governance model through which the government, the private sector, civil society, and local communities can collaborate. The landscape approach also establishes a business case for private-sector investment to generate significant co-benefits. Interventions implemented by Rainforest Alliance have assisted in increasing farm productivity, and in adapting production systems to be more sustainable and to respond favourably and lastingly to REDD+ opportunities. A major component in the success of this approach was the integration of a diverse range of strategies to support livelihood opportunities and long-term resource security among landscape stakeholders.

To achieve a truly self-governing and multi-actor collaboration at the landscape level, a range of efforts to address further coordination and innovation among the various stakeholders is required:

- agricultural intensification, improved cocoa agronomy and sustainable forestry practices;
- improved landscape governance through strengthening the LMB, empowering producer groups and integrating them in cocoa sector governance;
- the development of long-term visions and plans;
- continued monitoring and validation of farm and community development activities, using approved standards to measure financial flows and production of goods and services that support business development;
- expanded landscape restoration and increased establishment of native tree cover and biodiversity corridors;
- more resilient livelihoods and improved food security, including diversification through on-farm timber and non-timber resources and small livestock, potentially complemented by PES systems linked to services provided by sustainable cocoa farms (REDD+); and
- increased supply of and demand for climate-smart, zero-deforestation-certified sustainable cocoa.

This approach demonstrates the opportunities for successful landscape management through engaging with actors along a supply chain and fostering the participation of other stakeholders in the process. Application of the SAN Standard lays a solid foundation on which to replicate a similar approach in other landscapes.

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