



Climate-Smart Cocoa in Ghana

Achievements and a way forward

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Overview of Cocoa Sector & Climate-Smart Cocoa

Cocoa is a \$1.5 billion industry in Ghana. Despite the emergence of oil and gas, cocoa has remained the second largest foreign exchange earner for the country, contributing approximately 35% of Ghana's GDP. Combined with other agricultural activities, it employs 55% of the population. Globally, Ghana has maintained its status as the world's second largest producer of cocoa beans, for which it receives a premium price. In 2010/2011 the country reported its highest ever production of 1 million metric tonnes of cocoa, though industry insiders report that at least 10% of this crop derived from neighboring Ivory Coast. The 2011/2012 season saw a decline in production at just over 850,000 tonnes.

Ghana's cocoa authority and regulatory body, Cocobod, aims to make Ghana, "the number one best quality producer of cocoa in the world". This strategy, according to the government, necessitates cocoa becoming, "a sustainable product in a way that takes good care of the environment and also gives the farmer the best of income for what he produces, and also satisfy the requirement of the international market." For a sector which has predominantly relied upon an expansionist production strategy and has significantly contributed to the degradation and deforestation of the high forest zone over the past hundred years, this statement represents a major shift in environmental thinking. It is the first time that Cocobod has formally linked the sustainability of the cocoa sector with the health of the environment upon which it relies. As a result of consistent engagement and information sharing by Nature Conservation Research Centre / Forest Trends (NCRC/FT) and others, a shift in thinking about climate change and global warming is also starting to emerge as Cocobod senior officials have begun acknowledging that climate change does present a threat to sustainability, whereas only two years ago the likely impacts were ignored or denied.

Climate-Smart Cocoa and the Emergence of a Private Sector Led Nationally Appropriate Mitigation Actions (NAMA)

The climate-smart agriculture (CSA) cocoa initiative in Ghana has focused to date on building support for climate-smart agriculture interventions, within the context of national REDD Readiness activities. It is widely recognized that agriculture is a major source of emissions, and through climate-smart agricultural practices multiple benefits can be combined, including rural economic development, food security, as well as climate adaptation and mitigation

In Ghana, the NCRC / FT team chose to focus on cocoa because it is the main agricultural crop in the country and across the West African tropical sub-region, it is a dominant livelihood activity for at least 800,000 smallholder farmers and farm laborers, it is a major driver of deforestation across the high forest zone, and cocoa is highly susceptible to changes in rainfall and temperature.

In February, 2011, with support from the Rockefeller Foundation, NCRC and Forest Trends initiated a Climate-Smart Cocoa Working Group (CSCWG) to address issues of sustainability within the sector and to explore the potential for carbon finance or climate mitigation benefits to catalyze changes to the business-as-usual production practices. While the initial emphasis of the Working Group focused on the potential for developing REDD+ projects in

specific cocoa production landscapes linked to forest reserves and other protected areas, notably in the Bonsambepo site, the group members subsequently determined that seeking to promote a sector wide approach for the cocoa industry linked to emerging climate change finance and government policy was more strategic. Despite the shift, all of the site level work remains relevant, particularly the data collected on biomass dynamics; information which is now being used to articulate the business case for climate smart cocoa.

Since October, 2011, the group has made significant strides in meeting its goals, having essentially spurred the development of what is likely to be the first “private sector led NAMA” and influenced national level policies and perspectives. In this regard, NCRC / FT played a leading role in including support for CSA cocoa as part of Ghana’s Forest Investment Plan (FIP), and also in obtaining complementary funding for the continuation and expansion of the CSCWG from the UK’s Department for International Development (DFID). Given the success of this initiative, NCRC/FT have also initiated a similar process within the oil palm sector and are contemplating other crops that could benefit from a CSA approach.


Innovations & Milestones

Innovative Working Group Process

NCRC / FT brought traditional cocoa sector companies, government institutions, as well as companies with expertise in finance, management, and risk reduction together to create the CSCWG. This is a new mode of collaborating in Ghana, as it focuses on a process as opposed to a pre-defined product or outcome. To date, the two year old process has sought to build consensus amongst stakeholders through collective analysis, discussion and decision-making, resulting in a process that was largely driven by the private sector and has spurred new thinking on how to produce cocoa in Ghana and new means of collaboration that can build a more sustainable cocoa production landscape.

The working group itself has broad membership, drawing participation from the cocoa industry, government, banks, insurance, farmers associations, civil society, and research institutions. These include: Armajaro, OLAM, Zurich Insurance Group, Pricewaterhouse Coo-





pers, Stanbic Bank, Agricultural Development Bank Ghana Forestry Commission, Ghana's National Insurance Commission, Cocoa Abrabopa Association, Helveta, and The World Bank, in addition to NCRC and FT. It has also brokered dialogue and interaction between the Forestry sector and the Cocoa sector; interaction which is extremely uncommon.

Biomass Map of Ghana

A particularly noteworthy collaboration that has been effective in helping to galvanize attention to these issues has been NCRC / FT' work with Oxford University's Centre for the Environment, spearheaded by Prof. Yadvinder Malhi, and the U.S.' National Aeronautics and Space Administration (NASA) to develop a state-of-the-art carbon stock map for Ghana. NCRC/FT have conducted work to calibrate the map with representative cocoa growing landscapes and sites to improve the analytical and predictive capabilities of the map and associated software.

First Private Sector Led NAMA in West Africa

The government of Ghana has identified 55 potential NAMAs, and yet little to no effort has been made in further defining or testing those NAMAs that fall within the agriculture, forestry and other land use (AFOLU) sectors. The CSCWG has essentially created the precursor to what is likely to be the first-ever Private Sector Led NAMA for the cocoa sector, as compared to a government initiated process.

The NAMA opportunity that emerges with this private sector led effort, including cocoa companies that have traditionally competed for their share of annual production, will introduce farmers to climate smart practices and opportunities, which will bring yield increases, reduced risk, and access to information and financial products. For the private sector, the benefits include sustainability of supply, a more consistent and reliable access to farmers and cocoa beans, and the opportunity to reduce their carbon footprint by investing in the resulting carbon

New thinking is demonstrated by the growing recognition among stakeholders that global warming and changes in rainfall patterns present a serious threat to the sustainable production of cocoa in West Africa, and that existing environmental initiatives, like certification, are neither geared towards nor capable of producing measurable climate benefits, despite the need for real mitigation action and results. As a result, companies, whose common practice is not to collaborate or work together, have come together through this process to help define a climate smart cocoa farming package which can bring about high carbon stock cocoa landscapes that offer adaptation and mitigation benefits, in addition to significant yield increases.

assets. At the same time, the insurance and financial sectors will gain access to a major agricultural market that to date has been largely untapped and could be scaled across the West African sub-region. At the site level, this strategy will continue to be developed and tested in the cocoa carbon landscape of Bonsambepo, with the hope that it could be further tested at the Cocoa Research Institute of Ghana (CRIG)'s national REDD+ pilot project site and then scaled across Ghana's whole cocoa growing landscape.

Development of Cocoa Desired State Pathway Document

In December, 2011, the working group completed its cocoa pathway document, entitled, “The Case and Pathway toward a Climate-Smart Cocoa Future for Ghana”. Over the past year months the document has been widely distributed amongst government officials, private sector companies, foundations, other NGOs working on sustainability in agricultural commodities, and cocoa experts and researchers.

The working group approach and the process of writing this document has been transformative in that it has taken a multi-sectorial approach to building national consensus and to developing a coordinated series of innovations towards a 20 year pathway to sustainable, climate smart cocoa. The case presented by the document is summarized below, comparing the business as usual (BAU) to an alternative, desired future scenario.

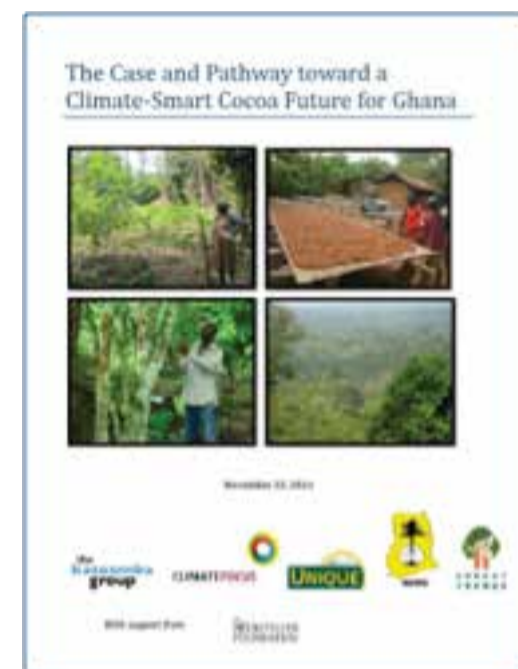
Increase Yields via CSA Practices

Despite being the world’s second largest producer of cocoa beans, average yields in Ghana are less than 400 kg/ha; one of the lowest in the world. The central pillar of the climate-smart cocoa strategy is to increase productivity on farm, potentially doubling production on only a portion of the land currently under cultivation. It will also entail building in measures and practices to reduce emissions from expansion and loss of shade trees, or promoting enhancement of carbon stocks in the farming landscape. Therefore, the primary benefit to small-holder farmers who adopt climate-smart best practices will be a 50%-60% increase in yield and potentially an increase of \$1,000 per year in revenue. Efficiency gains in the farming systems can enable a reduction in the amount of land under cocoa, creating new climate-smart / conservation land use opportunities. To achieve this, farmers will also have access to benefits that include extension and input packages, access to credit, and access to yield insurance.

Organizations involved in the working group, like Cocoa Abrabopa Association, have already demonstrated that with access to appropriate inputs and information farmers can double and triple their yield; however, these efforts are not focused on yielding any climate benefits and can arguably lead to increases in carbon dioxide emissions due to further expansion (reinvesting profits) or shade reduction to increase short-term productivity. It is anticipated that available fast start climate/carbon finance and private sector investment will be channeled to build these climate-smart production platforms.

Cocoa Carbon Opportunity

The climate mitigation benefit of climate smart cocoa production is calculated at 18t CO₂ per ton of cocoa. This constitutes a decrease from the current BAU of 20t to a climate-smart cocoa scenario that emits 2t CO₂ per ton of cocoa produced. Sector emissions reductions are calculated at 14.4 million tons of CO₂. This conservative estimate is calculated based on a 110,000 ha landscape containing 60,000 ha of cocoa farms, under three shade regimes, and 50% ha of intact and degraded forest subject, to a 3% deforestation rate. The biomass



1. BAU in Ghana's Cocoa Sector

- 100+ years of cocoa production
- World's 2nd largest cocoa producer
- BAU strategy based on creeping expansion into new forest lands
- Ghana has now lost 80% of high forest s suitable for cocoa
- Crop characterized by low productivity and reduction in shade trees on farms

2. BAU- Past Decade

- Average cocoa yield < 400 kg/ha. Lowest in world
- Farm expansion drives deforestation and degradation (1.9% - 6.0%/yr).
- In 2008, cocoa covers 1.8 million hectares
- No new lands for expansion except into Forest Reserves
- Farmers face many challenges, including climate change

3. Threats to Cocoa Sustainability




- Climate change already having negative impact on cocoa: changing precipitation patterns, temp, weather events
- Lack of landscape and land use planning causing ecosystem degradation
- Intensification programs w/out links to ecosystem health or climate impact
- Conflicting national policies: 1 million tons vs. REDD+

4. Desired Future State

- Reduce GHG emissions due to expansion into forests and conversion of other high medium carbon stock cocoa lands
- Enhance carbon stocks in low shade cocoa systems
- Improve livelihoods through yield increases on farm and access to mitigation and adaptation benefits
- Demonstrate importance of community land-use planning in CSA cocoa
- Promote biodiversity and ecological resilience of cocoa farming landscape

5. Key Gaps to be Filled to Achieve the Desired

- **Extension:** Enhance productivity and economic returns in CSA manner- inputs, extension services, best practices, and financial products
- **Credit:** De-risk cocoa farming activities linked to CSA strategies through increased access to credit
- **Yield Insurance:** De-risk cocoa farming activities linked to CSA strategies through development of specialized cocoa farm insurance products
- **Landscape Planning:** Reduce cocoa expansion into high carbon lands-capes and increase carbon values on farm landscape- test solution for land tenure and benefit sharing
- **Measuring, Reporting and Verification (MRV):** Manage and link data related to CSA approaches



data used to generate this analysis derives from field-site sampling of biomass in various cocoa and forest land use / vegetation types. The deforestation rate is viewed as a conservative estimate—a land-use change analysis using satellite imagery revealed a 6% rate of deforestation between 2000 and 2011. Agronomic and input data was gathered from cocoa experts, partner organizations, and research institutions.

Community-level Engagement

For more than four years, NCRC and partners have been working with communities and traditional rulers to develop a community resource management area (CREMA) in the pilot Bonsambepo landscape. This CREMA will focus on climate-smart cocoa farming as a means to increase yields and income, land use planning to maintain and benefit from ecosystem services, and conservation of the adjacent forest reserves, which are rich in biodiversity and have eco-tourism potential. The 19 CREMA communities have made significant progress in the CREMA development process. Most recently, the communities drafted a Constitution, which was ratified by all members in September, 2012, and are now moving towards land-use mapping and drafting of CREMA bylaws. While portions of this work have been supported by previous Rockefeller grants, it has also benefitted from support from Norad, IUCN-NL, and DFID.

One of the national REDD+ demonstration projects is envisioned to be a second climate-smart cocoa pilot site. The working group has started a conversation with CRIG, proponents of the project, to share information and link our activities moving forward. The overarching interest in piloting at this site would be to strengthen links to Ghana's cocoa authority, the Cocoa Board (Cocobod) and to test climate-smart cocoa under a different set of ecological and social variables.

Addressing Gaps to Achieving Desired State

The main gaps along the twenty year path to achieving a desired state of cocoa production in Ghana include extension, credit, landscape planning, yield insurance, and MRV. In 2012, the CSCWG outlined 5 scopes of work and drafted specific terms of reference to equip the team with critical information and strategies for filling the identified gaps. Co-funding to support implementation has been leveraged from both the private sector and from DFID to complete these work activities. Table 1 describes progress made on each to date.

Table 1: Status of 5 Scopes of Work Required to Fill Key Gaps

Title of Work Activity	Working Group Lead(s)	Status
Enhancing productivity and economic return to the farmer (farm inputs, extension services, financial products)	Vince McAleer Dr. S.T. Ampofo Dr. Rebecca Asare Consultant	Consultant currently under contract and work underway with expected completion 12/12. Key output-defining climate-smart cocoa farming package and extension program
Managing and linking cocoa sector data related to climate-smart approaches in an integrated manner	John Mason 2 Consultants	The contract under negotiation with 2 consultants to facilitate 2 phased implementation approach. Implementation to begin early 2013. Desire to be Open Source and relevant to multiple sectors (e.g. FC and Cocobod)
De-risking cocoa farming activities linked to climate-smart strategies through developing new insurance products	Lindene Patton Ruka Sanusi Isaac Buabeng Rebecca Asare	A plan of operation has been set up with ZIG, PwC, and NIC to complete the work. Negotiating dates for implementation in early 2013
De-risking cocoa farming activities linked to climate-smart strategies through increased access to credit	Henry Alhassan *Consultant	To build-off of and follow Extension work
Reducing cocoa farm expansion and encroachment into forests via landscape level planning through adaptation of the CREMA mechanisms	John Mason *Consultant *Consultant	Contract signed with lead consultant. In discussions with second consultant



Important Lessons Learned

Methodological Challenges for REDD+

Early Cocoa Carbon and CSCWG technical work influenced the thinking that led this initiative to focus on a climate smart NAMA approach, as compared to a REDD+ project. In assessing the carbon finance potential of a cocoa carbon play, NCRC and FT initially focused on the REDD+ opportunity. However, the feasibility assessment demonstrated that existing VCS REDD+ methodologies are not suited to cocoa landscapes because they are made up of a constantly shifting patchwork of different vegetation types, cocoa shade-tree regimes and land-use conversion practices. From a technical standpoint, for REDD+ to work in this landscape, multiple VCS methodologies would have to be applied across the project area, significantly increasing transaction costs and it was unclear whether the carbon benefits could support project costs and benefit sharing to multiple stakeholders. In the methodological assessment a Plan Vivo option was discussed, and it was recognized that Plan Vivo is significantly more amenable to small-holder projects, but it was also noted that the Plan Vivo standard carries many of its own challenges, including marketability, and therefore it was felt that this was also not a realistic option at that time.


Importance of Forest Definition for Tree Crop Opportunity

In line with requirements under the Clean Development Mechanism (CDM) and by default REDD readiness efforts, Ghana defined its forests as being a minimum of 1 hectare, having at least 15% canopy cover and containing trees that are 5 meters tall. Cocoa is not a native forest species and it also fails to achieve the 5 meter height requirement. Therefore, cocoa cannot be considered a “forest”. The shade trees in the cocoa system, however, could constitute a forest if they offer enough canopy cover and are taller than 5 meters. Thus, the forest definition and type of cocoa system (monoculture vs. shade) have serious implications for the type of REDD+ play that is viable. Were the forest definition to change, then the technical opportunities would also shift. For example, if the government had sent the forest definition at only 2.5 meters in height, then other tree crops, like oil palm, which are native forest species, would constitute a forest and therefore conversion of tropical high forest to oil palm plantations would not qualify for REDD+.

Broader Impacts

Influencing Private Sector

This initiative and its precursor, the Cocoa Carbon project, have been influential in improving the understanding of the private sector and Ghana's Cocobod's with regard to environmental issues that are of concern to the industry. The CSCWG has played a role in steadily changing perceptions within Ghana's cocoa sector about what sustainability means. For example, two years ago sustainability was a term that the sector primarily linked to social responsibility and livelihoods in order to strengthen their buying power and ensure access to cocoa beans. Sustainability also meant good environmental practices, resulting in multiple certification efforts (Rainforest Alliance and UTZ). But discussions around sustainability neither mentioned the climate and changes in rainfall patterns and temperature, nor did it specifically address cocoa's role as a deforestation driver. Only two years ago, major government officials expe-



ssed their view that cocoa had grown in Ghana for the past 100 years, and cocoa would continue to grow in Ghana for another hundred years, despite global warming and climate change predictions. Today, government and private sector companies cite deforestation climate as one of the major threats to sustainability, and CSCWG is partially responsible for this shift having persistently raised the issue at multiple forums over the past three years. According to Andy Harner, the Global Vice President of Mars, “If sustainability is not addressed in cocoa growing regions, crop yields will decrease, prices could spike, and the quality of both beans and finished products will diminish”. And according to Rahul Nair, Managing Director of Armajaro Ghana Ltd, climate tops the list of the four main factors affecting global production. The other three include agronomy, productivity, and pricing.


The CSCWG effort in Ghana also caused a modest shift in the industry’s investment focus. One strong example of this movement is the fact that Armajaro hired a known carbon consulting firm to conduct an assessment of the REDD opportunity in cocoa. In its conclusion, the report did not recommend taking the effort forward; however, the report may have been flawed given that the firm was not abreast of Ghana’s land and tree tenure policies, cultural institutions and social norms, or cocoa practices and landscape. On the other hand, the climate-smart cocoa working group process has helped to raise awareness about the lack of environmental, social and production data that is available about cocoa in Ghana. In 2012, the World Cocoa Foundation piloted a new initiative—CocoaMap—which creates a platform for sharing and accessing data about cocoa production in Ghana. Important private sector companies are certainly paying attention to this space, are seeking guidance to better understand the opportunity, and are willing to invest if the opportunity appears positive.

The CSCWG directly altered thinking within the sector on the perceived links between yield increases and deforestation. Prior to CSCWG being implemented it was widely assumed that a singular focus on increasing yields would not negatively impact deforestation rates. It was further assumed that increasing yield would lead to a reduction in the area under cocoa as farmers would be able to reap the same profits from less land. Ghana’s CSCWG work debunked this myth by widely arguing that farmers are more likely to reinvest profits into new farms in order to increase their profits and secure land tenure through the effort of land clearing.

Raising Awareness and Action on CSA

In Ghana, the CSCWG initiative has played a central role in raising awareness about climate smart agriculture and integrating it into agriculture and forestry projects and programs. In addition to leading the process on climate smart cocoa production, NCRC and FT are also working with the private sector and NGO partners to explore the potential for climate smart systems for oil palm and cashew in Ghana, with a high potential for expansion of these systems to other West African countries.

NCRC / FT participation in the development of Ghana’s Forest Investment Plan (FIP) resulted in the inclusion of a climate smart project on cocoa and agroforestry landscapes (Project 2: Engaging Local Communities in REDD+ / Enhancement of Carbon Stocks; Component 2: promoting a sustainable cocoa and agro-forestry landscape off-reserve that is productive, climate-smart and environmentally responsible). This component, which is supported by



the African Development Bank (AfDB), is expected to receive \$US 8 million in FIP financing to the government and \$US 1.5 million in co-financing. NCRC / FT also played a defining role in shaping Project 3 under the FIP—Engaging the Private Sector in REDD+. This project, which is supported by the International Finance Corporation (IFC) of the World Bank, will make loans (approximate available funding—\$US 8 million) available to the private sector in a manner that seek to address key barriers that discourage private sector engagement in the forestry and other sectors. These barriers include; the high cost of borrowing, lack of technical expertise on REDD and other climate mitigation areas, high upfront and operational transaction costs, and high investment risks for financial institutions.

Road Map for Climate-Smart Cocoa

Heading into 2013 and beyond, the CSCWG's objectives and activities include:

- **Complete the 5 Priority Assignments**—Understanding the nature of the 5 identified gaps to achieving a desired state of cocoa production, and what it will take to fill these gaps is the main priority for 2013. This will happen with leveraged funding from DFID and private sector support from Zurich Insurance Group.
- **Define Climate-Smart Cocoa**—With the completion of the Extension work activity, the working group aims to be able to more clearly define climate-smart cocoa production locally, and outline how it overlaps with on-going efforts in the sector and how it differs. This will be the first time that any effort has been made in Ghana, or across the West African sub-region to do so.
- **Define a clear MRV strategy**—The success of a sector-wide NAMA will require an MRV system that is robust, but can be monitored efficiently. The Working Group therefore envisions establishing clear correlations between adoption of specific farming practices and carbon benefits, coupled with landscape level monitoring (satellite imagery) and random farm-level monitoring. Through community-based platforms, like the CREMA, compliance with climate-smart practices can also be monitored through peer-check systems and community based reporting. This is similar in some respects to the MRV strategy proposed by Unique forestry and land use for climate-smart coffee projects in Ethiopia, but it is not specifically linked to the Sustainable Agricultural Land Management (SALM) methodology approved last year by the Verified Carbon Standard.
- **Implement Climate-Smart Cocoa pilot(s)**—With the five gaps explained and climate-smart cocoa defined, the working group will have a clear picture of what it will take to implement and test climate-smart cocoa production in a cocoa landscape. Thus, the initiative will seek begin testing pilot activities in the Bonsambepo and CRIG project sites with private sector partners.
- **Facilitate private sector investment in Climate-Smart Cocoa**—NCRC and Forest Trends have developed the climate-smart cocoa initiative in Ghana in such a way that cocoa companies can take the lead in piloting , in collaboration with government and NGOs, at the field level. Thus, pilots will aim to leverage co-funding from those companies already invested in the cocoa landscape. Further, the working group will seek to broker support from chocolate companies, whose investment could translate into quantifiable carbon benefits that they could use to off-set their carbon footprint.

