

Cacao, Coffee, and Carbon

Agroforestry Systems and Carbon Markets

Background and Overview

Motivated by the prospects of enhancing the value of sustainably-managed ecosystems and increasing returns to coffee and cocoa farmers, there has been strong interest from a variety of actors in combining carbon crediting with sustainable production of agricultural commodities, especially coffee and cocoa. These crops can be grown under the shade of tree species with high carbon content, but they have also been a significant driver of deforestation and degradation as farmers abandon older, unproductive plots and/or convert nutrient-rich natural forests for cocoa or coffee production.

Nevertheless, few, if any, of these types of agroforestry carbon credit initiatives have gone to market. The purpose of this gathering of technical experts was to identify the obstacles to carbon crediting in agroforestry systems, to assess the viability of overcoming those obstacles, and to outline possible opportunities for developing projects.

The technical experts' meeting was held in Washington, DC on June 19th, 2009. Participants included representatives from a number of organizations and disciplines as listed below:

1. Jonathan Haskett, World Agroforestry Center (ICRAF)
2. Seth Shames, Ecoagriculture Partners
3. Jeff Hayward, Rainforest Alliance
4. Jim Gockowski, Sustainable Tree Crops Program
5. Jacob Olander, Katoomba Incubator
6. Phil Covell, Katoomba Incubator
7. Michael Richards, Forest Trends
8. Fiona Mulligan, The Katoomba Group

By phone:

9. Till Neeff, Ecosecurities

Carbon Initiatives and Key Constraints

Potential

Agroforestry systems for cocoa and coffee production in principle represent promising platforms for carbon sequestration and emissions reductions. Increasing shade cover, enhanced border plantings or associated woodlots can increase carbon stocks, diversify farmer income, provide better habitat for biodiversity, and improve long-term agricultural sustainability. For environmentally certified products, carbon may provide complementary income to leverage a transition to more sustainable production practices. From a business standpoint, existing organizations and marketing channels for cocoa or coffee could provide a strong existing framework for aggregating and commercializing small volumes of carbon credits from many farmers.

There has been strong interest from a variety of actors in these agricultural commodity markets, including producers, brokers, wholesalers, retailers and financiers, as well as aid agencies and donors. Nevertheless, few, if any, of these types of agroforestry carbon credit initiatives have gone to market. The low marginal value of additional carbon sequestration has been one barrier, as has been the lack of proved, broadly accepted methodologies for project design, and unclear land title and policy environments in some countries.

Constraints

There are a range of constraints and questions that need to be addressed before moving forward with sustainable cocoa and coffee initiatives. Although there is considerable potential for integrating carbon finance into agroforestry systems, to date initiatives have failed to reach the market. Critical factors that directly impact these systems are additionality, permanence, volumes, production trade-offs, cost barriers, methodologies, and access to carbon markets.

A significant number of agroforestry systems already incorporate tree cover as common practice, which makes this biomass an integrated part of the system that would occur even if participants were not receiving additional benefits from selling carbon credits. In addition, agricultural systems are by nature dynamic (perhaps even more so than forestry systems), and any additional carbon storage created by a shaded system may be temporary and prone to future conversion. Even if these systems are able to sustain a stable increase in carbon storage, the additional volumes of carbon are relatively small and provide only minimal improvements to the income of the farmer, an effect that is magnified when primary commodity production declines due to increased tree cover are not balanced by an increase in income from the sale of carbon credits.

The issue of cost barriers is also noteworthy, as the expenditures necessary for project development and monitoring tend to be prohibitively high, relative to the volume of carbon generated per hectare or per farm. Lack of applicability or eligibility under existing methodologies is another concern, with many improved agroforestry systems not satisfying definitions of “forest” or “reforestation.” Limited access to carbon markets combined with legal, social and institutional issues such as land and tree tenure and unclear government policies contribute to the complex issues surrounding cocoa and coffee agroforestry.

Major Themes and Trends

Productivity trade-offs and economic variables

While the potential for carbon credits to generate significant income does exist, the issue of effective trade-off needs to be carefully considered. Carbon payments alone are frequently insufficient incentive for forest conservation for a number of reasons, ranging from cultural resistance to change to the fact that the payments received from carbon credits may only be equal to if not less than what the farmer may be receiving for producing no-shade crops. For example, light shade intensified cocoa production can have up to 800kg in cocoa yield, where as multi-strata biodiverse growth may only reach 400kg. Up to 200kg worth of profit may be made up for with alternative forest product compensation, but that still leaves a difference of 200kg worth of profit to make up for, which equals or is even less than what would have to be paid to farmers to compensated for shade grown farming practices reducing crop yield. The question of whether or not environmental service payments can cover this difference remains undetermined.

Due to declining yields from unsustainable practices, these trade-offs may be much lower over a longer time horizon. However, when benefits may only be seen outside of the scope of a single generation, it is difficult to convince people of the worth of the change, especially as the initial input required to start a project is significant. Because of this, coffee and cocoa producers are continuing to seek better short-term returns, and until the returns can be clearly demonstrated to outweigh the benefits of current no-shade practices, it will be difficult to convince participants of the benefits to be found in sustainable agriculture.

Unfortunately, agroforestry commodity crops can be key drivers of deforestation and degradation, and a potential pathway of conversion to full agriculture. If additional off-farm carbon benefits of reducing deforestation through more sustainable farming practices can also be captured, this may further shift the balance towards sustainable systems. Forest carbon can theoretically be increased at the landscape or farm level by intensification of production (including full-sun, high-input systems) linked to forest conservation measures or by increasing carbon stocks in agricultural systems (potentially at the cost of declining per area output). More detailed analyses of these tradeoffs and alternatives in varying local contexts would be valuable.

In general, lack of adequate economic analyses and data factoring in carbon benefits is currently a key gap that warrants attention.

Carbon Accounting Methods

Marketable forest carbon offsets increasingly depend on using rigorous, broadly-accepted standards and methods for project design and carbon accounting (e.g. Voluntary Carbon Standard; Climate, Community and Biodiversity Standard; approved Clean Development Mechanism methodologies). Many forestry projects under the CDM were initially held back by the lack of approved methodologies. Development of carbon projects based on agroforestry systems may be constrained by a lack of eligible, applicable methodologies.

However, it does not seem that lack of methodologies is a primary constraint to project development, at least within the voluntary market. Rainforest Alliance has field-tested and applied AR-AM004 as well as preparing a guidance documents for its use in coffee agroforestry systems. Definitions of “forest” and

“reforestation” will still need to be resolved since many carbon enhancement activities in coffee systems do not move systems from non-forest to forest, according to nationally adopted Kyoto definitions.

EcoSecurities has also developed a REDD methodology applicable to coffee “forests” at risk of conversion, currently undergoing CCB validation. A key methodological challenge here, representative of many agroforestry and smallholder forestry projects, is the definition of project boundaries, which will expand over time with new entrants. Sampling approaches commonly applied in group certification schemes (e.g. FSC) can address some of the cost and logistical challenges, posed by many participants scattered over a landscape. One question in this regard is the extent to which individual project areas, often small, will need to be individually demarcated, measured and mapped as separate polygons (with potentially fatal transaction cost implications).

Many coffee and cocoa agroforests will have difficulty demonstrating additionality or cost-effectively measuring, monitoring and reporting on carbon stocks and changes. Approaches that reward carbon stocks would be useful. Current discussions of REDD+ may provide options. Rainforest Alliance is also in the process of developing certification guidelines for “climate-friendly” coffee, which recognizes farmers with increased tree cover and other climate benefits. While not generating an offset, this certification aims to provide recognition and a price premium for farmers who maintain and enhance carbon stocks.

Policy and Legal Issues

Policy and legal issues also currently constrain development of these project types. The current global uncertainty regarding REDD policy and mechanisms of course limits overall investment. Some other issues, both at the international and national levels will need to be resolved to realize the potential in this sector:

- *Project-based versus national approaches.* It is unclear to what extent and how a post-Kyoto REDD(+) and forest carbon regime will recognize project-level activities. A growing consensus is seen around the need for national-level mechanisms and accounting frameworks, while it is also clear that project activities are essential for local results and could provide an effective channel for investment. Some participants argued that national level policy approaches were of primary importance in being able to drive the large-scale shifts in land-use, populations, intensification and technologies to reduce pressures on forests. Others emphasized projects as important, measurable stepping stones to these broader outcomes. Reaching national and regional scales will almost certainly require project-type activities (site-specific investments and activities) as well as national policy changes (changes in subsidies and tariffs, land tenure arrangements, investment in research and development).
- *Land, tree and carbon tenure* is a particular thorny issue. Very few countries have regulatory frameworks governing carbon rights. But questions of tree tenure, delinked from land tenure, as is the case in Ghana, for example, further complicate possibilities for long-term investments in forest maintenance.

Transaction Costs

Agroforestry projects also face challenges in terms of transactions costs, especially given that farmers are often small or medium-sized producers scattered over the landscape, and often potentially generating relatively modest (per hectare) carbon benefits. Transaction cost barriers include:

- *Cost of initial project design:* can be reduced with user-friendly tools, approved methodologies and increased local capacity in the developing world.
- *Monitoring and measurement:* Given relatively small carbon volumes cost-efficiency is critical. Review of successful, low-cost monitoring and measurement approaches would be very productive. Improved technology, coupled with community-based monitoring may also be effective. WWF and ICRAF are developing approaches under the Rainforest Challenge Project (<http://www.worldagroforestrycentre.org/news/Default.asp?NewsID=%7BE53A26D7-E0BA-4182-B3F5-E23A1A412F20%7D>). Group certification approaches and well-designed sampling regimes can also contribute to cost reduction.
- *Aggregation:* Bringing together multiple smallholders through aggregation mechanisms will be essential to achieving economies of scale. Coffee and cocoa provide promising platforms for aggregation through existing producer, processing, commercialization and finance organizations. Bundling carbon transactions into commodity commercialization (e.g. Anacafé, Nicaragua, Rainforest Alliance) or credit mechanisms (FICAFE, El Salvador) show promise.

Initiatives and Organizations

Technical experts and project developers include:

- Ecologic (<http://www.ecologic.org/>)
- GTZ (<http://www.gtz.de/en/>)
- Rainforest Alliance(<http://www.rainforest-alliance.org/>)
- Conservation Company (<http://www.conservation-company.com>)
- EcoAgriculture Partners(<http://www.ecoagriculture.org/>)
- Winrock International (www.winrock.org)
- EcoSecurities (<http://www.ecosecurities.com/>)
- ICRAF (<http://www.worldagroforestry.org/af/index.php>)

Future areas of Interest

A preliminary discussion of issues and approaches has led to the conclusion that further study and work is necessary to fully understand the issues surrounding agroforestry and the possibilities for project implementation. Future areas of interest identified by this expert group include:

- Information exchange – potentially using the Forest Carbon Portal (www.forestcarbonportal.com)
- Identification of additional groups and individuals working on coffee, cocoa and other agroforestry systems for carbon markets
- Field testing and feedback to Rainforest Alliance on project developer guidance document for coffee agroforestry systems
- Improving financial assessment tools and data for a variety of AR or REDD activities associated with cocoa and coffee
- Piloting projects as proofs of concept
- Exploring aggregation platforms, particularly through finance, producer organizations, and commercialization

