CIAT policy brief

Shared Value: Agricultural Carbon Insetting for Sustainable, Climate-Smart Supply Chains and Better Rural Livelihoods

Abhishek Banerjee, Eric Rahn, Peter Läderach, and Rein van der Hoek

The relentless advance of climate change negatively impacts farmers, businesses, and consumers by putting greater pressure on natural resources, making the weather more unpredictable, and depressing crop productivity. To cope with climate change requires multilateral efforts that draw on the experience of farmer groups, research and development organizations, and the private sector. One increasingly important focal point for such efforts is an approach referred to as carbon insetting, which offers the private sector a means to create shared value for the benefit of all stakeholders. The approach can make a company's value chain more productive and resilient, sustaining supplies over the long term. By creating synergies between climate change mitigation and adaptation in agriculture (e.g., through practices such as agroforestry), carbon insetting can also generate incentives and funding for climate change adaptation while enhancing farmers' livelihoods.

Key Messages

- Carbon credit projects provide a suitable framework for climate change mitigation and adaptation.
- The shared-value model has the potential to enhance a company's competitiveness, while also improving the economic and social conditions of the communities in which it operates.[1]
- Unlike carbon-offset approaches, carbon insetting offers benefits for the communities on which companies rely. Companies can benefit from shared value, while reducing their greenhouse gas emissions and investing in the resilience of their corporate supply chains.
- Compensation schemes have the potential to improve farmers' livelihoods and promote adaptation to climate change, while guaranteeing the sustainability of ecosystem services.
- Partners in carbon credit projects should include farmer cooperatives, the private sector, development organizations, universities, and other research institutes whose interests are aligned with project goals.
- Compensation can be offered through the sale of carbon credits, via direct payments, or, alternatively, in nonmonetary forms, such as capacity strengthening.

1. Porter and Kramer (2011).

Carbon Insetting versus Carbon Offsetting

Carbon insetting refers to any activity that reduces greenhouse gas (GHG) emissions or sequesters carbon and is linked to the supply chain or direct sphere of influence of a company that supports or is responsible for the insetting activity. Taking the form of credit trading or other compensation or support for the carbon-insetting activity, its purpose is to generate shared benefits for partners, in addition to the benefits of climate change mitigation itself.

Carbon offsetting, in contrast, refers to compensation for GHG emissions outside the company's supply chain or sphere of influence and without additional benefits. For most food products, the potential for GHG mitigation exists mainly on farms.

The Business and Social Case for Shared Value through Carbon Insetting

This policy brief is about creating shared value in supply chains involving agricultural systems, which are the largest managed ecosystems on earth. They offer multiple opportunities for improving farmers' livelihoods while also providing ecosystem services, such as water conservation and carbon sequestration.

Businesses may derive purely performance-based benefits from agro-ecosystems as well. For example, the reduction of carbon and water footprints can lower a supply chain's resource requirements, helping to avoid raw material scarcity and price increases while reducing pressure on the ecosystem. Likewise, improved farm management can increase productivity, thus improving supplies of agricultural raw materials. By those and other means, companies can sustain their competitive advantage in the marketplace and at the same time deliver social goods – the essence of shared value.

When a company decides to invest in its supply chain and engage in projects to realize the benefits of shared value, it must conduct life-cycle analyses to assess the environmental impacts associated with all stages of a product's life. Such analyses frequently show that the largest impacts occur either upstream (in farming) or downstream

What is Shared Value?

The concept of "creating shared value" was best described by Harvard Business School professor Michael Porter and FSG Co-founder Mark Kramer. It is steadily gaining support among business experts and management, who increasingly recognize that the "competitiveness of a company and the health of the communities around it are closely intertwined."

Creating shared value represents a break from the traditional notion of corporate social responsibility – a means by which companies "give back" profits to society through social services. Unlike corporate philanthropy, the shared value concept does not reflect the personal values of a company's management but rather is concerned with the creation of economic value from social value.

Figure 1. Corporate Social Responsibility (CSR) vs. Creating Shared Value (CSV). (Adapted from Porter and Kramer, 2011).

(in consumption). To achieve environmental sustainability, companies must find ways to achieve quantifiable reductions in up- and downstream impacts – goals to which agriculture can contribute importantly.

In today's vertically disintegrated supply chains, companies do not own their suppliers' farms. So, in order to change traditional practices, companies need to create mechanisms for compensating farmers and offering them incentives. While this can be done through direct payments for ecosystem services, the market for carbon credits has the benefit of being far more developed and credible than other alternatives. Carbon credits are one of the few viable means to compensate farmers financially for practices that guarantee the sustainability of ecosystem services and help mitigate climate change. Many activities leading to mitigation yield other positive environmental benefits as well, such as watershed and biodiversity protection.

Most carbon credit approaches to date have centered on carbon offsets, originating outside a given supply chain, and have involved no direct relation between the supplier and buyer. For companies to gain the benefits of shared value, they need to engage in carbon insetting, in which the carbon credits generated by farmers are marketed directly to buyers within the same supply chain. Agricultural companies wishing to reap the benefits of shared value can do so by engaging in carbon-insetting projects.

What benefits can accrue to would-be partners in carbon insetting and similar activities? This question is particularly important for businesses, which must be convinced that the benefits justify their engagement. For nonprofit development organizations and agricultural research institutes, the challenge is different. Funded primarily

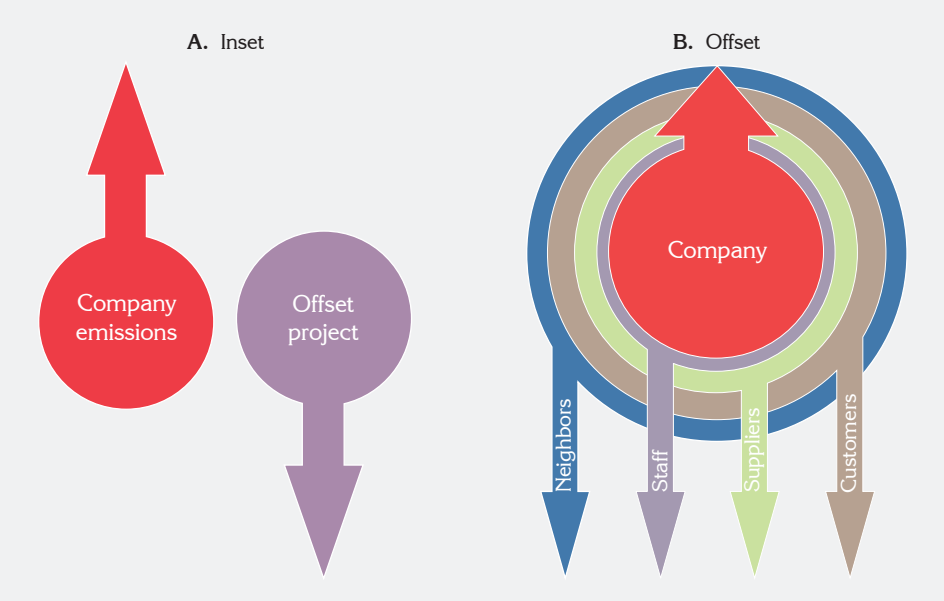

Figure 2. Offsetting vs. insetting (adapted from Tipper et al., 2009).

through grants and donations, they need to acquire long-term projects that achieve large-scale impacts. Engagement with the private sector and government is critical for that purpose. Only by integrating climate change mitigation and adaptation into supply chains to strengthen farmers' livelihoods, can these activities be scaled out and made sustainable.

Agricultural carbon-insetting projects can leverage the combined efforts, knowledge, and resources of the research, development, and corporate communities. Such projects enable companies to reduce their overall GHG emissions, while enhancing the resilience of their supply chains. Research institutes and development organizations gain new and powerful partners to help realize their missions. Mitigation activities offer farmers a new source of support for improving their livelihoods and climate change resilience through the payment of carbon credits and related capacity strengthening.

Integrating those activities into supply chains can create win-win solutions for farmers, corporations, and consumers. The challenge is to create synergies between mitigation, adaptation, and livelihood benefits and to determine the appropriate levels of monitoring and compensation. Without rigorous standards, companies run the risk of trying to compensate low in order to attain shared value or of making monitoring too expensive for farmers. Even so, any investment that offers real benefits for farmers is better than none.

Project Characteristics

Any agricultural carbon-insetting project must meet certain basic criteria:

- To qualify as insetting, all carbon mitigation work and any associated compensation must remain within the supply chain of a single participating business or a consortium of businesses.

- Any mitigation effort must be shown to not cause leakage, or the transfer of emissions outside project boundaries. For example, expanding the agricultural area to compensate for decreased productivity caused by mitigation activities merely results in deforestation elsewhere.

- The permanence of carbon sequestration achieved through alternative land uses must be demonstrated by means of perpetual maintenance, attribution, and monitoring plans. Risk buffers, such as excluding a percentage of planted trees from the sale of carbon credits, provide assurance against the risk of forest fires and other threats of deforestation.

- In order for mitigation activities to qualify for carbon credits, it must be shown incrementally that they are additional, meaning that these activities would not have occurred in the natural course of business.

Key Project Activities

Any carbon-insetting project will have three main elements: (1) identification and execution of mitigation activities; (2) ongoing monitoring and training; and (3) compensation and funding.

Identification: Carbon mitigation can be achieved through either reducing GHG emissions or maintaining and/or increasing the carbon sequestration potential of farmland. In response to concerns about permanence, sequestration activities must be carefully evaluated and accompanied by risk buffers to qualify for carbon credits. Carbon sequestration through agroforestry systems may create other benefits, such as increased biodiversity and water availability as well as improved agricultural productivity.

The choice of carbon sequestration versus emissions reductions will vary from project to project. On-farm realities, such as the degree of deforestation and pasture degradation, prevalent agricultural practices, technical expertise, and even legal and public incentives, will further indicate which mitigation activities can be implemented.

The Cool Farm Tool, developed by the University of Aberdeen, UK, in collaboration with Unilever and the Sustainable Food Lab, is useful for gaining an *ex-ante* understanding of mitigation potential. Using the Tier II methodology of the Intergovernmental Panel on Climate Change (IPCC), the tool allows for relatively simple footprint analysis. Moreover, it is not as data intensive as other models (e.g., CALM Calculator, EX-ACT Carbon-balance Tool, DAYCENT, and DNDC).

Monitoring: Once carbon mitigation activities have been defined, farmers and other partners must be provided with appropriate training to make the project sustainable over the long term. Moreover, all incremental GHG emissions reductions and carbon sequestration must be monitored over time, according to carbon certification standards or internal project guidelines. Although any entity may perform those activities, development organizations are generally the best candidates, as they possess both the technical skills and local contacts to provide effective training and monitoring.

Compensation: Finally, proper channels must be identified for project funding or farmer compensation. Carbon-insetting projects have traditionally been funded through the generation of carbon credits from farm-level activities. But project partners may also wish to explore these alternatives:

- *Sale of carbon credits:* Mitigation activities can be validated by third-party carbon certification agencies, yielding credits to be sold on carbon markets. The principles of carbon insetting mandate that the business involved in the project buy those credits; otherwise, they will be considered as carbon offset by a third-party purchaser. The third-party audit makes this option attractive to private sector partners, but it also raises monitoring and transaction costs. Which certification mechanism is chosen will determine the mitigation activities that can be implemented and the compensation received. The Clean Development Mechanism (CDM) offers the greatest credibility and compensation but also has a very strict certification regime. Plan Vivo, in contrast, is far more flexible about the projects it certifies, though its credits sell for a correspondingly lower amount.

- *Nonmonetary compensation:* This option is suitable only for mitigation activities from which farmers receive economic benefits directly. There is no restriction on the funding source, since these projects have positive net present value and generate revenue that can be used to pay back any nongrant funding. This option's fixed payback period makes it the easiest to sell to businesses but also severely limits the scope of its activities. An example is livestock production in silvopastoral systems, which yields supplementary income from forestry products; another is planting trees from which timber can be sustainably harvested and sold.

- *Direct payment:* In this case, businesses directly compensate farmers for mitigation activities. Project partners can thus define the guidelines for compensation, monitoring, and execution, thus avoiding the transaction costs of third-party certification but also lowering marketability. An example of this methodology is outlined in the Environmental Services Index, developed for alternate land uses by the Center for Tropical Agricultural Research and Higher Education (CATIE, its Spanish acronym) in Nicaragua.

Project Partners

A well-conceived project for agricultural carbon insetting engages farmer cooperatives, development organizations, universities and other research institutions, and, of course, the private sector. Almost any not-for-profit organization can take part in such a project, as long as it is consistent with the organization's development mission. But private-sector partners are not singularly guided by a desire to improve the well-being of farmers. So, they must be selected on the basis of a good understanding of their motivation for engagement. While most major corporations are familiar with the notion of shared value, they have internalized it to varying degrees and on that basis may be divided into three groups:

- The best partners are companies fully committed to creating shared value. They recognize that this is a means to gain long-term competitive advantage and will assign the work higher priority than short-term financial performance.

- Next are companies whose goals are related to shared value but who consider this a lower priority than financial performance, either by choice or because of market constraints.

- Finally, there are companies that see only reputational value in carbon-insetting projects and treat them primarily as marketing initiatives.

A company's motivation for taking part in a carbon-insetting project will determine its resource commitments. While certainly it is preferable to engage with companies in the first group, this is not always feasible. Project leadership must play close attention to a potential partner's past performance to ensure that it will

Case Study: Coffee Carbon Insetting in Nicaragua

According to recent projections, climate change will lower coffee yields in Nicaragua during the coming decades, as the conditions suitable for coffee production shift to higher altitudes. This development threatens not only the livelihoods of current coffee producers and related businesses in their communities but also the interests of companies trading in coffee.[2]

In response, a Consortium was formed to develop a payment-for-ecosystem-services project aimed at improving smallholders' livelihoods, while mitigating climate change and making agricultural systems more climate resilient. The Consortium members are CIAT, FLO-CERT, Catholic Relief Services (CRS), Sustainable Food Lab, four Nicaraguan coffee cooperatives,[3] and a private-sector partner. Together, the partners possess a large body of knowledge and experience of applied climate science, adaptation and mitigation strategies, and GHG measurement and are actively involved in projects with Nicaraguan farmer organizations as well as in strong learning networks and relationships with current and potential global stakeholders in carbon projects.

2. See Läderach et al., 2010.
3. The four cooperatives are: Promoter of Cooperative Development in Las Segovias (PRODECOOP), Union of Agricultural Cooperatives of San Juan del Río Coco (UCA SJRC), Union of Multifunctional Organic Coffee Producers (UCPCO), and Regional Cooperative of Coffee Growers of San Juan del Río Coco (CORCASAN). All in the department of Madriz in Northern Nicaragua.

engage appropriately throughout the project. Of course, there is always the possibility that a company in the third group may shift to the first, once it realizes the full benefits of creating shared value through carbon-insetting activities.

The partnership has been buying carbon credits from renewable-energy projects outside the company's supply chain to reduce corporate emissions. But then the company became interested in buying carbon credits directly from farmers, based on studies showing strong synergies, particularly for coffee, between climate change mitigation and adaptation and livelihood benefits from agroforestry systems. On-farm emissions have been found to account for 55% of the full carbon footprint of a single cup of coffee.

First, the Consortium assessed current GHG emissions and carbon stocks, using the Cool Farm Tool, based on interviews with 60 farmers and visits to 21 farms and 4 centralized postharvest facilities. The following practices were evaluated: afforestation/reforestation, REDD,[4] wastewater treatment, efficient cooking stoves, agricultural land management, improved forest management, conversion of biomass to energy, water purification, and solar-thermal energy generation. Then, Consortium members identified the climate change impacts and adaptation needs of participating producers, based on interviews with 96 of them, regarding indicators of climate sensitivity and adaptive capacity. The results were combined with modeled exposure of crops to climate change.

Next, the Consortium assembled an inventory of possible mitigation activities, based on two criteria: (1) high possibility of qualifying for carbon credit certification and (2) relevance to farmers' needs. Afterwards, Consortium members identified the most suitable and cost-effective measurement and certification standards for the project. Finally, they discussed the results with farmers and the private-sector partner to obtain feedback.

The study found afforestation/reforestation (A/R) projects to be the most promising of several options for generating carbon credits.[5] These projects can be implemented on or off the coffee plots by diversifying the shade trees in simple coffee/legume-tree systems, planting trees to form living fences, implementing new coffee agroforestry systems on degraded sites, implementing the Quesungual system on bean–maize plots, and establishing silvopastoral systems. To simplify monitoring, a maximum of 5–10 tree species are under consideration. Farmers prefer living fences and coffee agroforestry systems on degraded sites.

The appropriateness of these options depends on the production system (organic/conventional, high/low shade, etc.) and its vulnerability to the effects of climate change. Different activities involve different synergies between mitigation, adaptation, and livelihood benefits at different sites. Given the need for flexibility, Plan Vivo was identified as the most appropriate third-party certification mechanism.

4. REDD: United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation.

5. Carbon sequestration activities are often considered to be offsets (e.g., PAS 2050), even when generated within the value chain. But because these offsets contribute to climate change adaptation and generate livelihood benefits for farmers, thus enhancing supply-chain resilience, they are considered here as carbon insetting as well.

Policy Recommendations

- The private sector should be engaged on the basis of shared-value principles to demonstrate how creating social value can generate economic value.
- Incentives such as tax subsidies, direct government assistance, and preferential access to resources are needed to overcome obstacles to the participation of more businesses in the creation of economic value through social value.
- To implement carbon-insetting projects that involve smallholder farmers requires the identification of synergies between mitigation, adaptation, and livelihood benefits.
- Regulatory agencies should invest more in measuring environmental performance and introducing standards, phase-in periods, and technology to improve the environment while promoting innovation and increasing competitiveness.[6]
- Easy-to-use methods for carbon credit projects are needed to widen adoption of the carbon-insetting approach and to include a greater variety of practices for achieving food security and climate change mitigation and adaptation.

6. Porter and Kramer (2011).

Further reading

Davis A; Méndez E. 2011. Prioritizing food security and livelihoods in climate change mitigation mechanisms: Experiences and opportunities for smallholder coffee agroforestry, forest communities and REDD+. Policy Brief. Salvadoran Research Program on Development and Environment (PRISMA), San Salvador, El Salvador. Available at: http://ccafs.cgiar.org/sites/default/files/assets/docs/davisavemendez_prioritizingfoodsecclimatemitigationcoffeeredd_prisma11.pdf

Läderach P; Haggar J; Lau C; Eitzinger A; Ovalle O; Baca M; Jarvis A; Lundy M. 2010. Mesoamerican coffee: Building a climate change adaptation strategy. CIAT Policy Brief No. 2. Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia. 4 p. Available at: http://ciat.cgiar.org/wp-content/uploads/2012/12/policy_brief2_mesoamerican_coffee.pdf

Pagiola S; Ramírez E; Gobbi J; de Haan C; Ibrahim M; Murgueitio E; Ruiz JP. 2007. Paying for the environmental services of silvopastoral practices in Nicaragua. Ecological Economics 64(2):374–385.

Porter M; Kramer M. 2011. Creating shared value: How to reinvent capitalism – and unleash a wave of innovation and growth. Harvard Business Review [online]. 89(1/2):62–77.

Tipper R; Coad N; Burnett J. 2009. Is 'insetting' the new 'offsetting'? Technical Paper TP-090413-A. Ecometrica Press. Available at: www.ecometrica.com/assets//insetting_offsetting_technical.pdf

Correct citation

Banerjee A; Rahn E; Läderach P; van der Hoek R. 2013. Shared value: Agricultural carbon insetting for sustainable, climate-smart supply chains and better rural livelihoods. CIAT Policy Brief No. 12. Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia. 6 p.

About the authors

Abhishek Banerjee is an MBA candidate, Class of 2013, at the Harvard Business School, and was the Shared-Value Advisor for CIAT's Decision and Policy Analysis (DAPA) Research Area in Managua, Nicaragua. abanerjee@mba2013.hbs.edu

Eric Rahn, a Climate Change and Agriculture Expert, was a Visiting Researcher in CIAT's DAPA Research Area in Cali, Colombia, and currently works at the Swiss Federal Institute of Aquatic Science and Technology (Eawag). rahn_eric@yahoo.com

Peter Läderach, a Climate Change Specialist, is CIAT's contact point for the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and CIAT's DAPA Research Area leader for Central America and the Caribbean. p.laderach@cgiar.org

Rein van der Hoek is the coordinator of CIAT's Tropical Forages Program in Central America and the Caribbean. r.vanderhoek@cgiar.org

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security CCAFS