What is needed to make REDD+ work on the ground?

Lessons learned from pilot forest carbon initiatives

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Cover photos, top to bottom:

a. Stakeholder engagement meeting in the Alto Mayo REDD+ initiative, Peru.
b. Muriqui monkey (*Brachytelles hypoxanthus*) in the Atlantic Forest, Brazil.
c. Aerial view of a Kayapó village in the Xingu Basin, Brazil.
d. Field visit to a restoration site in the Quirino reforestation initiative, Philippines.

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Table of contents

Boxes

Tables

Figures

Abbreviations + acronyms

A/R	Afforestation/Reforestation
AIDER	Association for Integrated Research and Development (Peru)
AMPF	Alto Mayo Protected Forest (Peru)
AVMM	Association of the Virgin of the Miraculous Medallion (Peru)
BH	Biodiversity Hotspot
CAR	Regional Autonomous Corporation (Colombia)
CAZ	Corridor Ankeniheny-Zahamena (Madagascar)
CCBA	Climate, Community, and Biodiversity Alliance
CCB	Climate, Community, and Biodiversity (Standards)
CDM	Clean Development Mechanism
CER	Certified Emissions Reduction
CI	Conservation International
CO_2e	Carbon Dioxide equivalent
COP	Conference of the Parties
CPA	CDM Programme Activities
DBH	Diameter at Breast Height
DNA	Designated National Authority
EAAB	Bogotá Water and Sewage Company (Colombia)
EB	Executive Board
ECOAN	Association of Andean Ecosystems (Peru)
EDF	Environmental Defense Fund
ES	Ecosystem Services
FS	Flagship Species
GHG	Greenhouse Gas
GIS	Geographic Information System
GPG	Good Practice Guidelines
ha	Hectares
IEF	Minas Gerais State Forest Institute (Brazil)
IMAZON	Amazon Institute for People and the Environment (Brazil)
IPAM	Amazon Environmental Research Institute (Brazil)
IPCC	Intergovernmental Panel on Climate Change
ISA	Socio-environmental Institute (Brazil)
LULUCF	Land Use, Land-use Change and Forestry
MBR	Maya Biosphere Reserve (Guatemala)
NGO	Non-governmental Organization
PDD	Project Design Document
PES	Payment for Environmental Services
PoA	Programme of Activities
PROMATA	Project for the Protection of the Atlantic Forest (Minas Gerais State, Brazil)
REDD+	Reducing Emissions from Deforestation and Forest Degradation, plus conservation, sustainable management of forests and enhancement of forest carbon stocks
SDA	District Environment Secretary (Brazil)
TAMS	Tetik' Asa Mampody Savoka ("Return the Fallows to Forest") (Madagascar)
tC	tons of Carbon
tCO_2e	tons of Carbon Dioxide equivalents
TNC	The Nature Conservancy
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VER	Verified Emissions Reduction

1. Executive summary

The Tikal archaeological site, located within the Maya Biosphere Reserve, Petén, Guatemala.

Technical partner, AIDER, in Peru doing fieldwork to collect biomass data.

Black-and-white Ruffed Lemur *(Varecia variegata)*, found in native forests near the CAZ and TAMS initiatives, Madagascar.

Community members locating potential project boundaries on a satellite image in the Selva Lacandona initiative, Mexico.

1. Executive summary

There is now unprecedented global recognition of the urgent need to sharply reduce rates of deforestation and forest degradation to help avert dangerous levels of climate change. At the United Nations climate negotiations in Copenhagen in December 2009, the international community recognized in the Copenhagen Accord "the crucial role of reducing emissions from deforestation and forest degradation and the need to enhance removals of greenhouse gas emissions by forests" and agreed on the need to provide positive incentives for REDD+. With this new international mandate to tackle deforestation and forest degradation, there is now an urgent need for detailed guidance on how to design and implement field activities that effectively achieve emissions reductions.

In order to provide preliminary insights into what will be needed to make REDD+ work on the ground, we analyzed the experiences of 12 pilot forest carbon initiatives in nine countries (five REDD+ pilot initiatives, and seven reforestation activities), in which Conservation International (CI) has been involved as a partner. The 12 initiatives analyzed include reforestation activities in Brazil, China, Colombia, Ecuador, Madagascar and the Philippines, and site-scale, pilot REDD+ initiatives in Brazil, Guatemala, Madagascar, Mexico and Peru. Located in nine countries and spanning the Asian, Latin American and African regions, these initiatives represent a broad range of geographic, socioeconomic and biophysical conditions and provide a unique opportunity to examine the challenges and opportunities of implementing forest carbon initiatives in different contexts. All 12 initiatives are in their initial stages of design and/or implementation, and provide a window into the early challenges that efforts to implement REDD+ will likely face.

We focus our analysis on five main issues that will be critical for success: 1) creating effective on-the-ground partnerships and capacity; 2) ensuring that forest carbon initiatives are backed by rigorous technical and scientific analyses; 3) attracting the needed financial resources for development; 4) successfully engaging stakeholders in project design and implementation; and 5) ensuring active government support to field activities. For each of these issues, we provide an overview of how the 12 forest carbon initiatives have dealt with these issues, and highlight both the challenges and opportunities encountered from the perspective of the project managers and partners involved. In addition, we provide key recommendations to field managers of forest carbon initiatives, as well as to policy makers on how to ensure these activities result in effective on-the-ground emissions reductions. Our analysis is based on the results of detailed surveys (n=124) and interviews (n=86) of project partners and managers, field visits to eight project sites, an expert workshop of approximately 30 CI project managers, as well as detailed analyses of individual case studies. Our insights relate primarily to the initial (design and start-up) stages of the development of forest carbon initiatives, and are based on a project manager's perspective.

Partnerships for forest carbon initiatives

Description of existing partnerships:

All of the 12 forest carbon initiatives surveyed have created diverse, multidisciplinary partnerships to ensure that they have the necessary skills and expertise to successfully deliver emissions reductions. The size and composition of these partnerships varies greatly, from small partnerships of only three organizations, to complex partnerships of more than 15 organizations, including NGOs, government agencies, local communities, indigenous groups and the private sector. Because most of the partners surveyed had little or no previous experience in forest carbon, the partnerships have often had to recruit additional technical partners or hire outside consultants to help design and implement forest carbon activities. In addition, all of the initiatives have had to dedicate significant time and resources to building capacity on forest carbon issues (both within the partnership and with local stakeholders). Despite these efforts, several of the partnerships still have key expertise gaps, particularly related to legal and financial aspects of forest carbon initiatives.

Factors that have facilitated effective forest carbon partnerships:

For a forest carbon initiative to be successful, the partnership must include a combination of technical expertise in forestry, biomass measurements and carbon accounting; experience in stakeholder engagement; familiarity with the local conditions; solid project management skills; and detailed knowledge of relevant national and international laws and policies. Beyond the necessary expertise, to be successful, partnerships must also include partners with significant knowledge of the project area and strong credibility with local communities; solid, pre-existing working relationships among project partners; partnerships with organizations that have broad expertise in forest carbon; a common vision for the forest carbon initiatives; the desire to develop multiple-benefits forest carbon initiatives (so that the project delivers more than just carbon); and a strong central partner who coordinates activities, clarifies roles and responsibilities and facilitates communication.

Challenges encountered in forest carbon partnerships:

Some of the common challenges encountered by the 12 forest carbon initiatives in maintaining effective partnerships have included the limited resources of partners to dedicate to forest carbon activities (especially to stakeholder engagement and training), important gaps in capacity within the partnerships (particularly in stakeholder engagement, and legal and financial issues) and differing levels of expertise and familiarity with forest carbon issues among partners. In addition, in at least two initiatives, the long lag time between the development of the forest carbon initiative and the availability of funding for design and implementation has resulted in some partners losing interest. Some partnerships have also had problems due to the lack of strong leadership, coordination and communication—an aspect which is critical, given the multidisciplinary and novel nature of these initiatives.

Technical aspects of forest carbon initiatives

Status of technical work in the 12 initiatives:

In order to measure the potential mitigation benefits of forest carbon initiatives, a wide range of technical analyses must be undertaken. These include identifying and delineating the project boundaries, assessing the eligibility of lands (for reforestation activities), measuring biomass stocks, conducting analyses of historical land-use change, establishing the without-project emissions scenario along with the expected with-project net emissions benefits and creating a monitoring plan, among others. All 12 of the forest carbon initiatives surveyed have dedicated significant time and resources to this technical work, and have either completed or are in the process of identifying the boundaries of the area(s) where forest carbon activities will take place, estimating the carbon (biomass) stocks in the project area and establishing their emissions baselines. Many of the initiatives have also conducted socioeconomic and land-tenure analyses in order to inform the design of field activities. In most cases, the technical work has been conducted by Conservation International or hired consultants.

Factors that facilitate the development of technical aspects:

In the 12 initiatives surveyed, several factors have helped facilitate the development of technical activities. Securing solid partners who have previous experience with the technical issues of forest carbon initiatives (such as experience in biomass estimation, application of existing carbon accounting methodologies and development of new methodologies) has been key for ensuring analyses are done in a scientifically rigorous manner and follow the guidelines of the carbon standard(s) applied. In some initiatives, the pre-existing availability of detailed site-specific information on land use, carbon stocks, land tenure and socioeconomic conditions has greatly facilitated project development. Good coordination among partners on technical aspects and previous experience with forest carbon initiatives has also been key.

Challenges encountered in technical aspects:

The key technical challenges encountered by project managers have been related mainly to obtaining and accessing information necessary for estimating biomass stocks and establishing baselines for carbon emissions. Many initiatives have had difficulties obtaining site-specific and scientifically rigorous data on remote sensing, biomass and deforestation patterns. Another often-cited constraint in reforestation initiatives has been the lack of scientifically rigorous forest inventory data on the silviculture of native tree species within the project area. In addition, the development of carbon baselines for REDD+ initiatives has been hampered by the lack of readily available and approved baseline methodologies. Reforestation initiatives have faced additional challenges related to identifying which lands were eligible for reforestation activities.

Financing of forest carbon initiatives

Status of financing of the 12 forest carbon initiatives:

Forest carbon initiatives require significant funding for project development, implementation and monitoring. Securing this funding can be one of the most challenging activities for project development. The 12 initiatives analyzed in this report have relied on a variety of different funding sources—usually from multiple donors—that include a mixture of philanthropic donations, carbon finance and government support. However, obtaining a steady flow of project financing has been difficult, and several initiatives have experienced delays in project development or implementation due to the lack of continuous funding.

Factors that facilitate the financing of forest carbon initiatives:

A variety of factors have facilitated fundraising for forest carbon initiatives. All of the initiatives have been specifically designed to provide environmental and social co-benefits, in addition to climate benefits, which have proved helpful in attracting donor and investor interest. Demonstrating that the forest carbon initiatives are scientifically rigorous, well-designed and backed by strong technical expertise has also encouraged investment. In a few cases, the development of small-scale pilot initiatives (such as small-scale reforestation activities) has similarly attracted investors, by showing how things will work on the ground and that activities are viable, and providing experience for scaling up implementation. Some initiatives have also leveraged additional funding by conducting feasibility studies that can be used to attract donors or investors, or by partnering with other organizations that are interested in providing supplementary finance for reforestation and forest carbon activities. Developing forest carbon initiatives in areas where partners already have a track record of working successfully with local communities has also reassured donors about the potential success of initiatives and led to greater support.

Challenges with obtaining financing:

Despite the fact that all 12 forest carbon initiatives have secured some funding for project development, fundraising is still a key challenge. Almost all of the projects have had difficulties obtaining sufficient up-front funding to cover the high costs of initial project design. Another challenge has been ensuring the continuity of funding to support ongoing field activities, stakeholder engagement processes and project monitoring. Another limitation is that the projected amount of carbon revenue that will be generated from the forest carbon activities is not always sufficient to cover the entire design, implementation and transaction costs of setting up the initiatives (including the development of the Project Design Document and certification). The high costs of non-technical activities (such as local stakeholder engagement, government outreach, communication and training) have also significantly elevated project costs, making them less appealing for potential carbon investors and/or donors.

Engagement of local stakeholders in forest carbon initiatives

Status of stakeholder engagement in the 12 initiatives:

The success of forest carbon initiatives depends heavily on the effective engagement and support of local stakeholders. All of the forest carbon initiatives surveyed in this report have already invested considerable time and resources in engaging local stakeholders (including local communities and other landowners living in or adjacent to the project areas) through ongoing community meetings, field visits and training workshops.

Factors that have facilitated stakeholder engagement:

One of the main factors that has helped motivate local stakeholders to participate in forest carbon initiatives has been the potential to receive direct benefits from the reforestation or forest conservation activities. The most important perceived benefits include prospective increases in income from carbon revenues, sustainable livelihoods activities and employment related to the project. Other attractions include the possibility of learning new skills through training events or workshops, support in complying with environmental laws and the potential that the project might help clarify land-tenure. In many of the initiatives, stakeholder engagement is high when there are good, existing relationships between the forest carbon partners and local communities, indigenous peoples and other landowners, a clear understanding of the local context and a successful track record with other environmental activities. In some sites, stakeholder engagement has been greatly facilitated by the presence of key local leaders who have promoted the initiative, or by the existence of formal or informal social structures (such as local farmer associations), which have been instrumental in obtaining stakeholder support.

Challenges encountered with stakeholder engagement:

Over one-third of survey respondents indicated that local stakeholder engagement was one of the most difficult aspects of developing forest carbon initiatives, due to the need to gain commitment and support over the long (>20-year) lifetime of the initiative, the difficulty of ensuring local stakeholders receive tangible benefits in the short term and the need to conduct extensive outreach, training and negotiations with often large numbers of stakeholders. One of the most commonly mentioned challenges has been how to clearly explain forest carbon initiatives to local stakeholders, how to articulate the potential benefits—and risks—for participants and how to manage stakeholder expectations. In addition, the long time horizon (sometimes several years) between project start and the delivery of certain benefits was found to be a challenge. Many of the initiatives had underestimated the amount of time and resources needed to contact, engage and train local stakeholders and have often under-resourced these components. Several initiatives have also had difficulties in reaching stakeholders or organizing activities with groups, either due to the remoteness of communities, the large number of stakeholders or the presence of local stakeholders who were illegally settled in the site. Working with illegal settlers in the project area, who

were in violation of some type of environmental code, or had previous negative experiences working with conservation projects made engagement more difficult because of their distrust of government or NGOs.

Government involvement in forest carbon initiatives

Government involvement in the 12 initiatives:

Governments can play an important role in supporting the development and implementation of forest carbon activities by endorsing initiatives, providing funding and/or technical support, facilitating access to information, ensuring political support, creating legal mechanisms and policies that facilitate forest carbon activities and integrating initiatives into national development strategies and programs. All 12 of the forest carbon initiatives surveyed have received some level of government support, either at the local, regional/state or national level, and 10 of the initiatives have received government support at multiple levels. The type of support provided by governments has varied across initiatives. All have received some kind of technical support, and most have received help in identifying and engaging local stakeholders. In roughly half of the initiatives, governments have also provided important political support through official endorsement or promotion of the initiatives in national strategies. A subset of initiatives has also received direct support through governments providing human resources, government infrastructure and, in a few cases, funding

Factors that have facilitated effective government involvement:

A variety of factors have been important to obtaining government support and involvement in forest carbon initiatives. A key factor has been the pre-existence of good relationships between partners and the government and the willingness of high-level or key government officials to champion the initiatives within the government and abroad. The initiatives have also been generally well-supported by governments due to their interest in building capacity and expertise with forest carbon initiatives, and REDD+ more generally, and their interest in participating in training and pilot activities. Governments have also supported forest carbon initiatives as a means of furthering existing conservation and rural development policies, and as a way of obtaining important co-benefits such as biodiversity conservation, water provision and improved livelihoods.

Challenges encountered in working with governments on forest carbon initiatives:

Although governments have been generally supportive, all of the forest carbon initiatives have periodically encountered challenges in working with governments on forest carbon activities. These challenges have arisen primarily due to the lack of clear climate change policies and regulations to guide the design and implementation of forest carbon activities, particularly REDD+, and the lack of clarity around carbon rights. In roughly half of the initiatives, the lack of clear land tenure and land-use rights have also been a critical barrier. Another common challenge has been the lack of integration of forest carbon activities with broader government strategies and programs that affect forestry and land use (e.g., rural development policies, agricultural policies and infrastructure programs), often resulting in conflicting land-use outcomes. Other common constraints have been the lack of government experience and capacity on forest carbon activities and the subsequent need for significant training and capacity-building due to the rapid turnover of government staff, the lack of sufficient public financial resources to support forest carbon activities and in, some cases, challenges with slow government procedures, limited communication and inconsistent political support.

Recommendations for project developers

Based on the 12 forest carbon experiences outlined in this report, we suggest that managers of site-level activities should:

- Establish strong, multi-disciplinary partnerships which include expertise in technical issues, project management and relevant laws and policies, and have extensive experience with local stakeholder engagement to guide the forest carbon initiatives;
- Build on successful pre-existing relationships to ensure confidence and trust among partners, local stakeholders and government and create simple partnership structures with well-defined roles and responsibilities;
- Use the best available expertise to estimate forest carbon stocks and create emissions baselines, and demonstrate scientific rigor and credibility using appropriate methodologies and standards;
- Explore a diversity of funding sources (philanthropic, private investments, etc.) to ensure sufficient up-front financing to cover the costs of project design and implementation;
- Use any seed funding or short-term funding opportunities strategically to leverage additional long-term financial resources;
- Dedicate sufficient time and resources to stakeholder engagement, including basic capacity building in forest carbon and field activities and ensure that all stakeholders understand both benefits and risks of REDD+ activities;
- Carefully design REDD+ activities so that they deliver clear, tangible benefits to local stakeholders; and
- Actively involve representatives of the government in all steps of the design, management and implementation of each forest carbon initiative to secure government endorsement of the initiative and possible links with future national accounting frameworks.

Recommendations for policy makers

At the national level, governments can also support the design and implementation of effective national REDD+ mechanisms by:

- Clearly defining the roles and responsibilities of the different institutions involved in each component of the national REDD+ mechanism within the country;
- Ensuring actors at all levels have the appropriate, relevant expertise to implement the REDD+ strategy;
- Providing clear, common technical guidance to field activities and delivering technical support to local stakeholders and civil society partners;
- Creating a platform for field managers and local agencies to share and access key data, such as remote-sensing images and forest inventories;
- Prioritizing an outreach and consultation strategy which ensures that stakeholders understand how REDD+ works, incorporates their knowledge and input and clearly explains the roles and responsibilities of all actors; and
- Identifying and harmonizing conflicting policies or programs (e.g., subsidies or proposed infrastructure projects), and integrating REDD+ into national-level development strategies.

2. Introduction

Maquipucuna Foundation technician stands next to a planted tree in the $ChoCO_2$ initiative, Ecuador.

Identifying reforestation sites during an exchange visit between the Procuenca and Bogotá Corridor initiatives, Colombia.

Agricultural landscape near the Quirino initiative reforestation sites, Philippines.

Sampling herbaceous biomass in the Tengchong initiative, China.

2. Introduction

There is unprecedented global recognition of the urgent need to sharply reduce deforestation and forest degradation to help avert dangerous levels of climate change. Ongoing deforestation and degradation of the world's forests account for approximately 15-17% of global greenhouse gas emissions (IPCC, 2007; Van der Werf, ***et al.***, 2009), and recent models suggest that it will be impossible to prevent "dangerous climate change" unless tropical forest loss and degradation are significantly reduced (Warren, ***et al***., 2009). In addition to helping to mitigate climate change, reducing deforestation and degradation can also potentially provide important co-benefits, such as the conservation of biodiversity, the maintenance of critical ecosystem services that underpin human well-being and community benefits (Brown, ***et al***., 2008; Harvey, ***et al***. 2009; Karousakis, 2009; Pistorius, 2009; Stickler, ***et al***., 2009). Reducing deforestation and degradation is considered an attractive mitigation strategy because it can be cost effective and is an immediately available option (Nabuurs, ***et al***., 2007; Stern, 2007; Eliasch, 2008).

At the December 2009 United Nations climate negotiations in Copenhagen, the international community took important steps towards reducing emissions from deforestation and degradation. As part of the Copenhagen Accord[1], the international community recognized "the crucial role of reducing emissions from deforestation and forest degradation and the need to enhance removals of greenhouse gas emissions by forests" and agreed to the "need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD+, to enable mobilization of financial resources for developed countries." REDD+ refers to a suite of actions that reduce or enhance the removal of greenhouse gas emissions through conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (UNFCCC Decision 1/CP.13). Individual countries also pledged significant funds to help catalyze REDD+ activities in developing countries, with the U.S. pledging US $1 billion, and Australia, France, Japan, Norway and Britain committing an additional US $2.5 billion for the period between 2010 and 2012 (Casey, 2009).

With this new international mandate to tackle deforestation and forest degradation, and resources dedicated to promoting REDD+, there is now an urgent need for detailed guidance on how to design and implement field activities that effectively achieve emissions reductions. Some of the key issues in operationalizing REDD+ will include how to effectively engage and work with local stakeholders to reduce deforestation and degradation rates, how to ensure countries have sufficient technical capacity and infrastructure to design, implement and monitor REDD+ activities, what new institutional arrangements and partnerships are needed and how to manage REDD+ financing to ensure equitable distribution of costs and benefits among different stakeholders, among others (Angelsen, ***et al***., 2009). All of these factors will be critical in determining how effectively countries can reduce deforestation and degradation rates, and whether they can sustain these low rates over time. In addition, the way in which REDD+ is implemented on the ground will have significant impacts on the provision of co-benefits, such as community benefits and biodiversity conservation (Harvey, ***et al***. 2009).

1 Copenhagen Accord: http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf

Although the issue of how to effectively operationalize REDD+ will only become clear as countries begin to design and implement REDD+ strategies at the national level, it is possible to draw preliminary insights as to the potential challenges that REDD+ will face by examining the experiences of the numerous pilot forest carbon activities that are already underway. There is a considerable number of forest carbon initiatives currently under development (Cerbu, *et al*., 2009; Wertz-Kanounnikoff, *et al*., 2009; Hamilton, *et al*., 2010)—either as pioneer projects designed for the voluntary carbon market or as a result of the Bali Action Plan's call for "demonstration activities" on REDD+ (UNFCCC Decision 2/CP.13). Some of these forest carbon activities have been designed to reforest or restore degraded areas, while others have been established to conserve existing forest areas and/or promote sustainable management of forests.

While most of these forest carbon initiatives are still in preliminary stages, they can provide valuable insights into many of the issues that will likely be encountered by governments as they operationalize REDD+. Although they are generally implemented at a much smaller scale, pilot forest carbon initiatives can serve as valuable test cases for national REDD+ systems, as many of the activities that have to be designed and implemented at the local level by a project developer are similar to those that will be implemented on a national scale (i.e., building institutional partnerships and structures, designing field interventions, establishing monitoring and verification systems, attracting and distributing finances, clarifying legal aspects, engaging stakeholders, developing benefit-sharing mechanisms, etc.; Jagger, *et al*. 2009; Sills, *et al*. 2009; Van Bodegom, *et al*. 2009). Learning from how these early initiatives are applying REDD+ at the local level can provide valuable information on both suitable approaches and potential pitfalls, thereby helping to guide the design of a more effective and equitable future REDD+ mechanism.

Here we provide preliminary insights into what is needed to make REDD+ work on the ground, drawing on experiences from 12 pilot forest carbon initiatives (five REDD+ pilot initiatives[2], and seven reforestation activities[3]) in nine countries in which Conservation International has been involved as a partner.

We focus our analysis on five main issues that are critical for success: 1) creating effective on-the-ground partnerships and capacity; 2) ensuring that forest carbon initiatives are backed by rigorous technical and scientific analyses; 3) attracting the needed financial resources for project development; 4) successfully engaging stakeholders in project design and implementation; and 5) ensuring active government support for field activities. For each of these issues, we provide an overview of how the 12 forest carbon initiatives have addressed the issue, what challenges they have faced and what factors have facilitated progress. In addition, we provide key recommendations to forest carbon initiative field managers, as well as to policy makers on how to ensure that activities result in effective on-the-ground emissions reductions. Our analysis is based on the results of extensive surveys and interviews of project partners and managers, case studies, field visits and an expert workshop, and gives a project manager's[4] perspective of the initial challenges facing the development of forest carbon activities.

By using our forest carbon initiatives as pilot test cases and providing a detailed and critical analysis of our initial experiences (and their associated shortcomings), we aim to provide valuable insights, input and recommendations to policy makers to help inform the future design and implementation of national REDD+ policies and processes, and ensure that these efforts not only effectively achieve emissions reduction on the ground, but also deliver environmental and social benefits.

2 We use the term "REDD+ initiative" to refer to a pilot REDD+ activity implemented at the site or sub-national scale. The term "reforestation project" is used to refer to an afforestation/reforestation project (A/R) under the Clean Development Mechanism (CDM), or to a reforestation project aimed at the voluntary carbon market.

3 Throughout this report we use the term "forest carbon initiatives" to refer to both reforestation projects and REDD+ initiatives aimed at reducing emissions from deforestation and degradation.

4 We use the term "project manager" to refer to the person who is actively managing the forest carbon initiative, regardless of whether the initiative is a reforestation project or a REDD+ initiative.

3. Methodology

Discussing forest carbon concepts with a Kayapó community in the Xingu Basin, Brazil.

Large-scale cattle operation in the Cerrado biome near the Emas initiative, Brazil.

Agricultural landscape surrounding the TAMS and CAZ initiatives in eastern Madagascar.

CI staff and local partner, Maquipucuna Foundation, during field visit to the $ChoCO_2$ site in Ecuador.

3. Methodology

The study focuses on the preliminary lessons learned from the development of 12 pilot forest carbon initiatives (seven reforestation, and five REDD+ initiatives), in which Conservation International has been involved as a partner. The 12 initiatives were selected to represent a wide range of geographic, socioeconomic and biophysical conditions, and are located in nine countries, spanning Asia, Latin America and Africa. All of the selected initiatives are in the early phases of development, with at least two years of ongoing activity, and thereby provide insights into the initial challenges faced in the design and development of forest carbon activities. A detailed description of the 12 forest carbon initiatives is available in Section 4.

To document the lessons learned from the initial development of the 12 forest carbon initiatives, we used a combination of approaches, including a) detailed questionnaires; b) field visits and semi-structured interviews; c) development of case studies; and d) an expert workshop in which the results were discussed and validated.

The first step in our research plan was to assess the general progress of each forest carbon initiative, and to identify key challenges, enabling factors and lessons learned by project participants, using a structured questionnaire with roughly 50 multiple-choice and open-ended questions. In addition to gathering information on the nature of the project and the partners involved, the questionnaire focused on several themes: 1) the experience of the respondent's institution in forest carbon initiatives; 2) issues related to the development of technical activities; 3) stakeholder engagement and socioeconomic aspects; 4) environmental considerations; 5) fundraising and marketing issues; and 6) government involvement and political issues. In each of the 12 sites, we distributed the questionnaire to key project participants, including project managers and developers, technical partners, government representatives at different levels, local community leaders and other individuals with relevant knowledge and insights. A total of 124 questionnaires were completed in July 2009 (Table 1), of which 69 were completed by NGO staff (including 37 by CI field staff), 26 by government representatives, 15 by members of community organizations, five by private companies, and seven from other organizational types (e.g., universities, associations, etc.) (Two survey respondents preferred to remain anonymous. The full list of people surveyed and their affiliations can be found in Appendix A). All of the data collected from the questionnaires were entered into an Excel database, and basic summary statistics were produced.

In order to obtain more in-depth information and to validate key trends identified through the survey, two of the authors (Olaf Zerbock and Stavros Papageorgiou) visited a subset (eight of the 12) of the project sites in July and August 2009, and conducted detailed, follow-up interviews with CI project managers, partners, local stakeholders and staff from national government agencies working on climate issues (note that due to funding and time constraints, the initiatives selected for field visits were those in Latin America). Site visits ranged from three to five days, including field visits to the project areas. During these visits, the authors conducted a total of 86 semi-structured interviews (Table 1), including interviews with 25 CI field staff, 28 technical partners, 22 members of local communities and 11 government representatives. Some of these interviews took place in formal meetings, while others were conducted in informal settings. (A summary of the number of interviews per country, and the types of partners interviewed, can be found in Appendix B.) All information collected from these interviews was transcribed and used as input for the development of case studies.

Table 1. Summary of the number of surveys completed in each of the forest carbon initiatives, and the number of in-person interviews conducted in a subset (n=8) of the forest carbon initiatives.

Forest Carbon Initiative*	Number of questionnaires completed	Number of in-person interviews conducted
Reforestation		
Bogotá Corridor, Colombia	11	18
ChoCO$_2$, Ecuador	11	11
Emas, Brazil	9	7
Muriqui, Brazil	8	6
Quirino, Philippines	10	-
TAMS, Madagascar	14	-
Tengchong, China	13	-
REDD+		
Alto Mayo, Peru	7	16
CAZ, Madagascar	14	-
Maya Biosphere, Guatemala	15	10
Selva Lacandona, Mexico	6	10
Xingu Basin, Brazil	6	8
Total	**124**	**86**

*For a detailed description of individual forest carbon initiatives, please see Section 4.

Using the data collected from the questionnaires, field visits and existing project documentation (e.g., PDDs, project reports, etc.), we developed case studies for each of the 12 initiatives, together with CI field staff responsible for the initiatives. The case studies highlighted the progress, current status, key enabling factors and challenges experienced by individual forest carbon initiatives. Preliminary results of these case studies were presented and discussed during a four-day "Lessons Learned Workshop" in Bogotá, Colombia (15-18 September, 2009), in which approximately 30 CI staff, representing all 12 initiatives, participated. (A full list of workshop participants can be found in Appendix C.) In addition to reviewing and discussing the results from individual case studies, we also used the workshop to have in-depth working sessions to compare and synthesize experiences on five cross-cutting themes (i.e., partnerships, technical and financial issues, stakeholder engagement and government involvement) across the 12 sites. For each of these themes, we reviewed in the working groups what each initiative has accomplished to date, what challenges it has encountered and what factors have facilitated project development, and then used this information to develop recommendations on how project managers could ensure the success of their forest carbon initiatives. We also discussed how policy makers could facilitate the development of effective forest carbon initiatives and how these lessons could inform the design of national REDD+ strategies. All of the information collected in the working sessions was summarized in tables and written notes, added to the general data base and incorporated into the study.

This report represents the synthesis of information from multiple sources (i.e., 124 questionnaires, 86 in-person interviews, notes from eight field visits, 12 case studies and discussions from a four-day expert workshop) and provides an overview of the current status, challenges, enabling factors and lessons learned across the 12 forest carbon initiatives, as well as recommendations to both project developers and policy makers responsible for these initiatives. It is important to note that our analysis and recommendations focus primarily on the perspective of project managers, and are limited to observations relative to the early stages of project development. It is likely that additional challenges and insights will arise as the forest carbon initiatives move forward.

4. Overview of the twelve forest carbon initiatives

Forested landscape fragmented by farming in the Bogotá Corridor initiative, Colombia.

Nursery worker from local partner Oreades preparing soil for seedling production in the Emas initiative, Brazil.

A new species of frog (*Pristimantis sp. nov.*) discovered within the Bogotá Corridor, Colombia.

Community member providing seedlings from his nursery for the $ChoCO_2$ initiative, Ecuador.

4. Overview of the twelve forest carbon initiatives

The 12 forest carbon initiatives examined in this report include seven reforestation and five REDD+ initiatives, which aim to mitigate climate change by either increasing carbon sequestration through afforestation/reforestation (A/R), or by reducing GHG emissions from deforestation and degradation. The initiatives are located in nine countries, with eight initiatives in Latin America (three in Brazil and one each in Colombia, Ecuador, Guatemala, Mexico and Peru), two initiatives in Africa (both in Madagascar), and two in Asia (China and the Philippines; Figure 1), and span a broad range of geographic, socioeconomic and biophysical conditions.

Scale and scope of forest carbon initiatives

The initiatives vary widely with regard to the scale of implementation, the predominant land uses and drivers of deforestation within and around the project boundaries and the types of interventions the initiatives undertake to reduce emissions (Table 2). Most of the reforestation projects are small-scale initiatives, involving the reforestation of 100 to 600 hectares of land on mainly small-holder farms. The REDD+ initiatives, in contrast, are much larger and typically include areas of more than 100,000 hectares. The largest REDD+ initiative (Xingu Basin, Brazil) comprises almost 14 million hectares of forest on contiguous indigenous territories.

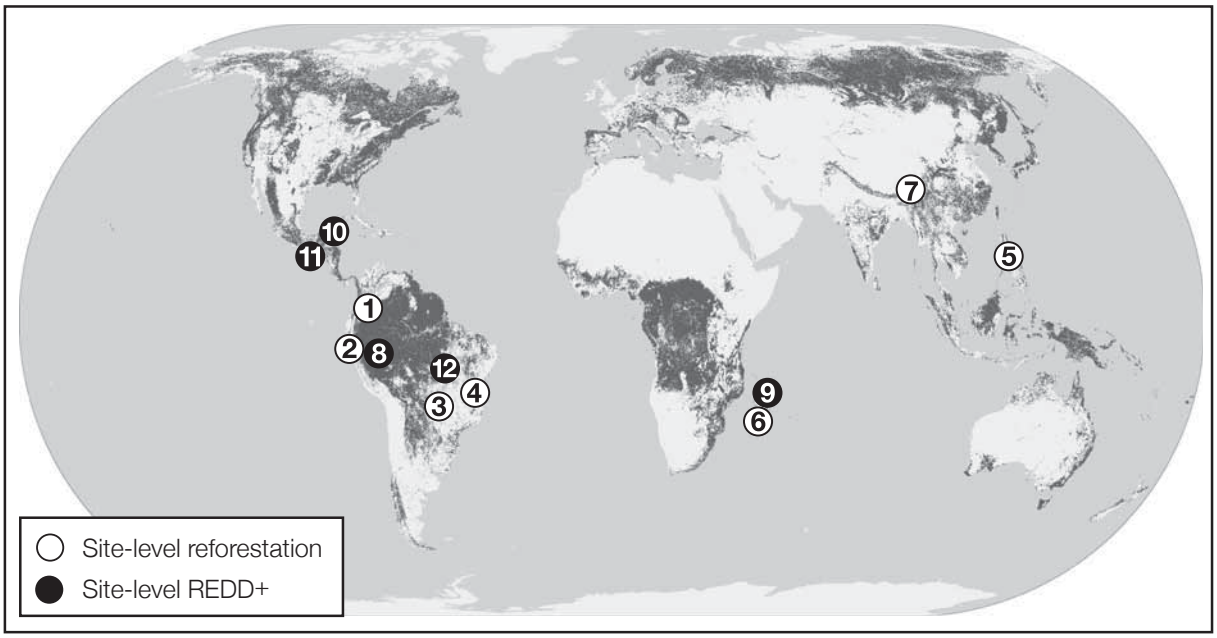

Figure 1. Locations of the 12 forest carbon initiatives surveyed*:

Reforestation Initiatives
1 Bogotá Corridor, Colombia
2 $ChoCO_2$, Ecuador
3 Emas, Brazil
4 Muriqui, Brazil
5 Quirino, Philippines
6 TAMS, Madagascar
7 Tengchong, China

REDD+ Initiatives
8 Alto Mayo, Peru
9 CAZ, Madagascar
10 Maya Biosphere Reserve, Guatemala
11 Selva Lacandona, Mexico
12 Xingu Basin, Brazil

*Dark grey areas indicate forest cover in the year 2000 (JRC, 2003)

Table 2. Size, land tenure, land uses and interventions in the 12 forest carbon initiatives.

Name	Size	Land Tenure	Land Use / Drivers	Interventions
Reforestation Initiatives				
Bogotá Corridor, Colombia	174,000 ha	Private (99.18%): Farmers Public (0.82%): Bogotá Water Supply Company (EAAB), environmental authorities, municipalities, regional government, national parks	Conservation areas (26.3%) including protected areas; small-holder agriculture (8.6%) and livestock (60.3%); other uses (4.8%)	Reforestation with native species on degraded lands
ChoCO_2, Ecuador	161.2 ha	Private (100%): Maquipucuna Foundation	Small holder agriculture, especially sugar cane and pasture; montane forest remnants	Reforestation with native species on degraded lands
Emas, Brazil	681 ha	Private (96.5%): Large landowners Public (3.5%): state park	Large-scale agriculture producing cotton, soybeans, and cattle; native Cerrado forests and savannah vegetation	Reforestation with native species on private lands, to comply with Brazilian environmental code for Permanent Protected Areas and Private Reserves
Muriqui, Brazil	89 ha initially, up to 600 ha	Private (100%): Small landowners	Small-scale agriculture including cattle; eucalyptus plantations; native forest remnants including private reserves	Reforestation with native species on private lands, to comply with Brazilian environmental code for Permanent Protected Areas and Private Reserves
Quirino, Philippines	177 ha	Public (59%): Government-owned but awarded to communities via Integrated Social Forestry (ISF) Private (41%): Alienable and Disposable	Small-scale agriculture producing mostly maize, cassava and bananas; native forest remnants	Reforestation with native/endemic species and agroforestry systems on cropland areas
TAMS, Madagascar	600 ha	Public (51%): State-titled land Private (25%) Informal (24%): Held by farmers without proper title	Small-scale agriculture for hillside and paddy rice and vegetables; eucalyptus plantations for charcoal and timber	Reforestation with native species on private lands, land-titling process, support to alternative agricultural systems and fuel-wood plantations
Tengchong, China	467 ha	Public (24%): managed by Sujiang Forestry Farm Communal (56.6%): Villages' collective property Private (19.4%) : individual farmers	Small-scale agriculture including tobacco and maize, forest remnants including nature reserve	Reforestation with native species in buffer zone of nature reserve
REDD+ Initiatives				
Alto Mayo, Peru	177,749 ha (425,000 ha including the Buffer Zone)	Public (100%): Government-owned protected area, with some private and communal lands in the buffer zone	Native humid montane forest with illegal settlement for small-scale agriculture, especially coffee and pasture	Promoting social organization and signing of conservation agreements with settlers
CAZ, Madagascar	425,000 ha	Public (100%)	Native humid forest, with clearing for hillside rice, eucalyptus plantations, mining, logging and fuel-wood gathering	Creation of new protected area, with strict protection zones and areas under community sustainable management
Maya Biosphere Reserve, Guatemala	Over 2 million ha	Public (100%): Mix of community forestry concessions and protected areas	Native humid lowland and flooded forests; illegal settlement for cattle production, land speculation, drug trafficking	Strengthening existing community forest concessions through conservation agreements
Selva Lacandona, Mexico	113,742 ha	Communal reserve (100%)	Native humid forests with small-holder agriculture including cattle and maize; illegal timber production	Options include reforestation of small-holder plots and improved community protection of La Cojolita forested area.
Xingu Basin, Brazil	13,590,547 ha	Government-declared indigenous territories (100%)	Native humid forest; encroachment by small- and large-scale cattle production, soybeans, timber extraction	Supporting and strengthening existing territorial monitoring and management by indigenous communities

Most of the reforestation initiatives occur in highly modified landscapes, which are dominated by agriculture or cattle production, and have little remaining forest cover. The primary goal of the reforestation initiatives is to increase carbon sequestration by planting native tree species in plantations or agroforestry systems. In contrast, the REDD+ initiatives occur in high-carbon forest ecosystems and are focused on reducing deforestation and degradation by slowing the drivers of deforestation, which often include clearing for the creation or expansion of small-holder agricultural systems, wood extraction for timber and fuel and other legal and illegal threats such as mining and land occupation. In addition to the direct reforestation or forest protection activities, some forest carbon initiatives are also incorporating other approaches, such as land-titling reform or complementary livelihood improvement activities, which are expected to help catalyze long-term changes which will result in lowered emissions.

Land tenure within the 12 sites is highly variable (Table 2). In some sites, land is mainly privately owned, while in others, most of the land belongs to the government. In still others, land tenure is more complex, and has important implications for how the forest carbon initiatives are designed and implemented, and what activities are planned.

Expected benefits from forest carbon initiatives

All 12 forest carbon initiatives have been designed not only to provide climate mitigation benefits, but also to deliver biodiversity and community co-benefits (Table 3). This multiple-benefit approach is due, in part, to the fact that many of the forest carbon initiatives grew out of pre-existing conservation or sustainable development efforts, led by partners interested in biodiversity habitat conservation or restoration, or by partners interested in improving the well-being of local stakeholders. It also reflects the interest of project partners in receiving certification by the Climate, Community and Biodiversity Standards (www.climate-standards.org). In all of the initiatives, carbon finance has been seen as a means of supporting reforestation and forest conservation activities over the long term, and achieving climate mitigation, biodiversity conservation and community benefits simultaneously.

The climate benefits that the individual forest carbon initiatives will provide depend on the size of the project site, as well as the types of interventions and time period over which they are applied. In the reforestation initiatives, the climate benefits will also depend on what tree species are planted and how quickly they sequester carbon. In the REDD+ initiatives, the emissions reductions generated will depend on the current rates of deforestation and the carbon density of the forests that are being cleared. Preliminary estimates of climate benefits are presented in Table 3; however, these numbers may change as additional analyses are completed.

The expected community benefits of the forest carbon initiatives are highly variable, reflecting differences across communities (e.g., size, composition, types of land tenure, cultural and ethnic diversity and types of land uses), as well as differences in the community engagement strategies employed in different sites (Table 3). In some sites, the community benefits include financial revenue to support agreed-upon development projects, or direct cash payments to landowners for placing their lands under reforestation. In others, communities benefit from the creation of “alternative” or “improved” livelihood activities which support or diversify the income streams of small-holder producers. For example, farmers and/or landowners participating in the Quirino reforestation initiative receive technical assistance and inputs such as seedlings, fertilizers, fencing material, etc. to implement agroforestry schemes, which provide a complementary source of income from the sale of fruit and other non-timber forest products. Another important type of community benefit is assistance with the clarification of land tenure, as in the TAMS reforestation initiative in Madagascar, where the national government has agreed to set up a local office to clarify traditional landholdings through a participatory process, and issue tenure instruments which would allow the transfer of carbon rights. In general, the type of community benefits delivered by projects depends

largely on local conditions, including the kinds of threats to existing forests, the opportunity cost of alternative land uses, cultural or legal conditions, the availability of funds and the degree of support from government agencies.

Table 3, Part 1. Anticipated climate benefits (greenhouse gas removals or emissions avoided), community benefits and environmental benefits (including ecosystem services (ES), biodiversity hotspots (BH)[5] and flagship species (FS)), of the 12 forest carbon initiatives.

Name	Climate Benefits (removals)	Community Benefits	Ecosystem Services (ES) and Biodiversity Benefits (Biodiversity Hotspot (BH) & Flagship Species (FS))
Reforestation Initiatives			
Bogotá Corridor, Colombia	Up to 19 million tCO_2e sequestered over 20 years over entire eligible area	Compensation to landowners for forest conservation and restoration; direct project employment for reforestation	**ES:** Bogotá water supply for city of 8 million people and surrounding communities (approx. 2 million); improved connectivity between protected areas and remaining ecosystems
			BH: Tropical Andes
			FS: Spectacled Bear, Andean Condor
ChoCO_2, Ecuador	74,641 tCO_2e sequestered over 30 years	Creation of employment through reforestation activities; complementary activities with local communities (especially ecotourism, agroforestry, handicrafts)	**ES:** Upstream watershed protection
			BH: Tumbes-Choco-Magdalena, Tropical Andes
			FS: Spectacled Bear, Mantled Howler Monkey
Emas, Brazil	236,846 tCO_2e sequestered over 30 years	Landowner compliance with Forest Code; capacity building and training courses; income generation for local communities	**ES:** Headwaters of important rivers; Pantanal ecosystem
			BH: Cerrado
			FS: Giant Armadillo, Giant Anteater, Tapir, Maned Wolf, Jaguar and Cougar
Muriqui, Brazil	161,100 tCO_2e sequestered over 30 years	Landowner compliance with Forest Code; direct income and employment generation; training in sustainable production	**ES:** Watershed protection, soil erosion reduction, ES maintenance
			BH: Atlantic Forest
			FS: Northern Muriqui, Vinaceous Amazon Parrot, Buffy-headed Marmoset
Quirino, Philippines	41,878 tCO_2e sequestered over 23 years	Diversification of farming through agroforestry, community empowerment; income generation; improved farm production	**ES:** Soil and water erosion reduction; improved protection of crucial water sources
			BH: Philippines
			FS: Giant Soft-Shelled Turtle, Philippine Eagle
TAMS, Madagascar	285,000 tCO_2e sequestered on 600 ha (over 30-year period)	Creation and diversification of producer revenue; reduction of food insecurity; clarification of land tenure; capacity building; sustainable livelihood activities	**ES:** Restore degraded lands into functioning ecosystems
			BH: Madagascar and the Indian Ocean Islands
			FS: Black and White Ruffed Lemur, Diadamed Sifaka, Greater Bamboo Lemur
Tengchong, China	151,971 tCO_2e sequestered over 30 years	Production of timber and fuel-wood resources; technical training; income generation; enhanced social cohesion	**ES:** Protection from soil erosion; maintenance of watersheds
			BH: Southwest China
			FS: Red Panda, Leopard, Bengal Tiger, Takin, Hoolock Gibbon, Phayre's Leaf-monkey

5 For more information on Conservation International's biodiversity hotspots, please visit: www.biodiversityhotspots.org

Table 3, Part 2. Anticipated climate benefits (greenhouse gas removals or emissions avoided), community benefits and environmental benefits (including ecosystem services (ES), biodiversity hotspots (BH) and flagship species (FS)), of the 12 forest carbon initiatives.

Name	Climate Benefits (emissions avoided)	Community Benefits	Ecosystem Services (ES) and Biodiversity Benefits (Biodiversity Hotspot (BH) & Flagship Species (FS))
REDD+ Initiatives			
Alto Mayo, Peru	Reduction of deforestation below historical rate (0.35% yr^{-1} between 2001-2006)	Improved and diversified farming systems (agroforestry/ coffee, cattle); technical assistance; access to markets; social organization	**ES:** Water for municipal and agricultural supplies (9,000 ha of rice, 35,000 inhabitants)
			BH: Tropical Andes
			FS: Yellow-tailed Woolly Monkey, Andean Titi Monkey, Spectacled Bear
CAZ, Madagascar	Reduction of deforestation below historical rate (0.63% yr^{-1} between 1990-2005)	Employment generation for local communities; engagement of local communities in natural resource management; capacity building; support for ecotourism	**ES:** Protection of headwaters of 8 large rivers and regulation of water systems for local rice agriculture, habitat connectivity
			BH: Madagascar and the Indian Ocean Islands
			FS: Several species of threatened lemurs, such as: *Indri indri, Varecia Variegata variegata, and Propithecus diadema*
Maya Biosphere Reserve, Guatemala	Reduction of deforestation below historical rate (0.9% yr^{-1} between 2000-2005)	Community financial benefits; protection of Mayan archaeological and cultural sites	**ES:** Watershed protection
			BH: Mesoamerican rainforest
			FS: Tapir, Harpy Eagle, Jaguar
Selva Lacandona, Mexico	Reduction of deforestation below historical rate (1.71% yr^{-1} between 2000-2005)	Capacity building in sustainable agriculture; provision of additional income through carbon and ecosystem service marketing	**ES:** Watershed protection
			BH: Mesoamerican rainforest
			FS: Tapir, Peccary, Jaguar, Spider Monkey, Howler Monkey
Xingu Basin, Brazil	Avoiding increase in future deforestation rate	Improved living standards for IP communities; provision of resources for protection; preservation of cultural values	**ES:** Water resources in the Xingu Basin
			FS: White-lipped Peccary, Giant otter, Neotropical Otter, Giant Armadillo, Jaguar, Hyacinth Macaw, Blue-winged Macaw, Bearded Saki Monkey, Red-handed Howler Monkey, White-whiskered Spider Monkey, Bare-faced Curassow, Razor-billed Curassow, Red-throated Piping Guan, Bare-necked Fruitcrow, Chestnut-throated Spinetail

Current status of forest carbon initiatives

As of December 2009, all of the forest carbon initiatives are still in the early stages of development (Table 4; see Box 1 for an overview of the general development stages of forest carbon initiatives). Ten of the initiatives are in the design phase and are currently working to complete and validate their PDDs, while raising additional funding for implementation. Among these 10 initiatives, six are simultaneously implementing pilot activities while finalizing project design. Only one of the forest carbon initiatives (the Tengchong small-scale reforestation initiative in China) has completed validation (receiving CCB Standards Gold level validation in January 2007) and has started full implementation. The remaining initiative (the Selva Lacandona REDD+ initiative in Mexico) has just completed the feasibility analysis stage, with preliminary field work undertaken to assess future potential.

Table 4. Location, start date and current phase of the 12 reforestation and REDD+ initiatives surveyed for this report (as of December 2009).

Name	Location	Start Date	Phase of Development
Reforestation Initiatives			
Bogotá Corridor, Colombia	The corridor is located around the capital city of Bogotá, between the Sumapaz and Chingaza National Parks, "Bogotá's eastern hills" Forest Reserve and the *Paramo de Guerrero*	2005	Design (elaborating PDD)
ChoCO_2, Ecuador	Nanegal, Quito Metropolitan District, Pichincha Province	2003	Design (finalizing PDDs) Implementation (30% planted)
Emas, Brazil	Mato Grosso, Mato Grosso do Sul and Goias States, Brazil (Cerrado biome)	2009	PDD submitted for validation
Muriqui, Brazil	Minas Gerais State, Brazil (Atlantic Forest biome)	2007	Design (finalizing PDD) Implementation (89 ha pilot area)
Quirino, Philippines	Quirino Province, Luzon, Philippines	2003-2005	Awaiting validation of PDD Implementation (41 ha pilot area)
TAMS, Madagascar	Adjacent to Mantadia National Park and the Indri Special Reserve, eastern Madagascar	2005	Design (finalizing PDD) Implementation (more than 50% planted)
Tengchong, China	Yunnan Province, southwest China	2005	Design completed (PDD validated) Implementation started
REDD+ Initiatives			
Alto Mayo Protected Forest, Peru	San Martin and Amazonas regions	2007	Design (elaborating PDD) Implementation (1st watershed pilot area)
CAZ, Madagascar	Corridor connecting Zahamena and Mantadia National Parks, eastern Madagascar	2004	Design (finalizing PDD) Implementation
Maya Biosphere Reserve, Guatemala	Department of Petén	2007	Design (in progress)
Selva Lacandona, Mexico	Selva Lacandona, Chiapas State	2006	Concept (feasibility analysis completed)
Xingu Basin, Brazil	Mato Grosso and Pará States, Xingu River Basin	2007	Design (in progress)

Box 1. General stages in the development of forest carbon initiatives

Many forest carbon initiatives build on preexisting conservation or development efforts at a particular site, and take advantage of existing relationships with local stakeholders and knowledge of land-use dynamics, which lay the groundwork for forest carbon activities. However, the presence of such efforts is not necessarily a prerequisite for undertaking a forest carbon initiative.

Regardless of whether an initiative builds on existing field activities or not, most forest carbon initiatives pass through five main stages of development, including the Project Concept (or feasibility assessment), Project Design, Validation and Registration, Implementation and Verification (Figure 2).

The first stage is the development of a feasibility analysis to explore whether a reforestation or REDD+ activity is likely to be socially and economically feasible. This feasibility assessment generally includes identifying project goals and potential partners, assessing local stakeholders, analyzing land-use dynamics, identifying field interventions required to either reduce emissions or increase GHG removals, calculating the potential emissions reductions that would be generated by the intervention and assessing financial feasibility. Typically, the feasibility assessment results in the generation of a concept note or a project idea note (PIN).

The next stage consists of developing a much more detailed project design, usually based on the guidelines provided by one of the standards available in the carbon market. Typical activities in this stage include refining project partnerships and structure, making detailed plans for interventions and stakeholder engagement and carefully developing project baselines and calculations of emissions reductions and monitoring plans, following the requirements of specific project standards and methodologies. The output from this stage is the project design document (PDD).

Once the project has been designed and the PDD completed, the project undergoes independent audit and approval by a third-party entity, to ensure that its design complies with the standard that has been applied. If approved, the project is registered in the standard's registry system (provided it has one).

Project implementation generally (but not always) starts after the PDD has been validated. In this phase, project interventions such as reforestation activities, the development of alternative livelihood strategies to reduce pressure on existing forests or the implementation of forest protection activities are carried out to either reduce GHG emissions or enhance removals from the atmosphere, as outlined in the PDD. Project implementation also includes the monitoring of project activities and outcomes.

The emissions reductions (ERs) generated by the project during its implementation phase are then turned into carbon credits and issued after they have been verified by a third-party auditor, who ensures that the ERs claimed by the project are real. The frequency of verification depends on the carbon standard being used, but is typically done at least every five years throughout the project's lifespan (≥20 years).

Note that while the phases involve distinct types of activities, certain phases may begin before the previous stage has ended; for example, projects often begin implementation in a pilot or trial site before the PDD for the entire project is completed.

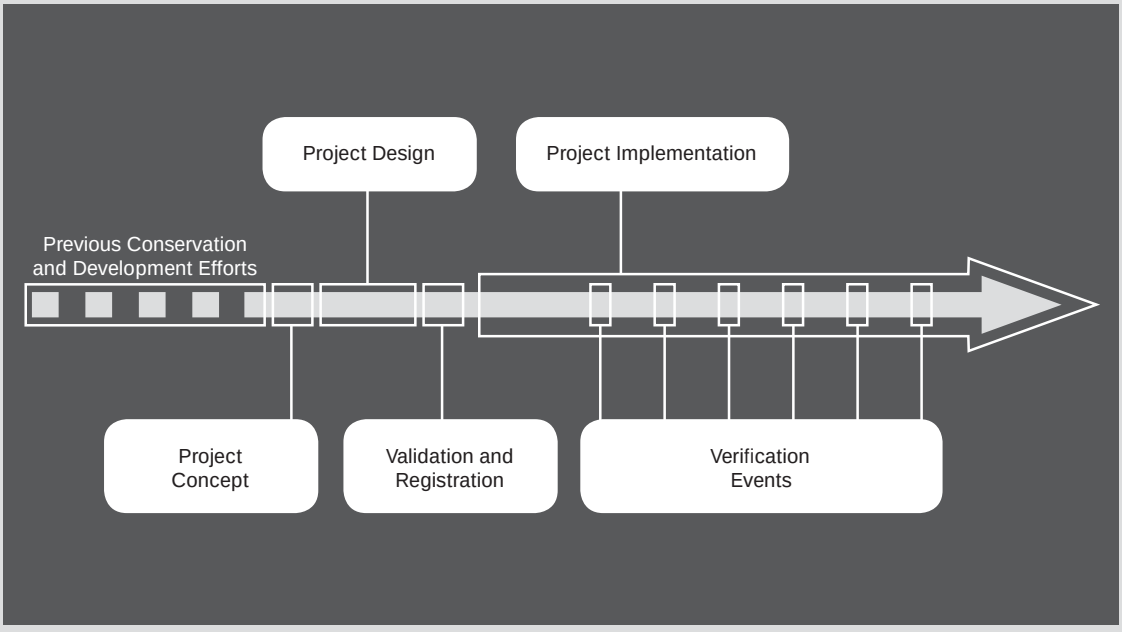

Figure 2. Stages in the development of forest carbon initiatives

Individual descriptions of the 12 forest carbon initiatives

The following are brief descriptions of the 12 forest carbon initiatives covered in this report, including the activities undertaken or planned, the goals of each initiative and the environmental and social contexts in which they are being designed or implemented. The initiatives are divided into two types: reforestation and REDD+ initiatives.

Reforestation initiatives

Bogotá Corridor, Colombia

The Bogotá Conservation Corridor is located east of the city of Bogotá, and comprises high Andean forests and *Paramo* ecosystems. The native ecosystems are threatened by agricultural and livestock production, which has led to a drop in water quantity and quality for municipal consumption in the city and surrounding communities. The initiative intends to plant trees on these lands through a CDM Programme of Activities (PoA)[6], including native-species restoration and silvopastoral systems. These activities will remove carbon dioxide from the atmosphere, generating CDM-compliant offsets, while improving watershed management. The initiative is working with the municipal water company of the city of Bogotá (EAAB), government environmental authorities (CARs) and several NGOs to design the project. To date, the initiative has delineated the entire corridor up to 174,000 hectares of land that is eligible for CDM-compliant reforestation. A preliminary version of the PoA Design Document has been completed, and a land-tenure analysis is currently underway for the lands which are the highest priority for reforestation. The initiative will be implemented in phases depending on area prioritization and funding availability.

$ChoCO_2$, Ecuador

The $ChoCO_2$ initiative is located in the Choco-Manabi Conservation corridor in northwestern Ecuador, in the transition zone between the high Andes and coastal ecosystems. Existing forest cover is threatened by small-holder agriculture, including cattle and sugarcane production. The goals of the initiative are to increase forest cover and carbon stocks through the reforestation of 161.2 hectares of abandoned pasture on private land using native tree species. CDM-compliant emissions reductions credits are calculated using a small-scale A/R methodology. Early feasibility work was supported by the Global Environment Center using funding provided by the Ministry of Environment of Japan; the initiative has since been supported financially by Ricoh Corporation of Japan which has shown interest in purchasing the carbon credits to meet part of its emissions reductions commitment as a company operating under the Kyoto Protocol. Technical work, including identifying eligible lands and developing the PDD was undertaken by consultants under the coordination of CI, with Maquipucuna Foundation (the landowner) leading the production of seedlings, planting and maintenance. The project has planted 51 hectares of abandoned pasture to date, out of an expected 161.2 hectares by the end of 2012.

Emas, Brazil

The Emas-Taquari initiative is located in the *Cerrado*, or savannah, region of central Brazil in the states of Goias, Mato Grosso, and Mato Grosso do Sul, and is located near the headwaters of major rivers which form the *Pantanal* ecosystem. The region is of great agricultural importance, producing soybeans, sugarcane and cattle, and these activities have transformed the natural landscape. While Brazilian environmental laws (known as the Forest Code) require the protection of a certain percentage of natural forest cover on all lands under production, these laws are poorly enforced. The goals of the initiative are to bring landowners into compliance with this code by reforesting land in a corridor surrounding two protected areas, the Emas National Park and the Rio Taquari State Park, while generating emissions reductions for the voluntary carbon market to help finance implementation. The initiative is led in the field by Oreades, a Brazilian NGO with experience in analyzing deforestation and working with local landowners to identify and restore critical pieces of land. Reforestation has been planned for 681 hectares, and the project will meet both VCS and CCB Standards with PDDs completed and ready

6 A CDM Programme of Activities (PoA) (often called Programmatic CDM) differs from the traditional CDM project approach. A PoA is made up of an unlimited number of CDM Programme Activities (CPAs), which can be included under a PoA at the time of registration and additional CPAs can be added at any point in the life of the PoA. For more information, please see UNEP Risø Centre, 2009.

for validation. Tree seedlings will be grown both in a central nursery and by individual local communities located close to individual reforestation sites. The initiative has attracted some initial funding and will begin a pilot phase, however, it is currently looking for further investment to scale up to full implementation.

Muriqui, Brazil

The Brazilian Atlantic Forest now occupies less than 10% of its former range (SOS Mata Atlantica, 2009) and is threatened by small-holder agricultural activities including cattle production. The Muriqui reforestation initiative is named for the Muriqui monkey (***Brachytelles hypoxanthus***), the largest primate in the Americas, which is highly threatened due to the reduction and fragmentation of its forest habitat. Reforestation with native species is designed to occur in a corridor between two private natural reserves, and will be implemented by working with small landowners who are interested in bringing their lands into compliance with the Brazilian Forest Code and marketing emissions reductions through the voluntary carbon market. Working with local landowners, the local NGO Muriqui Preservation Society, which owns and manages one of the two private reserves, has identified eligible lands for reforestation in areas adjacent to the reserves. The initiative is currently completing the PDD and has constructed a nursery on the site to produce seedlings. The Minas Gerais State Forestry Agency, through a complementary program called ProMata, has supported the initiative with technical advice and materials, and identified landowners to participate in the project.

Quirino, Philippines

The Quirino province in northern Luzon, Philippines, is predominantly an agricultural area with the majority of farming communities cultivating banana and corn crops. To meet the project goal of increasing forest cover while improving community livelihoods, the initiative has been designed using participatory approaches to reforest degraded lands with a mixture of native tree species and agroforestry systems, which will provide participating farmers with a complementary source of income from the sale of fruit, in addition to traditional agricultural crops. The initiative will be generating and marketing emissions reductions through the voluntary carbon market to help finance implementation. In 2007, a pilot area of 20 hectares was planted to demonstrate the project to local farmers. Soon after the pilot establishment, the MoreTrees, Inc. Foundation from Japan committed financing to scale up implementation to a total of 177 hectares identified as being eligible for inclusion under VCS rules. Project partners, including Mitsubishi Research Institute of Japan, have completed the PDDs to meet both VCS and CCB Standards, and these documents have been submitted for third-party validation.

TAMS, Madagascar

The ***Tetik' Asa Mampody Savoka*** ("Return the Fallows to Forest" in Malagasy) reforestation initiative, or TAMS, is located in eastern Madagascar. The initiative is reforesting degraded agricultural land to restore a natural corridor between existing protected areas, including the Mantadia National Park and the Indri Special Reserve. In the past, natural forests have been cleared and lands degraded through unsustainable agricultural practices, including reduced fallow times between crop cycles, charcoal production from native and exotic tree species, legal and illegal forestry and mining activities. The initiative is designed to generate the CDM certified emissions reductions through the reforestation of both public and private lands. The government of Madagascar leads the initiative and is supported by CI, which has led the field work in identifying eligible lands for reforestation. The World Bank BioCarbon Fund has included the project in its portfolio. The government of Madagascar and Conservation International are providing funds for implementation. Several nurseries have been created to reforest at least 600 hectares of degraded land; these nurseries are growing more than 120 native species, most of which have never before been propagated.

Tengchong, China

The Tengchong reforestation initiative is located in the mountains of southwest China, an important biological hotspot which is home to the Red Panda ***(Ailurus fulgens)***, Bengali tiger ***(Panthera tigris tigris)*** and many other threatened animal and plant species. The initiative intends to restore 467.7 hectares of land owned by a forestry cooperative and local village groups, in order to restore the buffer zone around a nature reserve, provide a firewood source for local

villages, reduce soil erosion and provide a source of income to the forestry cooperative by creating and marketing carbon credits. The initiative is led by the Forestry Department of Yunnan Province, which received technical support from partners including CI and The Nature Conservancy, and financial support from 3M Corporation. The local forestry bureau and technical college are providing technical support and undertaking the stakeholder outreach to local communities. Although designed initially to meet CDM criteria, the project has aimed for certification under the voluntary carbon market. The initiative was also the first to obtain Gold-level certification under the CCB Standards.

Reduced Emissions from Deforestation and Degradation (REDD+) activities

Alto Mayo, Peru

The Alto Mayo Protected Forest (AMPF), part of the Peruvian National System of Natural Protected Areas (SERNANP), is an area of approximately 177,749 hectares (or 425,000 including its buffer zone) located in the departments of San Martin and Amazonas on the eastern slope of the Andes Mountains in Peru. The area was declared a protected area in 1982, but a lack of management resources and increasing pressure due to in-migration from other regions of the country have led to a considerable loss of forest cover within the protected area. Now, San Martin has among the highest rates of deforestation in the country. Project partners have worked in the area surrounding the AMPF for many years, and are currently designing a REDD+ initiative to create emissions reductions and deliver long-term financing for management of the protected area. Technical activities completed so far, led by AIDER and CI, include initial carbon stock estimates in the Yuracyacu sub-watershed and deforestation modeling for the entire park. Community conservation initiatives were simultaneously started in 2007 on a pilot basis. In 2009, CI, ECOAN, AVMM, AIDER and additional partners committed to expanding implementation to the remainder of the AMPF and exploring work in the buffer zone, as well. Through Conservation Agreements (contracts negotiated with willing communities stipulating a package of benefits in order to overcome the opportunity cost of performing specific conservation activities), settlers inside the park are organized into *Rondas Campesinas*[7] and will be engaged to support the management of the protected area and stabilize land use inside the AMPF to prevent further clearing of native forests.

CAZ, Madagascar

The Corridor Ankeniheny-Zahamena (CAZ) REDD+ initiative is led by the government of Madagascar, and is taking place on more than 425,000 hectares of rainforest in the eastern portion of Madagascar. The initiative has involved the creation of a new multiple-use protected area, provisionally declared in 2005 with the intention of using sustainable financing, including carbon markets, to support its design and management. The goals of the forest carbon initiative are to reduce deforestation and enhance the capacity of the communities to manage natural resources, while protecting biodiversity and water resources important for downstream production. Revenues from the marketing of emissions reductions will help finance long-term protection and management of the area. Portions of the protected area will be placed under strict protection, while other areas are zoned for community resource management with support and oversight by the government. The initiative has received technical support from CI in the design of the activities aimed at reducing deforestation, calculation of the emissions baseline and the design of the management plan for the protected area. CAZ was the first REDD+ activity to receive the support of the World Bank's BioCarbon Fund, which has also provided technical support, notably by creating a mosaic deforestation methodology designed to be acceptable under the VCS guidelines. This methodology was submitted for validation according to VCS standards in late 2008 and is currently undergoing review.

Maya Biosphere Reserve, Guatemala

The Maya Biosphere Reserve (MBR), in the northern portion of Guatemala, is a mosaic of protected areas and community-managed forest concessions, encompassing approximately two million hectares

7 Rondas Campesinas ("Peasant Rounds") are self-organized, autonomous peasant organizations formed by rural inhabitants in the Peruvian Andes. Used originally to patrol lands and enforce standards of conduct, especially in areas of poor or non-existent control by government authorities, Rondas became widespread as communities opposed the activities of the Shining Path guerilla movement in the 1980s.

of moist forest. There is significant deforestation occurring in the area, due to outside encroachment for agricultural purposes (largely cattle ranching) and illegal land speculation. While the land is owned by the government of Guatemala, the relevant land-management authorities do not have the resources to control illegal deforestation. To assist the government in channeling resources towards the effective management of the area, a variety of NGOs (including local and international organizations) are providing technical support to design potential REDD+ activities and apply carbon accounting methodologies to generate emissions reductions. Although the government owns the land, much of the area is under forest management concessions to communities (living both inside and outside the MBR). One mechanism to reduce deforestation currently being tested with some communities are Conservation Agreements. These agreements complement existing initiatives of sustainable forest management and non timber forest product concessions, and provide additional resources to communities to combat illegal deforestation. The agreements strengthen community management by stipulating specific conservation activities such as patrolling or improved land management in exchange for financial compensation or support to specific community projects as agreed.

Selva Lacandona, La Cojolita, Mexico

In the Selva Lacandona region of Chiapas, Mexico, CI and partners, including Ambio and Na Bolom, have developed a feasibility analysis for a REDD+ initiative on communal lands. The feasibility analysis focused on the potential for both REDD+ activities in the area of the La Cojolita mountain range, which remains largely forested, as well as exploring reforestation/restoration on small-holder lands using the Plan Vivo methodology. Ambio developed Plan Vivo as a way to increase carbon stocks on small-holder agricultural systems by introducing different techniques such as live fences, shade trees for coffee and agroforestry systems. Multiple, individual landowners within a community or geographical area are grouped and managed under one system, lowering the overall transaction costs of the initiative. The Selva Lacandona is a declared communal land area owned collectively by three communities, including the Lacandones, an indigenous group who were the first inhabitants of the area (and for whom the area is named) and two additional ethnic communities (the Tzeltales and the Choles) who arrived subsequently. The three communities must agree on overarching land-management decisions, and collectively agree to enter into any particular project which impacts their shared territory. The forest carbon initiative has engaged in community consultations to identify possible areas for reforestation and to determine the will to commit to a REDD+ scheme for La Cojolita. The general assembly of the community members has a decision-making process in place to focus on issues that impact their collective lands, but they have had historical disagreements on the management of La Cojolita, which has currently stalled the initiative at the feasibility phase, pending further discussions with the communities.

Xingu Basin, Brazil

The watershed of the upper Xingu River includes approximately 14 million hectares of indigenous reserves, including the Xingu Indigenous Park and territories held by the Kayapó indigenous peoples and others. These relatively well-forested territories are surrounded on three sides by encroachment for cattle grazing and agricultural production, and represent the frontier of deforestation in the southeastern Amazon basin. The territories are owned by the government of Brazil but are granted permanently to the indigenous peoples who have exclusive rights to manage the land. The initiative would reduce deforestation and generate emissions reductions through the improved monitoring and effective mitigation of encroachment on the integrity of indigenous territories. A group of partners with many years of experience working in the area, including ISA, IPAM, EDF, CI and local NGOs, are examining the feasibility of REDD+ activities across the indigenous lands and potentially the surrounding areas, as well. The activities are designed to be led by the indigenous communities themselves with the approval of the Brazilian government; the partners are currently conducting preliminary analyses of future deforestation and building capacity of the indigenous peoples, to design a management structure for the initiative.

5. Lessons learned from forest carbon initiatives

Local partner, AIDER, measuring tree diameter above buttressed roots to estimate aboveground biomass in Peru.

Stakeholder engagement field visit to the Junín community in the Bogotá Corridor, Colombia.

Members of local farmers' association identifying areas of Integrated Social Forestry (ISF), Quirino initiative, Philippines.

Field visit to the Mantadia national park, as part of a Forest Carbon Project Development workshop in Madagascar.

5. Lessons learned from forest carbon initiatives

The following sections provide an overview of the key lessons learned from the early experience in designing the 12 forest carbon initiatives, based on surveys and interviews with the forest carbon project managers and partners, as well as results from the experts' workshop (see Section 3 for details on the methodology). The discussion of lessons learned is organized around five main themes that were identified as key for the successful development of forest carbon initiatives: partnerships and management (Section 5.1); technical issues (Section 5.2); financial aspects (Section 5.3); local stakeholders engagement (Section 5.4); and government role and participation (Section 5.5). For each section, we first provide an overview of the topic and outline the different ways in which the 12 forest carbon initiatives have approached this topic, and then highlight which factors have facilitated project development and implementation, and which challenges have been encountered along the way. The recommendations on how forest carbon project developers can address these challenges, and the resulting recommendations for policy makers and national REDD+ strategies are discussed in Section 6.

5.1 Partnerships and management

Overview: the role of partnerships in forest carbon initiatives

Assembling a strong team of partners and ensuring their effective coordination is critical for the success of forest carbon initiatives, due to their complexity and long duration. Forest carbon initiatives require a diverse variety of expertise ranging from technical expertise in biomass measurement and remote sensing, to experience with stakeholder outreach and engagement, to expertise in legal and policy issues, as well as land-tenure rights. It is also important to have partners capable of managing and interfacing with the appropriate authorities, navigating the legal and procedural processes and building capacity where necessary. Traditional "project management" work, such as coordinating work plans, managing contracts and grants and undertaking financial planning, is also necessary to ensure a smooth flow of work. Once emissions reductions are being marketed, there are also additional specific contractual and financial implications for underperformance, which require good legal knowledge and marketing skills.

In this chapter we provide an overview of the partnerships that have been created to oversee the 12 forest carbon initiatives, highlight the key factors that have facilitated good partnerships and efficient project management and identify some of the challenges that have been encountered in the process. For the purpose of this discussion, we define "partners" as the organizations which are responsible for the design, implementation, management or funding of forest carbon initiatives. "Partners" can include NGOs, technical organizations, government entities, the private sector, as well as indigenous peoples' organizations, local organizations or communities, as long as these groups are actively involved in project design, management, implementation, funding and/or decision making. (Local communities, indigenous peoples and other landowners or associations that are involved in field activities or are affected by project activities, but do not actively participate in project management are identified as "stakeholders," and are discussed in Section 5.4.)

Partnerships in the surveyed initiatives

The 12 forest carbon initiatives have taken a variety of approaches to project design and management. In some cases, the initiatives spent an extensive period of time conducting capability assessments to determine the appropriate group of partners, to negotiate their roles and to design the management structure. In other cases, partnerships started in a more ad-hoc way, building on preexisting relationships with key partners and leveraging years of experience with local communities and governments and recruiting additional partners as needed to fill certain gaps or to undertake specific activities. Many of the initiatives, for example, have specifically brought research institutions or specialized consultants into the partnership to deal with the technical activities of biomass estimations, deforestation analyses and PDD development.

Because each partnership has evolved as the result of the project's local context, available local expertise, geographic area of influence or particular funding circumstances, the number and type of partners has varied considerably among initiatives. While some partnerships consist of as few as three organizations (e.g., Emas), others are large, multi-layered structures of >14 organizations, and involve a mixture of NGOs, government agencies, consultants, indigenous peoples organizations and community organizations (e.g., TAMS) (Box 2). The average number of partners per initiative is 8 (± 3).

Box 2. Partnership structures and project management in two reforestation initiatives: Emas, Brazil and TAMS, Madagascar

Artur Paiva (CI-Brazil) and Jeannicq Randrianarisoa (CI-Madagascar)

The number of partners and structure of a project partnership are highly variable, reflecting differences in local context. A good example of a small and simple partnership structure is that of the Emas reforestation initiative, in Brazil, which is working with local landowners to reforest 681 hectares of agricultural land. The partnership involves only three partners: CI-Brazil, Oreades (a local NGO) and CantorCO_2 (a technical consulting company). Due to its experience and credibility in the local area and its expertise in remote sensing and GIS, Oreades has led most of the work on stakeholder engagement and land eligibility analysis, and has established the tree nurseries. All of the technical analyses related to baselines and expected emissions reductions have been handled by CantorCO_2, while general project management and fundraising has been led by CI-Brazil. The small size of the partnership - and the small number of landowners involved (six to date)—has greatly facilitated the development of the reforestation initiative and has resulted in the development of a PDD in less than a year's time.

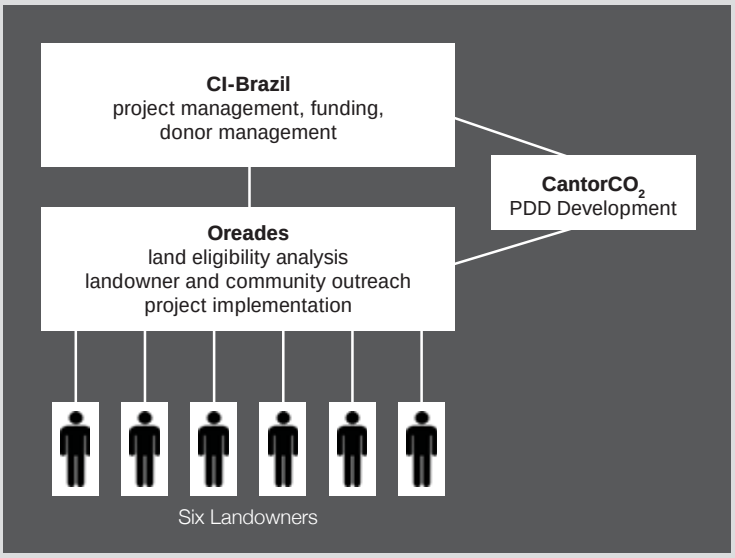

Figure 3. Example of a very simple partnership structure in the Emas reforestation initiative in Brazil.

In contrast, the structure of the TAMS reforestation initiative in Madagascar is much more complex, due to the large number of partners involved (> 14). The initiative relies on a consortium of NGOs and government agencies to provide technical guidance and oversight to the design of the PDD and the implementation of reforestation activities. The government maintains ownership of the project, while the World Bank and CI play both donor and technical advisory roles. Field activities are implemented by seven entities, which are overseen by a field project manager. To maintain regular communication and coordination among partners and stakeholders, monthly meetings have been set up to ensure the coordination of activities and to monitor stakeholder feedback. Participants at the regular meetings include the project coordinating body of the Ministry of the Environment and Forests, the project manager entity (ANAE), the seven local NGOs, the Regional Forest Service and Conservation International-Madagascar. When specific issues need to be addressed, the land titling office and the mayor (or his representative) are also included.

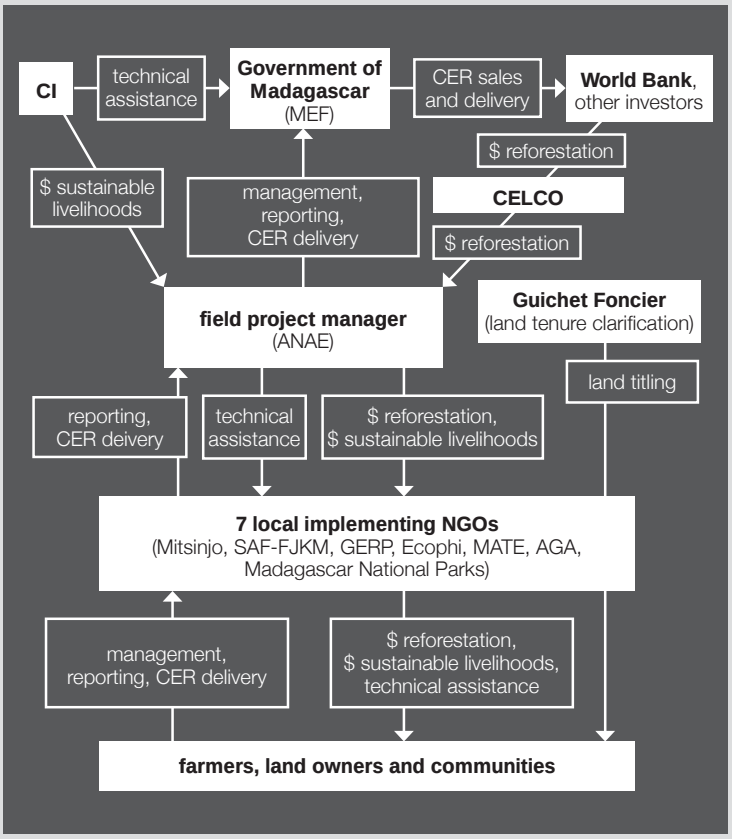

Figure 4. Example of a complex partnership structure in the TAMS reforestation initiative in Madagascar.

Although they vary greatly in structure, in all partnerships it is possible to distinguish two main types of partners. *Core* partners are those that have been more intensively involved during most or all of the feasibility and design phase, prior to startup of the initiative; a second set of ***extended*** partners and those that have been more responsible for particular aspects of the initiative at specific points in time (e.g., technical consultation), while not necessarily involved in the majority of planning or implementation. On average, the initiatives have had a total of 4 (± 1) partners in the "core" partnership group and an additional 4 (± 3) organizations in the "extended" partnership group (Table 5).

In almost all cases, the core partners include NGOs, as well as government entities and private organizations. For example, in the Bogotá Corridor reforestation initiative, the core partners include a private water company (the Bogotá Water and Sewage Company—EAAB) and the Ministry of Environment, Housing and Rural Development (*Ministerio de Ambiente, Vivienda y Desarollo Territorial* in Spanish), who are both interested in the initiative as a means of ensuring the continued provision of water from the watershed that is being reforested, as well CI-Colombia. In the Tengchong reforestation initiative, the core partners similarly include a mix of NGOs (CI, TNC), and government entities (Forestry Department of Yunnan Province, Gaoligong Nature Reserve Management Bureau and Tengchong Forestry Bureau). Appendix D provides a complete list of partners in each of the 12 initiatives, as well as a summary of each partner's primary responsibilities.

Table 5. A summary of the number and type of "core" and "extended" partners in each of the forest carbon initiatives. A complete list of partners in each initiative can be found in Appendix D.

	Core partners			Extended partners			
Forest Carbon Initiatives	**NGO***	**Government**	**Private**	**NGO**	**Government**	**Private**	**Total**
Reforestation							
Bogotá Corridor, Colombia	1	2	0	3	7	0	13
ChoCO_2, Ecuador	2	0	1	1	1	1	6
EMAS, Brazil	2	0	0	0	0	1	3
Muriqui, Brazil	2	1	0	2	0	1	6
Quirino, Philippines	2	2	2	1	0	1	8
TAMS, Madagascar	1	3	0	8	2	0	14
Tengchong, China	2	3	1	2	1	0	9
REDD+							
Alto Mayo, Peru	5	0	0	2	4	0	11
CAZ, Madagascar	2	4	0	0	2	0	8
Maya Biosphere Reserve, Guatemala	3	1	0	0	1	0	5
Selva Lacandona, Mexico	3	0	0	1	2	0	6
Xingu Basin, Brazil	4	1	0	3	2	0	10

*includes development, conservation and community NGOs.

Table 6. Fields of expertise among survey respondents (n = 124, more than one answer allowed).

Expertise	% of respondents
Biodiversity conservation	76.0
Forest management	41.6
Rural development or community engagement	34.4
GIS/Remote sensing	32.8
Biomass measurement	22.4
Economic analysis	21.6
Carbon accounting	16.0
Legal issues	15.2
Other expertise	16.8

Expertise and capacity within the 12 forest carbon partnerships

Although many of the partners have prior experience in forest conservation or reforestation activities, most of them are developing forest carbon initiatives for the first time and do not have previous experience with the technical "carbon" work (i.e., biomass estimates, carbon accounting, baseline development etc.). In fact, of the 124 people surveyed who are working on the 12 initiatives, 76% reported that they had no prior experience in forest carbon work. The most common field of expertise among survey respondents was biodiversity conservation (76% of respondents), which probably reflects the fact that many of the forest carbon initiatives were developed in areas of high biodiversity. Fewer than half of the respondents had expertise in forest management, community development and GIS/remote sensing. Expertise in economic analyses, carbon accounting and legal issues was even less common (Table 6).

In most of the initiatives, the project managers have had to recruit additional technical partners to ensure their partnership has the necessary skills and expertise to successfully estimate and deliver the emissions reductions. Across initiatives, there has been a general need to find specialized expertise related to biomass measurements and carbon accounting, as well as expertise in the legal and political implications of carbon activities. As a result, many of the partnerships have brought on specific partners to fulfill these roles. For example, the Emas reforestation initiative in Brazil contracted a private company, CantorCO_2, to provide biomass measurements, create the carbon baseline and help write the PDD. Similarly, the CAZ REDD+ initiative in Madagascar hired a private company, Winrock International, to help develop the biomass plots and carbon baselines.

Table 7. A list of the perceived gaps in expertise among the 12 forest carbon partnerships (as reported by project managers) and the number of initiatives that mentioned the specific expertise as missing within their partnerships.

Type of expertise	Gaps in forest carbon initiatives	Number of initiatives (n=12)
Legal issues	Carbon ownership and transfer; land-rights issues	9
Financial aspects	Marketing of carbon	9
	Economic analyses and budgeting related to forest carbon initiatives	6
	Fundraising	4
Stakeholder engagement	Conflict resolution and negotiations	6
	Training of local stakeholders in forest carbon activities	5
	Stakeholder outreach and engagement	4
Project management	Forest carbon project development and management	5
Technical	Development of PDD	4
	Measuring biomass	3
	Carbon accounting and baseline development	3
Field activities	Reforestation activities (planting, tree nursery management, etc.)	1
	Development of alternative livelihood options for local communities (e.g., agro-forestry, ecotourism)	1
	Forest conservation measures	0

Despite efforts to bring additional capacity and expertise, many partners still feel that there are significant expertise gaps within their partnerships. Of the 124 respondents surveyed, only 35% felt their partnerships had sufficient expertise to carry out the whole spectrum of activities needed to successfully develop a forest carbon initiative. In contrast, 43% of the respondents thought their partnership did not have all the required expertise to deliver a forest carbon initiative (the remainder were undecided). Particular capacity gaps include expertise in the marketing of forest carbon credits, legal issues of land tenure and carbon ownership, financial analysis and budgeting of forest carbon initiatives, training of local stakeholders in forest carbon initiatives, conflict resolution and negotiations and forest carbon project management (Table 7). Interestingly, all of the partnerships felt they had sufficient experience in forest conservation activities.

Table 8. Training topics in forest carbon issues which would be useful for enhancing capacity within the existing partnerships, as identified by project managers. Numbers in the third column indicate the number of initiatives that mentioned the specific training need.

Types of issues	Specific training need	Number of initiatives (n=12)
Stakeholder engagement	Effective communication and outreach strategy, to ensure local stakeholders understand forest carbon initiatives and can make informed decisions about participation	6
	Equitable distribution of benefits from a forest carbon initiative	8
	Negotiations with stakeholders regarding participation in forest carbon initiatives	2
	Clarification of land tenure and carbon rights	1
	Effects of climate change on local communities	1
Technical activities	Modeling of species growth curves (for reforestation initiatives only)	1
	Modeling deforestation baselines for REDD+ initiatives	1
	Construction of carbon baselines	1
	Basics of completing a PDD	2
Legal issues	Long-term legal implications of carbon projects	6
Policy	Political considerations and policy needs/implications of forest carbon initiatives	6
Marketing	Cost-benefit analyses of forest carbon initiatives	5
	Transaction and negotiation of carbon credits	4
Monitoring	Design of a biodiversity monitoring plan for the forest carbon initiative	1
	Understanding and monitoring leakage in the forest carbon initiative	3
	Measuring and monitoring the socioeconomic impact of project activities	2
Training	How to organize training on forest carbon activities for different stakeholders	1
Project management	Planning project timelines and activities	2
	Effective project administration (including management of carbon revenue)	5

In all of the partnerships, training has been critical for building capacity on forest carbon issues. Many of the partners with existing experience in forest conservation have been able to quickly learn important carbon-related concepts through training courses organized either by CI or other institutions; in fact, 55.2% of survey respondents reported having had some type of training course in forest carbon initiatives. Even so, most of the project managers agree that there is still a need for additional training to enhance partner capacity and facilitate forest carbon activities. A list of topics that project managers think should be included in future capacity-building efforts for partners can be found in Table 8. Interestingly, the most commonly cited capacity needs are related to stakeholder engagement: project managers feel that they need additional training on how to clearly explain what a carbon initiative is to local stakeholders, and on how to set up equitable benefit-sharing schemes that can be of interest to local stakeholders. Other priorities for capacity building that were mentioned by at least half of the initiatives included training on the legal and political implications of forest carbon initiatives.

Table 9. Factors that have facilitated effective partnerships in the 12 forest carbon initiatives.

Enabling factors	Number of initiatives (n=12)
Having a partner who has knowledge of the project area and strong credibility with local communities due to long-term presence in the locality and a good track record	12
Having strong, pre-existing working relationship among project partners	12
Partnering with organizations that have strong expertise in the field of forest carbon, forestry and/or conservation	12
Agreeing on the project's goals and having a clear, common vision for the initiative	11
Partnering with organizations that are motivated to participate for reasons beyond just carbon (i.e., for co-benefits that can result from the forest carbon initiative)	11
Having a strong central partner coordinate partners and activities	8

Factors that have facilitated effective partnerships

The forest carbon initiatives included in this report have benefited from a variety of enabling conditions which facilitated the development of effective partnerships (Table 9).

In all of the forest carbon initiatives, the presence of partners who know the local terrain and can quickly establish credibility and trust with local stakeholders has greatly facilitated project development. For example, in the Emas initiative in Brazil, the participation of a local NGO (Oreades) with an established track record in the region has been instrumental in moving the project forward. Many of the large landowners in the project area were initially suspicious of reforestation efforts and were fearful that their participation would question their compliance with environmental laws; however, because Oreades staff had years of experience working with local landowners in the area, they were able to gain their trust and overcome initial skepticism. Similarly, in the Alto Mayo region of Peru, the involvement of partners with significant experience in the region has been critical for moving the REDD+ initiative forward. The German Technical Cooperation Agency (GTZ) had already worked to establish a water-related Payment for Environmental Services scheme in the area, and this meant that local communities and municipalities had already been exposed to the basic concept of paying for an environmental good or service. In addition, the ongoing work of a local NGO (AVMM) with communities living in forested areas has helped generate interest and confidence in the REDD+ initiative.

All of the forest carbon initiatives have also benefited from having strong, pre-existing working relationships among project partners, which has made it easier to overcome difficulties and uncertainties in project development. Because forest carbon initiatives are new and complex undertakings, most of the partners have had to learn and apply new concepts, and work together on unfamiliar technical analyses and activities. In all cases, the fact that many of the partners had previous experience working together on other types of projects and already had well-established relationships has made it easier for the partnerships to successfully tackle new challenges together. For example, the close and steady relationship between CI's office in Japan and the ChoCO$_2$ project funder (Ricoh Corporation) has sustained the initiative through many difficult periods, such as when unexpected and costly difficulties delayed project design and implementation. The ChoCO$_2$ initiative also had a strong central coordinating partner in CI's Ecuador office, which maintained the sometimes strained relationships with local partners and coordinated the work of multiple consultants.

Another factor that has been critical for all of the partnerships is the inclusion of partners with strong technical expertise in forestry and carbon accounting. For example, the Tengchong reforestation initiative in China has benefited greatly from the involvement of TNC, which has strong expertise in forest carbon issues. The ChoCO_2 initiative in Ecuador has similarly benefited from the availability of excellent national consultants (e.g., Ecopar, a research and capacity building NGO) who greatly facilitated project design and led the identification of CDM eligible lands. In Chiapas, Mexico a local NGO, Ambio, has similarly provided critical technical expertise in biomass measurements and baseline calculations.

Almost all of the partnerships have benefited from having a clear, common vision of project goals that helps motivate partners, ensures their long-term commitment and sustains the partnership over the long term. In the Muriqui reforestation initiative in Brazil for example, the objectives of the project (to reforest private lands for biodiversity conservation and environmental protection and to bring them into compliance with Brazilian environmental laws) were clear, straightforward and compatible with the missions of all the partner institutions. Although some components of project development were difficult, such as the identification and engagement of local landowners, the partners were able to work together to find effective solutions, largely because they were committed to the common goal of restoring lands adjacent to a core private reserve for the preservation of the Muriqui monkey *(Brachytelles hypoxanthus)*.

Another factor that has helped sustain most of the partnerships is the fact that most of the forest carbon partners are motivated not only by the potential climate mitigation benefits, but also by the possibility of achieving social or environmental benefits. In almost all of the 12 forest carbon initiatives, many of the partners are extremely interested in the co-benefits that can result from reforestation and forest conservation efforts, and are highly motivated to ensure that the forest carbon initiatives deliver multiple benefits. For example, the Bogotá water company is supporting the Bogotá reforestation initiative largely because of its interest in restoring critical watersheds and ensuring continued water supply. In Guatemala, the high cultural and biodiversity value of the Maya Biosphere Reserve (and its potential value for ecotourism) have led the government and other partners to explore carbon finance as a means of ensuring the forests' conservation. In the Xingu REDD+ initiative in Brazil, the potential for the activity to serve as a model for the Brazilian Amazon and for REDD+ initiatives involving indigenous peoples around the world has motivated the participation of several partners.

A final factor that has significantly helped many of the forest carbon initiatives is having a strong, core partner who coordinates activities and communication, and ensures that the technical and stakeholder engagement components are developed concurrently. This role was often played, at least in part, by the local office of Conservation International. In some cases, the central partner has been a local NGO (e.g., PEDAI in the Quirino initiative), while in others, a government body (e.g., in the TAMS or Tengchong initiatives) has officially led project development. However, even in cases where the government or local NGO led the project, the local offices of CI have been instrumental in playing a coordinating role, at least at the start, to ensure that activities are carried out in a coordinated manner.

Table 10. Key challenges related to project management and partnerships in the 12 forest carbon initiatives

Challenges	Number of initiatives (n=12)
Limited time and resources of partners to dedicate to the initiative	8
Important gaps in capacity within the partnership	7
Absence of clear mechanisms of communication (regular in-person meetings, regular phone calls, etc.) or enough funds for travel meetings and field visits	7
Differing levels of expertise within the partnership, resulting in some partners feeling frustrated or left out of the process	6
Long time lag between the development of the project concept and the availability of funding for design or implementation, causing some partners or communities to lose interest in the project	6
Lack of strong central leadership and coordination of the project by the leading partner	4
Difficulty due to one or more partners having a different vision of what the initiative is trying to accomplish	4
Competition among partners for leadership of the forest carbon initiative	3
Complex or non-transparent administrative procedures on the part of one or more partners	3

Challenges to effective partnerships and project management

Although the majority of the forest carbon partnerships have been effective, many of them have experienced difficulties in partner relationships and project management at certain times during project development (Table 10). These challenges have largely been due to the complexity and novelty of initiatives, or constraints placed upon the partnerships by limited time or available resources.

Within the partnerships, one common constraint has been the lack of sufficient human and financial resources to dedicate to project development. The partnerships in all 12 initiatives are composed largely of NGOs, and these organizations are often trying to implement multiple projects with limited human and financial resources. In many cases, the project managers have responsibilities for various activities beyond the forest carbon initiatives and this has limited their ability to effectively coordinate activities, maintain communication across partners and provide continuity to project activities. In some of the more complex initiatives involving multiple partners, the amount of time each organization has been able to dedicate to the carbon project has been limited, and has meant that deadlines were missed, that partnership meetings were poorly attended and that coordination has suffered.

Many of the partnerships have also struggled, at times, due to the lack of partners with particular expertise in forest carbon initiatives, or because of critical gaps within the partnerships. As noted earlier, forest carbon initiatives require a diverse set of expertise, and if a partnership lacks a particular expertise or role, this can slow project development. For example, in one of the REDD+ initiatives, a key challenge has been the lack of a strong, locally based (on-site) partner who could lead regular weekly or monthly discussions with local communities and other stakeholders, to maintain their interest and participation. In other initiatives, the difficulty of finding partners with expertise in writing PDDs has been limiting.

Due to the remote location of certain initiatives and in order to fill the required roles with capable partners, the initiatives have sometimes had to rely on partners who are located in cities far from other partners, complicating communication and coordination of activities. Although good communication strategies and close previous relationships can mitigate many problems, an inability to meet regularly face-to-face and to see challenges first-hand has caused some of the partnerships to lose valuable time in addressing emerging problems. For example, in the Muriqui reforestation initiative in Brazil, the fact that the project site is remote and expensive to travel to, has meant that partners have had few in-person meetings. When problems emerged with respect to land eligibility and stakeholder outreach, the partnership was unable to provide direct and timely support to the field team, thereby delaying project development. In initiatives covering multiple administrative jurisdictions, if the main project partners are located in urban centers while the project activities are being planned in the field, coordinating the environmental and territorial management layers responsible for the project area can be time consuming and costly.

Partnerships have also struggled with uneven participation in and ownership of the initiative, due to differences in the partner experience and expertise. In a few cases, some of the partners have become frustrated because they perceive their role to be less important within the partnership or because they are unable to grasp the complexity of roles being filled by other partners. In one reforestation initiative, for example, the landowners wanted to be more involved in the design, methodological, marketing and carbon issues of the initiative, as opposed to only being the contractual implementing partner. In another initiative, a lack of capacity, as well as a lack of communication, made it hard for some partners to follow the pace of the project and to understand the importance of close coordination in anticipating key steps. In another initiative, the fact that some partners had strong experience in one aspect (e.g., social engagement) but little experience and technical skills in the environmental field and vice-versa, meant that partners could not always easily relate to each other, nor explain to other stakeholders the importance, and inter-dependence, of various project components.

In some initiatives, another challenge has been dealing with partner and stakeholder frustration due to the slow pace of project development. Because of technical complexities and long transaction times for certain activities (such as PDD design and validation), the life cycle of a forest carbon initiative is typically much longer than a typical conservation or agricultural project and it may take many months, or even years, to get through the design phase. The slow pace of project development can be frustrating for partners and stakeholders alike. In particular, local landowners or communities that are initially excited to join the forest carbon initiative may begin to lose interest in the project, if project start-up or the delivery of promised benefits does not occur in a timely fashion, and may back out of the project or change the terms for their participation. For example, in one reforestation initiative, one and a half years passed between the start of the project and the planting of the first tree, causing some partners to lose patience and withdraw their participation.

A few of the partnerships have also encountered problems with ineffective leadership or disagreement over partner roles and responsibilities. Given the complexity of forest carbon initiatives, it is critical that there is an agreed-upon work plan, frequent communication and close coordination among partners and that there is a "focal" partner (or partners) leading project development. While most of the partnerships have a clear structure and effective leadership, in a few partnerships there is either no clear, agreed-upon leader, or the lead partner is not able to dedicate enough time to project development. In two of the large REDD+ initiatives, for example, the fact that there are multiple partners accustomed to playing a lead role or being the prominent player in a given region, has resulted in competition among partners to lead the initiative and has made collaboration—and project development—more complex.

In a few instances, partners have had a difficult time agreeing on what the forest carbon initiative is ultimately trying to achieve, and how to obtain these goals, due to different partner priorities and approaches. For example, in one site, some partners were interested in establishing a REDD+ "framework" for the region, whereas others wanted to develop an actual REDD+ initiative capable of generating offsets. In another site, partners have disagreed about the appropriate process for reducing deforestation, with some actively pushing the concept of state-managed protected areas, while others preferring a gradual, community-based approach to establish a core REDD+ area. These types of issues are more likely to arise in sites with a challenging political environment, historical disagreements between stakeholder groups or complex land-tenure issues.

A few partnerships have also faced problems due to complicated administrative procedures and financial management practices, especially when multiple partners are dependent on a central partner or donor for funding. Administering funding grants and contracts can be a particularly complicated process. If budgets are not transparent, partners or local stakeholders may worry that they are being cut out of funding opportunities or that one partner is receiving the majority of the benefits generated by the initiative. This was a particular problem in one case, where landowners expressed frustration with the level of detail of reporting requirements of the central granting partner; difficulties in complying with these requirements have led to delays in funding disbursements, causing subsequent delays in field activities such as tree planting and weeding.

5.2 Technical issues

Overview: the role of technical aspects in the design of forest carbon initiatives

A wide range of technical analyses must be undertaken prior to implementation in order to design and carefully quantify the estimated mitigation benefits of any forest carbon initiative. Much of this prior analysis is similar for both reforestation and REDD+ initiatives. Common activities include identifying and delineating the project boundaries, assessing the eligibility of lands (for reforestation activities), measuring biomass stocks, conducting analyses of historical land-use change, establishing the without-project emissions scenario along with the expected with-project net emissions benefits, and creating a monitoring plan, among others (for a complete review, see GOFC-GOLD, 2008; and Ingram, *et al*., 2009 for REDD+ activities; Pearson, *et al*., 2005 for A/R initiatives). Since these technical activities ultimately determine how much carbon will be sequestered by reforestation activities, or how much greenhouse gas emissions will be reduced as the result of REDD+ interventions (and therefore the amount of emissions reductions or removals potentially credited by the initiative), project managers need to rely on the best available technical expertise and ensure that the analyses are done in a scientifically rigorous manner that follows the guidelines of the carbon standard(s) applied. This technical information is particularly crucial since it represents a central component of the project design document (PDD) and is thoroughly reviewed by third-party auditors as part of the validation and verification process.

In this section, we provide an overview of some of the enabling factors and challenges encountered in developing the technical activities of forest carbon initiatives. We focus our discussion on the management of these technical aspects from the project manager's perspective rather than on the methodological details of such work per se.

Level of difficulty encountered with technical aspects

Our survey respondents indicated that they consider some of the technical "carbon" components to be among the most challenging aspects of project design, in part because these aspects are new to most partners. In particular, proving the eligibility of lands for reforestation (28% of respondents) and establishing the emissions baselines (25.6%) were identified as the two most difficult technical activities to carry out in a forest carbon initiative, along with "non-carbon" activities such as engaging stakeholders (38.4%) and raising funds (27.2%). Because forest carbon initiatives are relatively new, all project managers and partners mentioned that they have faced a steep learning curve in understanding and applying technical issues.

Technical activities undertaken by the forest carbon initiatives so far

The technical activities undertaken by the 12 forest carbon initiatives vary, reflecting their different stages of development (Table 11). All initiatives have either completed or are in the process of identifying the boundaries of the area(s) where forest carbon activities will take place, estimating the carbon (biomass) stocks in the project area and establishing their emissions baselines. In addition, many initiatives have conducted socioeconomic (7/12) and land-tenure (8/12) analyses in order to inform the design of these activities. Among reforestation activities, all have already proved the eligibility of lands (7/7) and the majority have already created a reforestation (6/7) and monitoring plan (5/7), while most have already created a nursery (6/7) with some having already started (3/7) or completed (1/7) the planting of trees. Among REDD+ initiatives, most (4/5) have already conducted a first historic land-use change analysis, identified the drivers of deforestation and conducted some preliminary estimation of future deforestation within the boundaries of the initiative, either based on historical rates or through future projections that take into account future threats based on established models (Soares-Filho, ***et al***., 2004). Many of the REDD+ initiatives have not yet created a monitoring plan—either because they are still in the early stages of project design, or because they are waiting for baseline and monitoring methodologies to be approved under the VCS.

All initiatives have already chosen which carbon standard to apply, but progress on PDD development varies across initiatives, depending also on the level of advancement made in conducting the technical activities mentioned above. Among the seven reforestation activities, five have finished preparing their PDDs and two have already submitted them for third-party auditing, with one already validated under the CCB Standard, and the other one in the process of updating its PDD after having received Corrective Action Requests (CARs)[8] by the third-party auditors. The two remaining reforestation initiatives are still in the process of preparing their PDDs. Among REDD+ initiatives, only the CAZ (Madagascar) has a draft PDD in progress, using the RED mosaic methodology submitted for approval under the VCS and developed by the World Bank BioCarbon Fund specifically for this initiative (BioCarbon Fund, 2008). It is important to note that one factor limiting the advancement of REDD+ initiatives in their PDD development under the voluntary carbon market is the lack of currently approved methodologies for emissions reductions accounting from REDD+ site-level activities. However, several methodologies are presently being reviewed under the VCS and are expected to be approved soon.

8 A Corrective Action Request (CAR) is a request raised by a third-party auditor during validation when there has been a mistake, the requirements of the standard or methodology applied have not been met or there is a risk the emissions cannot be monitored or calculated. Source: adapted from CDM rulebook (http://cdmrulebook.org/).

Table 11. Technical activities undertaken by the 12 forest carbon initiatives as of December 2009. Solid boxes indicate activities that have already been completed; stripes indicate activities that are currently underway; white boxes indicate activities that have not yet been initiated; and boxes with diagonal lines indicate that the activity is not applicable to the type of initiative (reforestation or REDD+). The last column indicates the number of initiatives that have completed each activity.

	Reforestation						REDD+						
Activity completed / Activity in progress / Activity not yet initiated / Not Applicable	Bogotá Corridor, Colombia	ChoCO$_2$, Ecuador	Emas, Brazil	Muriqui, Brazil	Quirino, Philippines	TAMS, Madagascar	Tengchong, China	Alto Mayo, Peru	CAZ, Madagascar	Maya Biosphere Reserve, Guatemala	Selva Lacandona, Mexico	Xingu Basin, Brazil	Number of initiatives that have completed this activity (n=12)
Identified project boundaries	■	■	■	■	■	■	■	▤	■	▤	■	▤	9
Estimated carbon (biomass) stocks	▤	■	■	■	■	■	■	▤	■	▤	■	▤	8
Established emissions baselines	▤	■	■	■	■	■	■	▤	■	▤	■	▤	8
Created monitoring plan	▤	■	■	■	■	▤	■	□	▤	□	□	□	5
Conducted socioeconomic analysis	■	■	▤	▤	■	■	■	▤	▤	□	■	■	7
Conducted land-tenure analysis	▤	■	■	■	■	■	■	▤	■	□	▤	■	8
Designed alternative livelihood systems	□	□	□	□	■	■	□	▤	□	■	□	□	3
Proved eligibility of lands (A/R)	■	■	■	■	■	■	■	⊘	⊘	⊘	⊘	⊘	7
Created nursery (A/R)	□	■	■	■	■	■	■	⊘	⊘	⊘	⊘	⊘	6
Created reforestation plan (A/R)	▤	■	■	■	■	■	■	⊘	⊘	⊘	⊘	⊘	6
Planted trees (A/R)	□	▤	□	□	▤	▤	■	⊘	⊘	⊘	⊘	⊘	1
Conducted historic land-use change analysis	⊘	⊘	⊘	⊘	⊘	⊘	⊘	▤	■	■	■	■	4
Identified drivers of deforestation (REDD+)	⊘	⊘	⊘	⊘	⊘	⊘	⊘	▤	■	■	■	■	4
Estimated future deforestation (REDD+)	⊘	⊘	⊘	⊘	⊘	⊘	⊘	▤	■	■	■	■	4
Chosen carbon standard(s)	■	■	■	■	■	■	■	■	■	▤	▤	▤	9
Prepared PDD(s)	▤	▤	■	■	■	■	■	□	▤	□	□	□	5
Submitted PDD(s) for third-party validation	□	□	▤	▤	■	▤	■	□	□	□	□	□	2
Responded to CARs	□	□	□	□	▤	▤	■	□	□	□	□	□	1
Obtained validation	□	□	□	□	▤	□	■	□	□	□	□	□	1

Standards and methodologies used by the forest carbon initiatives

Most initiatives (9/12) have already chosen which standard best applies to their particular context and are planning to be validated in order to ensure credibility of the emissions removals or reductions generated and gain access to the carbon markets (Table 12). Currently, three reforestation initiatives are pursuing certification through the regulatory market under the CDM, while the remaining four reforestation initiatives and all five REDD+ initiatives are following voluntary market standards (since credits generated from REDD+ activities cannot currently be used in the UNFCCC compliance market). Among the nine initiatives using voluntary standards, the majority (7/9) are using the Voluntary Carbon Standard (VCS) to verify the emissions reductions generated, in combination with the Climate, Community and Biodiversity (CCB) Standards in order to demonstrate the provision of net environmental and social co-benefits. Only two initiatives are using or are planning to use a single voluntary standard, Tengchong in China (CCB) and Selva Lacandona in Mexico (Plan Vivo). At least two of the A/R CDM initiatives ($ChoCO_2$ and TAMS) are also pursuing validation through the CCB, making this standard the most commonly used among all of the forest carbon initiatives (10/12). Although not created specifically to certify emissions reductions, recent market surveys (Ecosecurities, ***et al.***, 2009) have shown that investors in the carbon market are willing to pay a premium price for credits that are also certified with the CCB, in addition to a carbon accounting standard (Box 3).

Some of the reforestation initiatives chose from the beginning to use a voluntary standard; however, others changed from the regulatory to the voluntary market during the design phase, due to the complexity of applying the CDM modalities and procedures. In fact, survey respondents involved in the reforestation activities generally considered the VCS and CCB standards as being more flexible and somewhat less bureaucratic than CDM, and having lower transaction costs while maintaining credibility among investors and donors about the quality of the credits generated. As shown in Table 12, as of December 2009 only one initiative has been validated using the CCB Standards (and is the first project worldwide to have received gold-level certification back in 2007); and another has submitted its PDD(s) for validation under both the CCB and the VCS. Most initiatives (10/12) are still in the process of preparing or finalizing their PPDs.

Table 12. Standards used (or planning to be used) by the 12 forest carbon initiatives. Solid boxes indicate that the project's PDD is in progress; stripes indicate that the PDD has been submitted for validation, while ticked boxes indicate that the project has been validated under the respective standard.

	Reforestation							REDD+					
■ PDD in progress ▤ Submitted for validation ☑ Project validated	Bogotá Corridor, Colombia	$ChoCO_2$, Ecuador	Emas, Brazil	Muriqui, Brazil	Quirino, Philippines	TAMS, Madagascar	Tengchong, China	Alto Mayo, Peru	CAZ, Madagascar	Maya Biosphere Reserve, Guatemala	Selva Lacandona, Mexico	Xingu Basin, Brazil	Number of initiatives using this standard (n=12)
CCB		■	■	■	▤	■	✓	■	■	■		■	10
VCS			■	■	▤			■	■	■		■	7
CDM	■	■				■							3
Plan Vivo											■		1

Box 3. The role of standards in the voluntary carbon market: the Climate, Community & Biodiversity (CCB) Standards and the Voluntary Carbon Standard (VCS)

Steve Panfil and Joanna Durbin (Climate, Community and Biodiversity Alliance)

Standards play a vital role in the carbon markets by providing a guarantee that real and permanent emissions reductions have been achieved. Carbon accounting standards like the VCS and others are designed to do this for a wide range of emissions reductions activities. However, no single standard serves all purposes. For land-based emissions reductions activities like REDD+ and A/R initiatives which may have great impacts on local communities and the natural environment, the Climate, Community and Biodiversity (CCB) Standards exist to help ensure that these impacts are positive. Thus, many project developers are currently choosing to certify their land-based projects against these two leading standards, the Voluntary Carbon Standard (VCS, 2008) and the Climate, Community & Biodiversity Standards (CCBA, 2008).

The Voluntary Carbon Standard (VCS)

The VCS has detailed procedures to ensure that the emissions reductions are additional, accurately measured, permanent and not double counted (i.e., used more than once). The VCS can be used to generate emissions reductions certificates ("carbon credits") from a broad range of activities, including but not limited to land use. Among land-use activities, the VCS currently covers Afforestation, Reforestation and Revegetation (ARR), Agricultural Land Management (ALM), Improved Forest Management (IFM) and Reduced Emissions from Deforestation and Degradation (REDD). For each of these categories, projects must use an approved methodology for estimating their emissions reductions, and are only issued emissions reductions certificates after verification, when an auditor has determined that the emissions reductions have actually been generated following the standard's guidelines. In the case of a reforestation project this would be after the trees have grown, and for a REDD+ initiative, after deforestation or degradation has been prevented. In addition, each project must undergo a risk analysis to define the percentage of emissions reductions which must be deposited into a pooled buffer account managed by the VCS. In the event that emissions reductions are reversed, for example by a forest fire, certificates held in this account would be cancelled to compensate for the reversal.

To track the creation, sale and use of emissions reductions certificates, the VCS has established a registry system, in which each ton of CO_2e is assigned a serial number and is assigned to a single owner. When this "carbon credit," known as a Voluntary Carbon Unit (VCU) is sold, the new owner is recorded in the registry, and when the credit is used to offset the owner's emissions, it is recorded as a "retired" credit and may not be resold. The VCS registries can also assign a label to each offset that comes from a project that has been verified against other standards, such as the CCB Standards.

The Climate, Community & Biodiversity (CCB) Standards

The Climate, Community & Biodiversity (CCB) Standards include social and environmental criteria that enable investors in emissions reductions activities to identify projects that go beyond just reducing emissions by also generating net social and environmental co-benefits. The CCB Standards include requirements for respecting the rights of local people and for their meaningful participation in the project design and implementation. These and other criteria for how projects are done are also likely to make the projects less risky and more likely to deliver permanent emissions reductions.

The CCB Standards first require that approved independent auditors perform a validation, which is an evaluation of the project's design. A validated project must also undergo verification at least every five years. Verification is an evaluation of the project implementation, to determine if the project has met the criteria in the CCB Standards and delivered its expected climate, community and biodiversity benefits. CCB Standards validations or verifications may be done at the same time as a VCS validation or verification, using the same auditor, which usually significantly reduces transaction costs compared with doing the audits separately.

While the focus of the CCB Standards is on the social and environmental impacts of a project, they also include requirements to estimate the future emissions reductions of a project and to measure and report the actual emissions reductions achieved using a methodology that is at least as rigorous and detailed as the IPCC 2006 Guidelines for National GHG Inventories for Agriculture, Forestry and Other Land Use (IPCC, 2006). This requirement helps a project to demonstrate that it generates a net climate benefit, but the CCB Standards do not provide detailed requirements for carbon accounting methodologies, and the Climate, Community and Biodiversity Alliance (CCBA)[12] does not issue emissions reductions certificates. When greater assurance is required on the quantified emissions reductions, for example when they are used as offsets, a recognized carbon accounting standard like the VCS is recommended to guarantee the delivery of real emissions reductions.

There are valid reasons why a project may choose to use only the CCB Standards, for example, in the case where the funder of a project wants to be sure that the project generates net positive climate, community and biodiversity benefits and does not seek to use or sell the emissions reductions generated as certified carbon credits. Projects may also choose to first apply the CCB Standards to demonstrate credibility that will help them attract further investment in a project, or may choose to apply the CCB Standards while they complete the approval process for a VCS methodology. In the voluntary carbon market there is currently a strong preference for projects that use the CCB Standards together with the VCS, and many buyers are willing to pay a premium for offsets that are also verified to the CCB Standards. A recent survey of buyers of offsets from forest carbon projects showed that 75% of respondents are willing to pay at least US$1 extra per ton for the additional CCB Standards certification (EcoSecurities, *et al.*, 2009).

12 The Climate, Community & Biodiversity Alliance (CCBA) is the partnership of international NGOs that publishes the CCB Standards.

Regardless of whether the standard chosen by the initiatives belonged to the compliance or voluntary market, all seven reforestation initiatives applied methodologies developed for the CDM and approved by its Executive Board (Table 13). The most commonly used standard among reforestation projects was the *"Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands"* (AR-AMS0001). This methodology, which is applicable to small-scale projects with annual removals fewer than or equal to 16,000 tons of CO_2 per year, has less stringent requirements for estimating and monitoring of baseline and project-related emissions, which reduces the amount of effort and cost required over the life of the project. In some cases project developers have to invest time and effort in developing a new methodology because the existing methodologies are not applicable to their project site conditions. When the ChoCO_2 A/R CDM project in Ecuador initiated in 2003 for example, project developers had to contract a consultant to develop a new large-scale methodology (ultimately approved by the CDM EB as AR-AM0007) applicable to the site conditions of lands currently under agricultural or pastoral use. However, the project ended up switching to the AR-AMS0001, because the final amount of eligible land and the expected annual emissions reductions were small enough to qualify for the small-scale methodology, and this methodology was also considered more cost-effective (Box 4). Other methodologies that were used by certain reforestation initiatives included AR-AM0009 and AR-AMS0004, which allow for silvopastoral and agroforestry activities, respectively.

Among the REDD+ initiatives, one is planning to use the Plan Vivo Standard (Plan Vivo, 2008), while the other four are aiming for the Voluntary Carbon Standard. Among the latter, two are planning to apply the *"Methodology for Estimating Reductions of GHG Emissions from Mosaic Deforestation"* (RED-NM-001/V1) which has already been submitted by the World Bank BioCarbon Fund for approval to the VCS (BioCarbon Fund, 2008).

Partners involved in developing technical aspects

All of the initiatives have relied to some extent on organizations with relevant expertise to develop several of the technical components required for designing and implementing a forest carbon initiative, such as biomass estimation, deforestation analysis, methodology creation and/or application and PDD development, among others. In many cases, these activities were conducted by one of the core or extended partners with relevant expertise, while in other cases experts were contracted only to deliver certain technical analyses and were not involved in other activities. The activities that were most commonly conducted by expert organizations were:

- estimating the carbon stocks and establishing the project baselines (10/12);
- elaborating on and drafting the PDDs (6/8 that have started drafting or completed a PDD);
- identifying the drivers of deforestation (5/12);
- conducting the historical land-use change analysis (4/12); and
- proving the eligibility of lands (4/12).

Table 13. Methodologies applied by the 12 forest carbon initiatives.

Forest carbon initiatives	Methodology applied	Full name of the methodology
Reforestation[9]		
Bogotá Corridor, Colombia	AR-AM0009-V3; and	Afforestation or reforestation on degraded land allowing for silvopastoral activities - Version 3
	AR-AM0006-V3	Afforestation/Reforestation with trees supported by shrubs on degraded land - Version 3
$ChoCO_2$, Ecuador	AR-AMS0001-V5	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands - Version 5
Emas, Brazil	AR-AMS0001-V5	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands - Version 5
Muriqui, Brazil	AR-AM0003-V4	Afforestation and reforestation of degraded land through tree planting, assisted natural regeneration and control of animal grazing - Version 4
Quirino, Philippines	AR-AMS0001-V5; and	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands - Version 5
	AR-AMS0004-V2	Simplified baseline and monitoring methodology for small-scale agroforestry - afforestation and reforestation project activities under the clean development mechanism - Version 2
TAMS, Madagascar	AR-AMS0001-V5	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands - Version 5
Tengchong, China	AR-AMS0001-V2	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands - Version 2
REDD+		
Alto Mayo, Peru	RED-NM-001/V1[10]	Methodology for Estimating Reductions of GHG Emissions from Mosaic Deforestation (VCS)
CAZ, Madagascar	RED-NM-001/V1	Methodology for Estimating Reductions of GHG Emissions from Mosaic Deforestation (VCS)
Maya Biosphere, Guatemala	to be defined	to be determined
Selva Lacandona, Mexico	Plan Vivo, 2008[11]	N/A
Xingu Basin, Brazil	to be defined	to be deterined

9 CDM A/R methodologies for reforestation initiatives and their full history can be found at: http://cdm.unfccc.int/methodologies/index.html

10 Available at: http://www.v-c-s.org/methodology_mferogefmr.html

11 Available at: www.planvivo.org

Box 4. Experiences with applying CDM standards and methodologies in the $ChoCO_2$ A/R initiative in Ecuador

Cristina Félix, Free de Koning, Luis Suarez (CI-Ecuador) and Kana Yamashita (CI-Japan)

The choice of which standard and/or methodology to apply to a forest carbon initiative can have important implications for the speed, ease and cost of project development. In the case of afforestation and reforestation (A/R) projects, this choice will also be crucial in determining the amount of land that is eligible for planting, thereby affecting the potential amount of carbon credits that can be generated from the project activities. While applying or developing a methodology that is appropriate for the conditions of a given area can be a challenging and time-consuming task, it is critical for project success.

The $ChoCO_2$ A/R initiative in Ecuador experienced first-hand the many challenges in developing and applying CDM methodologies. The reforestation project was conceived by CI and Ricoh (a private company based in Japan) in 2003 as a "triple benefit" A/R CDM project that would produce Certified Emissions Reductions (CERs) to meet Ricoh's emissions reduction target under the Kyoto Protocol, while also contributing to biodiversity conservation and local sustainable development. The goal of the project was to permanently reforest degraded lands in an area with high biodiversity value, thereby enhancing carbon sequestration, while also providing habitat and landscape connectivity for biodiversity conservation.

Several challenges were encountered while developing the project. The first challenge was to identify farmers interested in participating in the CDM reforestation activities. While the project's goal—reforesting degraded lands under cattle or agricultural production by using the CDM as an incentive—made it easy to prove the "additionality" of the project and to calculate the expected emissions reductions that would be generated, in practice, it was difficult to find landowners willing to set aside their lands to participate in a native tree species (and non-commercial) reforestation project because their land, though degraded, contributed to their livelihoods. While the project initially expected multiple landowners to participate, the long time lag between project conception and start of reforestation activities (due to the need to develop a new methodology) led several landowners to withdraw from the project.

A second challenge was identifying which lands would meet the eligibility requirements of the CDM under the respective guidelines, which stipulate that eligible lands have to be deforested prior to 31 December 1989 (CDM EB 35, Annex 18, 2007). Initially, it was estimated that 345 hectares of the available lands were eligible for reforestation, based on historical and land-use information gathered through an initial remote-sensing analysis and landowner interviews. However, subsequent ground-truthing work carried out by the technical partner (ECOPAR) determined that the actual amount of eligible land was about 183 hectares, due to the fact that part of the land that had been identified as "non-forest" in 1990 had regained forest cover to a point that passed the national definition of forest (30% crown cover; five meters high; one hectare minimum area) and thus was not eligible for reforestation. Subsequent analysis with fine-scale satellite imagery further reduced the total eligible area to 161.2 hectares due to the elimination of lands that were identified as forest on 31 December 1989 and thus did not meet CDM land-eligibility requirements. In addition to drastically reducing the amount of land that could be reforested, the final project area was composed of a number of highly fragmented polygons across the landscape (over 30 plots), thus sharply decreasing the scope and cost-effectiveness of the project.

A final challenge was related to the need for the project to develop a new CDM methodology. At the time the project was initiated, there were no approved methodologies applicable to CDM A/R projects. In fact, when the project was conceived in early 2003, the rules for A/R CDM project activities were not fully in place under the UNFCCC. Official rules for A/R activities under the CDM were agreed upon in December 2003 during COP9 in Milan, with the first A/R methodology being approved in 2005[13]. Consequently, the project partners decided to develop and submit their own A/R methodology that would be applicable to the conditions of the project area. After about two and half years of work (2004-2007), the new methodology (AR-AM0007: *"Afforestation and Reforestation of Land Currently under Agricultural or Pastoral Use"*)[14] was finally approved by the CDM Executive Board. However, the time and effort spent to develop the A/R methodology were too much to maintain the commitment of some landowners who initially agreed to participate in the project activities. Combined with the results of the new land-eligibility analysis of the available lands that scaled down the project area to 161.2 hectares, the project finally decided to use the CDM small-scale methodology[15], which allowed for simplified baseline and monitoring procedures.

There are several important lessons from this experience. First, the time and resources required for developing and applying a CDM methodology can be significant and sometimes prohibitive. In addition, developing a new methodology enhances the uncertainty of the project schedule and is likely to delay project development. Although developing a new methodology was a necessity for the $ChoCO_2$ project, whenever possible, project managers should choose to use existing methodologies, rather than developing their own, new methodology. An important lesson learned is that after having applied the land-eligibility criteria of the CDM to the project area, the appropriate scale of implementation should be assessed (availability of sufficient hectares) before starting the project, to assure cost effectiveness. Another key lesson is that project developers should not be "wed" to a particular standard or methodology, but carefully consider alternatives. For example, depending on the local conditions and the project's goals, managers of reforestation initiatives should consider whether the choice of a voluntary standard (which are generally more flexible) is more appropriate than a regulatory mechanism such as the CDM. The choice of voluntary vs. regulatory mechanism should be carefully considered by discussing the requirements and the ramifications of each approach with the local stakeholders, particularly if the project is considering pursuing the CDM, which has more rigorous and timing consuming procedures. Ultimately, project managers should strive to find the right methodology and mechanism on the basis of local conditions and local needs, as well as the needs of the investor to reduce costs and optimize benefits.

13 The first approved methodology was the AR-ACM0001—Afforestation and reforestation of degraded land

14 Available at: https://cdm.unfccc.int/UserManagement/FileStorage/T913E6XG8P5QIYVFNUMDACJZ2B0SWR

15 Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands

Table 14. Factors that have enabled the development of technical activities in forest carbon initiatives.

Enabling factors	Number of initiatives (n=12)
Project partners with good technical skills and prior experience with forest carbon initiatives	11
Availability of technical information or data about the project area	9
Good coordination between project management and the technical teams	8
Information and lessons learned from existing forest carbon initiatives in similar contexts	6

Factors that have enabled the development of technical activities

Several factors have helped facilitate the development of technical activities, including having solid technical partners, detailed site-specific information, good coordination among technical aspects and previous experience with forest carbon initiatives (Table 14); these are discussed below.

In almost all of the initiatives, the participation of key technical partners or consultants with specific expertise and experience in technical issues (such as biomass estimation, application of methodologies, baselines, etc.) has been critical for the development of the initiative. In Mexico, for example, the Selva Lacandona initiative has benefited greatly from the experience and expertise of two local NGOs: Ambio with extensive experience in developing and applying the Plan Vivo System[16], and EcoSur with expertise in spatial analysis and biomass estimation. In Ecuador, the ChoCO_2 reforestation initiative contracted Ecopar, a consultant group specialized in CDM projects, to do the remote-sensing analysis and ground-truthing to determine which land was eligible for reforestation. The Xingu REDD+ initiative in Brazil has similarly benefited from the Clark Labs and IPAM's extensive experience with deforestation modeling (using the Land Change Modeler and Dinamica models, respectively) and baseline development to establish future emissions scenarios for the Xingu Basin, while relying also on IMAZON's capacity in satellite monitoring of deforestation and degradation. In fact, several project managers mentioned that having experts involved in developing the PDD provides more authority and confidence to donors/investors and local partners, while reducing the possibility of technical analyses being questioned by the third-party auditors at the time of validation/verification. Securing good technical advice for designing the alternative livelihood component of the initiative (e.g., agroforestry systems, agricultural intensification, etc.) was also mentioned by project managers as being important in helping to gain the trust of the local population in that the livelihood options proposed by the initiatives are based on sound technical expertise rather than speculation, therefore encouraging their participation.

In some cases, the development of the technical component of forest carbon initiatives has also benefited from the availability of pre-existing information about the area where activities are being implemented.
The development of forest carbon initiatives is data-intensive, requiring significant amounts of biophysical data (such as land use, forest cover, patterns of land-use change, carbon stocks, etc.), as well as information on land tenure and socioeconomic characteristics of local stakeholders. In addition, reforestation initiatives require particular details on the tree species being planted, such as growth rates, stem volume, wood density, DBH, allometric equations, biomass expansion factors, etc. While none of the forest carbon initiatives had all of this information readily available prior to beginning work, those sites that had at least some pre-existing datasets had a much easier time developing the PDD and did not have to invest as much in data collection as those where data was lacking. For example, in the TAMS initiative in Madagascar, an existing database on forest cover (and available satellite images) provided valuable data for the initial historical deforestation analysis that allowed the project to identify eligible lands that could be

16 More information on the application of the Plan Vivo System in Mexico, can be found at: http://www.planvivo.org/fx.planvivo/scheme/mexicogovernance.aspx

reforested under the CDM rules, yet this analysis had to be refined somewhat using more high-resolution data at a later stage. This same analysis was also used for the adjacent CAZ REDD+ initiative. Similarly, the Bogotá Corridor initiative in Colombia has taken advantage of pre-existing information related to land cover and use, land tenure and other socioeconomic data generated by a variety of NGOs, universities, institutions and environmental authorities to incorporate it into the design of the conservation corridor. The Tengchong reforestation initiative in China obtained most of its socioeconomic and biophysical data included in the PDD directly from the government and from previous local and national forest inventories.

Good coordination between the management and technical partners of the initiative can also facilitate the smooth development of project activities. Many of the project managers pointed out the importance of clearly coordinating the development of the various activities that need to be conducted and incorporated into the design of the initiative, highlighting the interconnectedness, not only among the different technical aspects, but also with the other components of project management. For example, a land-tenure analysis is often necessary in order to identify the final project boundary (in cases where property rights or titles are not clear), or extensive field work is needed to collect all the necessary data prior to producing a baseline for a REDD+ initiative, such as GIS coordinates on settlements and trails inside the area, biomass information, ground-truthing of satellite images, etc. All of these activities must be well planned up-front and integrated into the general project management workplans and schedules so that the technical activities carefully reflect the on-the-ground reality and are not done in a vacuum. In the TAMS reforestation initiative in Madagascar, the fact that the core technical leader has a good understanding of all project components—and how they fit together—has greatly facilitated the technical work and ensured products are delivered in a timely manner to meet deadlines. The Emas initiative similarly benefited from the fact that the main local partner (Oreades) specializes in geo-spatial analysis and has an excellent understanding of regional land cover dynamics, which greatly expedited the identification of lands eligible for reforestation.

Previous forest carbon initiatives within the country, or in similar land-use contexts, can provide useful lessons about how to successfully complete technical activities. In roughly half of the initiatives surveyed for this report, field managers mentioned that they looked at how other existing forest carbon initiatives within their region or country were being designed, and tried to learn from and adapt such experiences to their own context, as appropriate. In Colombia for example, the previous experience of the Procuenca[17] CDM reforestation project provided key insights into how to develop the project and which A/R CDM methodology could be applied to the Bogotá Corridor initiative. In Madagascar, the TAMS restoration technique is a modified version of one used previously in the northern part of Madagascar in a different project. Similarly CI's previous experience in applying the BioCarbon Fund RED methodology in the Madagascar REDD+ CAZ initiative is accelerating the process of applying it in the Alto Mayo initiative in Peru.

17 Procuenca is a CDM A/R project carried out in the Manizales region of Colombia and is currently under registration. For more information, please see: http://cdm.unfccc.int/Projects/DB/TUEV-SUED1253788401.27/view

Table 15. Main technical challenges encountered in developing forest carbon initiatives.

Type of Challenge	Challenge	Number of initiatives (n=12)
Information gathering and data collection	Problems with obtaining access to information held by the government or other partners	6
	Difficulties accessing technical information, due to its being held outside of the country or not being available	4
	Lack of socioeconomic data for the region	4
	Lack of information on native tree species	3
	Problems obtaining good satellite images due to cloud cover	2
Measuring or estimating biomass	Lack of biomass data for forests in the project area	6
	High expense of biomass and carbon data collection (especially of soils)	6
	Limited knowledge on native tree species	5
	Difficulty in setting a rigorous and representative sampling design for measuring biomass plots	4
	Lack of capacity in country for conducting biomass estimates	4
	Large variability in carbon estimates across different studies for a certain area, which makes the choice of reference difficult	4
	Lack of adherence to the IPCC guidelines for biomass data collection	3
Developing emissions baselines	No available methodologies applicable to the initiative, especially for site-level REDD+ activities	7
	Difficulty of creating a baseline for a large heterogeneous area	6
	Difficulty of modeling drivers of deforestation and predicting future deforestation patterns	5
	Difficulty of determining leakage areas due to multiple initiatives being developed in the area	1
Identifying land eligible for reforestation (note: applies only to reforestation projects)	Unreliability of interviews with community members as a means of verifying land that is eligible for reforestation (i.e., land that was not forested in 1990)	7
	Lack of national forest definition at the beginning of the project, or a change in the definition after land eligibility analysis is made	7
Other challenges	Lack of alignment of technical activities with project-funding cycles	5
	Language obstacle in translating key documents	5

Challenges encountered in managing the technical aspects of the forest carbon initiatives

The challenges encountered by project managers in managing the technical aspects of forest carbon initiatives have been related mainly to obtaining and accessing information necessary for project development, estimating biomass stocks and carbon numbers and establishing baselines for carbon emissions (Table 15). Reforestation initiatives have faced additional challenges related to identifying which lands were eligible for reforestation activities under the carbon standard applied.

One challenge faced by many forest carbon initiatives was the limited availability of and access to up-to-date, relevant biophysical and socioeconomic information. In some cases, this information hasn't been collected or doesn't exist. For example, the ChoCO_2, TAMS and Bogotá Corridor reforestation initiatives in Ecuador, Madagascar and Colombia, respectively, were initially slowed down by the lack of information on the growth rate of native tree species. This made it difficult to estimate how much carbon would be sequestered by the reforestation activity, requiring the initiatives to either produce this information

themselves or to use default values from the "*IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry (2003)"* (IPCC GPG LULUCF), which may underestimate the true emissions reductions generated. In other cases, it might be hard to access some available information (such as socioeconomic census data, or country-level satellite images of land use), either because it is held by government agencies or by partners unwilling to make it publically available, or because this information is not well-organized, systematized or held in a central location.

A particular challenge for some countries (such as Madagascar) is that much biophysical data is collected by foreign researchers and taken overseas, making it difficult to track and/or access. In still other cases, the available information is outdated or not detailed enough to be useful. For example, forest cover maps are often too old, lack the sufficient spatial resolution to be useful for the development of forest carbon initiatives and may be based on unknown or poor-quality data sources or cloud cover in satellite images may restrict their use. This was a problem in the Quirino reforestation initiative, where initial land eligibility was determined using a forest cover map developed from questionable-quality interpretation of aerial photos; subsequent analysis using high-resolution satellite data showed some of the areas planted in the pilot site were ultimately ineligible for inclusion in the carbon project, based on CDM criteria which require eligible lands to be deforested prior to 31 December 1989. The same can be true for socioeconomic data, such as in the Bogotá Corridor initiative in Colombia, where several types of data (such as land-tenure information) were available but outdated, or very expensive to obtain.

Project managers have also encountered difficulties in obtaining accurate information on biomass and carbon stocks within the boundaries of the activities due to the lack of data, high cost and time needed for data collection and limited experience in biomass data collection. Of the five REDD+ initiatives, three had to conduct their own biomass measurements through field studies using sample plots, either because site-specific information was not readily available or because the available data was of insufficient quality to meet IPCC GPG LULUCF (2003) requirements. The other two initiatives where able to rely on the availability of regional biomass studies in the literature (Xingu Basin in Brazil), or data from national forest inventories, particularly DBH and allometric equations (Maya Biosphere Reserve in Guatemala). Obtaining good quality data is sometimes restricted or made more demanding by difficulties present in the site itself; many REDD+ sites are very hard to access for conducting biomass surveys, and some are in areas of steep terrain and frequent cloud cover that make land-use change detection through satellite images more difficult, thus requiring field validation. While RADAR penetrates clouds, its data are much less useful than optical satellite data in areas of steep terrain. Most reforestation initiatives have had to similarly establish their own plots to derive such biomass data.

In general, establishing plots and doing field work is considered expensive, time-consuming (for example, the CAZ initiative invested five months of staff time and US$30,000 towards biomass data collection), and also technically difficult, due to the need to have a clear, stratified sampling design and sufficient plots. As a result of their experiences, several project managers suggested that it was more cost-effective to use IPCC default values (although they also highlighted the risk that default values might underestimate the true carbon stock of the project area, leading to a loss of credits) or regional studies, rather than conducting expensive biomass studies. The three initiatives in Brazil also highlighted the importance of keeping up to date on advances in biomass research in order to have the latest and highest-quality data available.

There have also been some challenges with establishing the emissions baselines (both with- and without-project scenarios), particularly for REDD+ initiatives, due to the difficulties of accurately assessing carbon stocks across large, heterogeneous areas, determining appropriate leakage areas and, in the case of REDD+, projecting future deforestation patterns (Box 5). The development of carbon baselines is particularly complicated in large, heterogeneous landscapes, because different areas have different land uses (and carbon stocks) and may be subject to distinct land-use pressures—and all of these aspects have to be accurately reflected in the baseline. For example, although the Xingu Basin of almost 14 million hectares is mainly forested, there are likely differences in forest types and associated carbon stocks across the basin, and areas in the east and south are much more vulnerable to deforestation than others, due to their proximity to the expanding agricultural frontier. Furthermore, field work costs are exacerbated in the case of heterogeneous landscapes, which require a larger number of sampling and monitoring plots to ensure that the required level of precision (95% confidence level) is achieved in the estimates of the initial carbon stocks and the emissions reductions achieved. REDD+ initiatives have also had difficulties in determining appropriate leakage areas, as there is little guidance on how to define such areas in the guidelines provided by the voluntary carbon standards.

Another challenge REDD+ initiatives have faced is the ability to project future deforestation and associated emissions for the without-project scenario. Given access to the right information and expertise, historical deforestation analyses are often not that difficult—but predicting what people may do in the future is. While spatially explicit models exist, defending the future total rate of deforestation that is used in combination with the spatial model of where deforestation is most likely to occur to create simulations of future deforestation patterns, depends on identifying strong correlations between the drivers of deforestation and the forest lost, which often may depend on having good non-spatial data on socioeconomic information. However, information about future trends is often limited or unavailable (for example, future plans related to infrastructure or agricultural development, or migration patterns) to defend whether the total rate in the non-project scenario should be increased or not, or to assess the likelihood of leakage. Sufficient guidance with respect to these issues is also still lacking in the voluntary carbon standards.

Overall, the biggest problem with REDD+ baselines has been that there are no agreed-upon rules yet on how this should be done. Several methods have been submitted to the VCS, which are quite similar in terms of the technical issues, and most project developers are waiting for these methodologies to be approved in order to apply them to their initiatives. However, there are still some very fundamental issues that are not agreed upon and thus project developers are trying to estimate baselines while aiming at a moving target. Despite this, the technical baseline steps—once approved—can be done quite readily for almost all initiatives.

The lack of appropriate methodologies has also hindered the development of certain reforestation initiatives. For example, the $ChoCO_2$ initiative had to develop its own A/R methodology (AR-AM0007) and go through the formal CDM approval process because none of the existing A/R methodologies at that time was applicable to its local conditions (lands currently under agricultural or pastoral use) when the project design began (see also Box 4).

For reforestation initiatives, determining which lands are eligible for reforestation has also proven to be particularly challenging. Under CDM standards, reforestation activities can only occur on lands that were not "forested" in 1990 (Pearson, *et al.*, 2005). While this rule is fairly straightforward in theory, in practice it has often been difficult to evaluate land eligibility due to the lack of available satellite imagery from 1990 or other land-use data which could be used to evaluate the condition of the land in 1990. The VCS rule for A/R projects is less restrictive, stipulating that to be eligible, land may not have been cleared in the 10 years prior to the project start (VCS, 2008). In many cases, projects have had to rely on interviews with local farmers to identify eligible land—and this has proven problematic because farmers sometimes have incomplete or inaccurate knowledge of the history of their land, or, in their eagerness to participate in the reforestation activities, offer land that is actually not eligible. When projects have subsequently obtained satellite imagery to verify land-use claims, there have often been large discrepancies in the total amount of eligible land area. For example, in the ChoCO$_2$ initiative eligible lands were reduced from approximately 345 to 161.2 hectares after rigorous remote-sensing and ground-truthing analyses were conducted (Box 4).

Similarly, the Muriqui reforestation initiative initially relied on landowners to indicate the date when their areas were deforested in order to identify eligible lands, but when this information was cross-checked with satellite images, much of the land turned out to be ineligible.

A related issue is the uncertainty—in some countries—regarding the official definition of "forest" at the time of project design. In a few cases, a country might have a national forest definition without having officially submitted it to the CDM Executive Board. In such cases the lack of a clear definition has made it difficult to determine which lands could or could not be included in the reforestation initiative, since there was uncertainty in whether they would meet the definition of non-forest land once a decision was communicated to the CDM Executive Board. These two interrelated rules end up directly affecting the amount of land that is eligible for reforestation, and might result in many lands being left out of the project boundary (if certain lands do not result to fit the definition of "non-forest" as of 31 December 1989) or the project consisting of many dispersed patches of land which decreases the cost-effectiveness of the initiative.

Box 5, Part 1. Experience and challenges faced in doing technical analysis in the Alto Mayo REDD+ initiative, Peru

Eddy Mendoza, Claudio Schneider (CI-Peru) and Marc Steininger (CI-HQ)

Securing technical expertise in fields such as field forestry, biomass accounting, remote sensing and modeling is a critical component for successfully designing forest carbon initiatives. The Alto Mayo Protected Forest (AMPF) REDD+ initiative in Peru has been able to rely on a strong set of experts to assist with the technical analyses needed for the development of the carbon baseline, such as biomass estimation, GIS data collection, historical deforestation analysis and future baseline projections.

The partner organization AIDER led the collection of field biomass data in the pilot sub-watershed (Yuracyacu) in 2007-08 to help develop carbon stock and baseline emissions estimates for the initiative. AIDER technicians trained in forest inventory methods established 102 plots throughout the 12,479-hectare watershed. They estimated an average of 147 tons of carbon per hectare stored in above and below-ground biomass, not including other pools such as litter or soil organic carbon (Recavarren and Nalvarte, 2008). The estimates obtained in the Yuracyacu watershed had an overall estimate of error of only 10% (at the 95% confidence interval); therefore these values will serve as a proxy for biomass for the entire AMPF until further analyses can be completed in the remaining watersheds.

In addition, CI-Peru, with technical support from remote-sensing specialists based in the Virginia, USA office of Conservation International, has completed a preliminary analysis of deforestation for the Alto Mayo basin using a time series of Landsat images from 1996, 2001 and 2006, providing a 10-year historical perspective of deforestation (Figure 5). The classification includes broad classes of forest, non-forest, water and cloud or cloud shadow. It does not include more specific sub-classes of forest or non-forest, because this requires more field reference information than was available at the time. However, the region is very cloudy, and a significant portion of the satellite images used was obscured by clouds. With new funds to support the development of the initiative, CI is now acquiring additional images from past years to fill in cloudy areas, as well as updating the analysis to 2010, both of which are needed to develop a Project Design Document (PDD).

Box 5, Part 2. Experience and challenges faced in doing technical analysis in the Alto Mayo REDD+ initiative, Peru

The rate of deforestation inside the AMPF area (including the buffer zone) estimated from the existing analysis is 0.35% per year for the 2001 to 2006 period. The initiative will most likely follow the steps defined in the *"Methodology for Estimating Reductions of GHG Emissions from Mosaic Deforestation"* (BioCarbon Fund, 2008) for completion and validation of the PDD, once the methodology is approved under the VCS standard. The project site and surrounding area have among the highest rates of deforestation in the country, which implies a potentially high emissions baseline.

However, the initiative has encountered several challenges that have limited its ability to fully develop a future baseline and hence the analysis thus far only enables an initial feasibility assessment to be made until new data is acquired. First, the lack of biomass estimates for the specific forest types inside the project area (specifically cloud and montane forests) means that the initiative has to establish biomass plots in the field in order to obtain information on carbon stocks, which is both expensive and time-consuming. During the field work carried out in the first watershed, many areas that needed to be sampled were difficult to access because of steep terrain. The cloudiness of the satellite images has also been a challenge, although the project plans to obtain and analyze additional images. Another issue is that some important data, such as maps of small settlements and mule trails and small settlements - which is how people gain access to the forest—are incomplete or unavailable. Because such data on the drivers of deforestation is an essential input for modeling reference scenarios of the location of future deforestation in the project and leakage areas, significant field work is necessary to obtain this information. In addition, the lack of approved methodologies under the Voluntary Carbon Standard for REDD+ initiatives has delayed project design and validation and has created uncertainty about what technical guidelines need to be followed.

The Alto Mayo initiative's experience with developing a baseline points to the importance of not underestimating the complexity of the technical components of forest carbon initiatives. One of the major lessons learned is that it is important to identify the gaps in the available data and the field work required to obtain the missing information early on in the project design so that sufficient time and resources can be dedicated to filling these gaps, and so that project design and implementation is not delayed due to missing data.

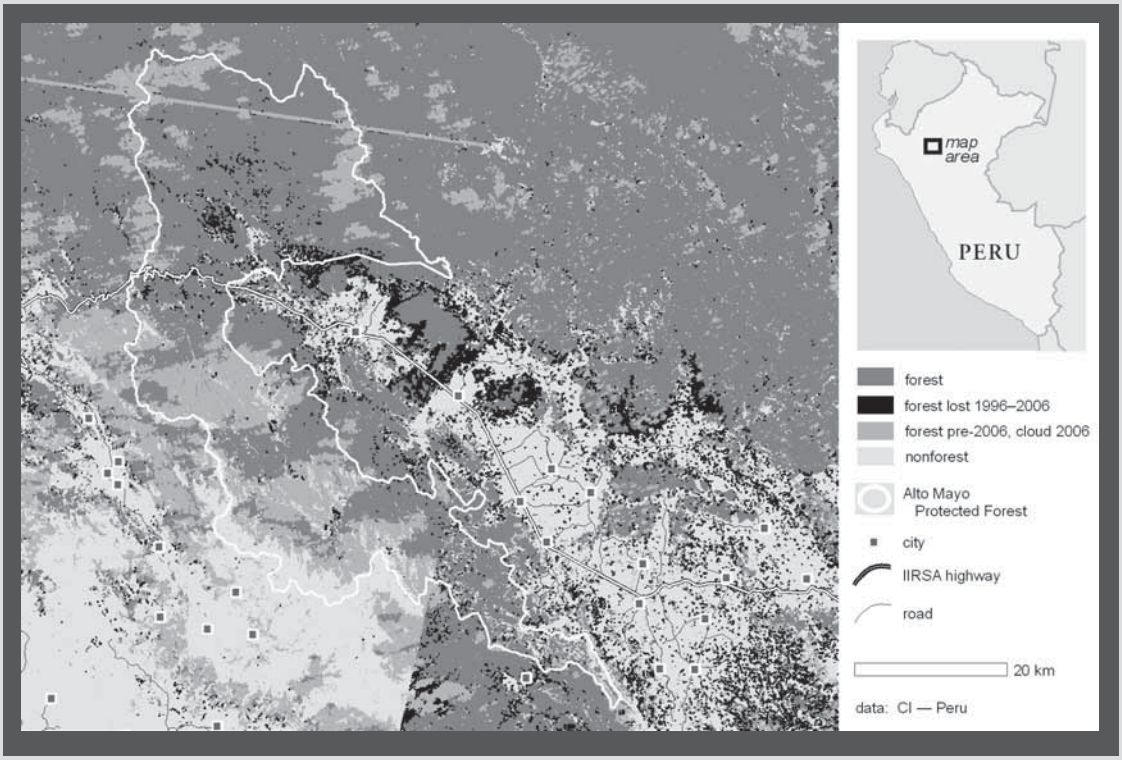

Figure 5. Map showing historical deforestation (1996-2006) in the Alto Mayo REDD+ initiative area.

5.3 Financial aspects

Overview: the role of financing and fundraising in forest carbon initiatives

Since REDD+ and reforestation initiatives extend anywhere from 20 to 100 years, securing their financial sustainability will be crucial for ensuring that they can be implemented and sustained over the long term. Project managers have to be effective in attracting enough funds during the early stages of development, be successful in marketing the emissions reductions generated to potential buyers—preferably *ex ante*—and rely on good financial management throughout the project's lifecycle to support these initiatives during their different stages of development. Forest carbon initiatives are unique with respect to traditional reforestation or conservation projects, in that they provide the opportunity to rely on an entirely new and rapidly growing source of funding through the marketing of carbon credits resulting from either carbon sequestration or reduced emissions (Capoor, *et al.*, 2009; Hamilton, *et al.*, 2009). However, all carbon projects (i.e., including energy and other CDM-scope projects) require a significant amount of up-front funding in the design phase (UNEP Risø Centre, 2007). Since such costs often occur many years before carbon credits are actually generated, verified and marketed, careful attention must be paid to the issues of fundraising and financial management during the early stages of project development to cover design and start-up costs. **This section describes the lessons learned from CI's efforts in raising and managing funds during the early stages of the forest carbon initiatives surveyed in this report, and highlights some of the major challenges and enabling conditions encountered, from the perspective of project managers.**

Level of difficulty encountered in raising funds for the forest carbon initiatives

Our survey results indicate that raising funds is one of the most difficult activities during the early stages of project development. Not all survey respondents were involved in the fundraising efforts, however, among those involved (n=52, or 42% of all survey respondents) the majority perceived it as a difficult task (36.4%), while another 25.4% thought it was somewhat easy and only 3.6% considered raising funds an easy task. There are several factors that can facilitate or hinder successful fundraising for forest carbon initiatives, which are discussed below.

Sources and types of finance for the forest carbon initiatives

All of the initiatives analyzed in this report relied on several sources of funding to finance their activities during their initial stages (Table 16). The majority (8/12) relied two to three different sources of funding, while four initiatives had four to five funders financing their activities. With the exception of one reforestation initiative, so far none of the initiatives has managed to secure enough funds to cover all of the phases of development. In fact, the $ChoCO_2$ in Ecuador is the only initiative that has secured full funding and is relying almost entirely on a single source of funding (a private investor) from its initial stages of inception to PDD completion, up to (in the future) credit generation. Philanthropic money (either through NGOs or private donations) was the most common funding found across the initiatives, with all having relied upon it to different degrees. Philanthropic funding was also identified by the majority of survey respondents (48%) as the most important type of seed funding for covering initial project activities. In total, six of the initiatives have relied on some form of carbon finance in exchange for future credits, either in the form of an up-front investment on behalf of the CER/VER buyer, or as funds accruing in the future upon delivery of verified credits through a pre-signed ERPA (Emissions Reduction Purchase Agreement) (Box 6). However, since none of the initiatives has undergone a verification event, these emissions reductions credits have yet to be delivered. Governments have also provided financial support in four cases, and in two of these cases, have also been involved in promoting the carbon credits to potential buyers.

Table 16. Types and sources of funding for the forest carbon initiatives. Colored boxes indicate that the initiative has received this type of funding; numbers within the boxes indicate the number of different sources of funding received under each type.

Types of funding	**Reforestation**							**REDD+**					**Number of initiatives that received this type of funding**
	Bogotá Corridor, Colombia	$ChoCO_2$, Ecuador	Emas, Brazil	Muriqui, Brazil	Quirino, Philippines	TAMS, Madagascar	Tengchong, China	Alto Mayo, Peru	CAZ, Madagascar	Maya Biosphere Reserve, Guatemala	Selva Lacandona, Mexico	Xingu Basin, Brazil	
Philanthropic funding (NGO or private donations)	1	1	2	3	4	2	2	2	3	2	2	2	**12**
Carbon finance (up-front investment in exchange for future credits)		1			1	1	1	1	1				**6**
Government spending	1					1	1		1				**4**
Total number of sources of funding per initiative	**2**	**2**	**2**	**3**	**5**	**4**	**4**	**3**	**5**	**2**	**2**	**2**	

The footnotes bellow (18 & 19) correspond to Box 6 on page 67.

18 The emissions reductions or sequestrations achieved by a project in a particular year are referred to as "vintages" of that year. Offset users generally try to match as closely as possible the timing of their corporate or individual emissions with the reductions or sequestrations achieved from offset projects. This makes "near-term vintages" more attractive for offset buyers and project investors.

19 See Senator Stabenow's bill (November 2009), which allows VCS REDD credits to be converted to compliance credits in the early years of the US regulatory regime. See also Hamilton, ***et al.***, 2010 (pp. 35-36).

Box 6. Linking forest carbon initiatives to the voluntary offset market: what are investors looking for?

Christopher Tuite and Toby Janson-Smith (Center for Environmental Leadership in Business—CELB), Conservation International

Over the last few years, interest in forest carbon has grown significantly as the international policy environment has shifted to recognize the role of forests and deforestation in climate change. As recently as 2005, however, interest in forest carbon offsets to meet quantifiable GHG emissions reduction goals was relatively low due to several factors, including perceptions about the quality and credibility of forest carbon offsets. The acceptability of forest carbon offsets has increased substantially in recent years through the development of the technical capacity to measure and monitor forest carbon and the evolution of robust standards and market registries. As a result, the corporate sector is now showing a greatly increased level of interest in investing in forest carbon initiatives either for corporate social responsibility reasons or for pre-compliance purposes, as they try to get ahead of emerging climate legislation.

In spite of the potential demand for high-quality forest carbon offsets, the supply is still extremely constrained, with limited supply of carbon credits coming from verified (ex-post) emissions reductions. One of the most significant barriers facing carbon project development is the lack of forward financing required to design and implement projects, given that it can take as long as three to five years for REDD+ activities, and more than eight to 10 years for native-species forest restoration projects, before they can start generating verified carbon credits.

CI's Forest Carbon Markets team, which forms part of CI's Center for Environmental Leadership in Business (CELB), has worked with many of the projects in this report (7/12) to help them gain access to sources of forward or up-front carbon financing.

What are forest carbon investors looking for and how can project developers best meet these needs?

Quality of the emissions reductions. Above all, buyers and investors are focused on the credibility of the emissions reductions generated, since their primary goal is to meet specific, quantified offset commitments. Many of the lingering perceptions of inferior offset quality have now been addressed with the development of robust, independently audited carbon accounting standards, such as the Voluntary Carbon Standard (VCS), and associated transparent registries for recording transactions and carbon ownership. The VCS is rapidly gaining recognition as the leading standard for forest carbon projects and, according to The Forest Carbon Offsetting Survey 2009 (Ecosecurities, *et al.*, 2009), VCS was seen as the "most highly desirable" certification by the sample of forest carbon buyers and investors who participated in the survey. Credits certified by VCS are likely to command the highest possible prices in the market. Also applying a standard focused on assessing environmental and social impacts and benefits, such as the CCB, can provide added value to the project and there are indications that buyers are willing to pay some premium for the additional certification, especially companies aiming to support corporate social responsibility goals (see also Box 3).

Timing of credit generation. Buyers and investors are looking for near-term vintages[18] and most will not want delivery of the credits to be more than three to five years forward. This is a challenge, especially for A/R projects where significant carbon delivery in the form of verified carbon credits may not occur until many years into the future.

Affordability. While there is increasing recognition that offset quality should not be compromised, generally, offset buyers and investors are seeking to tap carbon credits at the lowest possible cost. With the emergence of global carbon standards, like the VCS, that generate fungible credits regardless of the project type, forestry projects must now compete with other project types (e.g., energy or industrial activities), which brings additional price pressure. Therefore, project developers must prioritize the most cost-effective projects and pay close attention to cost control when implementing them. More costly projects must have compelling multiple-benefit stories to tell to counter carbon price concerns.

Compliance potential. With the likelihood of cap-and-trade climate legislation being enacted, for example, in the U.S., buyers are increasingly interested in the pre-compliance and compliance potential of carbon credits. To attract pre-compliance buyers, projects looking to appeal to a particular market should determine what types of forest carbon standards are likely to be accepted, and ensure they are positioned to meet those standards. For example, under the U.S. climate bill it is likely that VCS REDD+ credits will be usable for compliance purposes[19].

Geographic attractiveness. Many corporate buyers are eager to link their potential offset purchases to regions or countries in which they have major business operations or markets. There are also important perceptions related to political stability and risk. This may be a challenge when projects are located in countries with limited international investment or where recent history has given countries a negative reputation.

Links to national efforts and frameworks. Buyers are looking for clarification of how site-based projects will be integrated into national-scale carbon accounting systems if an international REDD+ framework emerges under the UNFCCC or other policy frameworks. It will be important for project developers to work closely with national government agencies responsible for REDD+ policy. Participating in the process of developing frameworks for integrating projects into national carbon accounting systems will maximize the potential for the project to be compliant under new national rules.

Understanding the importance and communications value of forest carbon. As companies develop and implement their climate strategies, they may require extensive briefing and education on the importance of including forest carbon offsets in their overall emissions reduction portfolio. Important messages to deliver to potential buyers include the significance of deforestation as a major source of greenhouse gas emissions, the co-benefits for biodiversity and poverty reduction in developing countries, and the compelling communications opportunities associated with forest carbon projects.

Table 17. Factors that facilitated successful fundraising for forest carbon initiatives.

Enabling conditions	Number of initiatives (n=12)
Promoting co-benefits of the initiative	10
Showing that the initiative has a solid technical foundation	10
Starting with a pilot initiative to demonstrate the project feasibility to potential donors/investors	8
Using the funds strategically to leverage additional funds (e.g., strong feasibility study, making key institutional alliances, etc.)	7
Maintaining good donor relationships	7
Establishing partnerships with interested actors that can provide additional funds	5
Building on existing local structures to provide security to donors	4

Factors enabling successful fundraising strategies

Most initiatives have had to approach potential donors and/or investors in order to promote the forest carbon initiative and raise enough funds to finance their initial stages of development, as well as actual implementation activities. Based on the experiences of the initiatives surveyed in this report, it is possible to identify some common factors that enable the development of a successful fundraising strategy, (Table 17).

All of the forest carbon initiatives have been designed to provide environmental and social co-benefits, in addition to climate benefits. This multiple-benefit design has been highly successful in attracting the attention of donors and carbon investors. Project managers reported that, donors and investors found the following features to be attractive: locating the project within a biodiversity hotspot, providing community co-benefits (such as improving the well-being of the local population, developing alternative livelihood systems, etc.), supplying ecosystem services (mainly related to the improvement of water quality and quantity), contributing to cultural diversity (e.g., archaeological importance or high ethnic diversity) and the ability to contribute to climate change adaptation (e.g., reducing vulnerability from water shortages) (Table 18). For example, the reforestation initiative in the Atlantic Forest of Brazil used the charismatic and highly endangered Muriqui monkey *(Bracytelles hypoxanthus)* as its flagship species, while in Colombia the Bogotá Corridor initiative capitalized on the interest of the Bogotá Water company (EEAB) and a general regional awareness of the protection of water resources for the population of the capital city. The cultural importance of the Maya Biosphere Reserve was a distinguishing feature in the case of the Guatemalan REDD+ initiative (the forest includes the famous Tikal pyramids), and also in Xingu, Brazil, where the forest is inhabited by indigenous peoples of a diversity of ethnicities and languages. In addition, the fact that most of the forest carbon initiatives (10/12) are planning to be validated using the Climate, Community and Biodiversity (CCB) standards, has also generated considerable interest among investors and donors.

Table 18. Most attractive co-benefits of forest carbon initiatives (beyond carbon) to donors/private investors, as reported by project managers.

Co-benefits	Reforestation							REDD+					Number of initiatives (n=12) for which this feature attracted donor or investor attention
	Bogotá Corridor, Colombia	$ChoCO_2$, Ecuador	Emas, Brazil	Muriqui, Brazil	Quirino, Philippines	TAMS, Madagascar	Tengchong, China	Alto Mayo, Peru	CAZ, Madagascar	Maya Biosphere Reserve, Guatemala	Selva Lacandona, Mexico	Xingu Basin, Brazil	
High biodiversity value	■	■	■	■	■	■	■	■	■	■	■	■	12
Community benefits	■		■		■	■	■	■	■	■	■	■	10
Provision of environmental services	■		■	■	■		■	■				■	7
Climate adaptation	■		■			■			■			■	5
Cultural importance										■		■	2

Demonstrating that the forest carbon initiative is scientifically rigorous, well-designed and backed by strong technical expertise has provided security to donors and investors and encouraged their investment. As highlighted in the Partnership and Technical Issues sections (5.1 and 5.2 respectively), all of the forest carbon initiatives have a strong team of technical experts that oversee the design and development of the emissions baselines, as well as partners dedicated to community outreach, government relationships and field activities. In addition to the support on the ground, many of the initiatives receive additional technical support and oversight from CI's scientific staff based in Virginia, USA. This combination of strong field partnerships, backed by rigorous scientific capability both in-country and in the USA, has reassured project investors that the initiatives will be well-designed and able to deliver the expected carbon credits.

For example, adequate technical support from several CI divisions (especially the CI-Japan office) during all stages of development (e.g., feasibility study, PDD preparation and validation, project marketing) has helped the Quirino reforestation initiative in the Philippines to secure donor funding to conduct a feasibility study and attract investors to start implementing the project.

Developing pilot activities (prior to scaling up to the entire area) has also been useful in demonstrating the feasibility of the reforestation or REDD+ initiative to potential donors and/or investors, and in attracting their interest. Because forest carbon initiatives are relatively new and involve novel technical activities, it is useful to test the proposed reforestation or REDD+ activity through a pilot phase to determine how it will work on the ground, assess whether the activities are viable, and gain experience in project management and implementation, while looking for additional funds to scale up implementation. Several (6/12) of the forest carbon initiatives have taken this approach, establishing pilot sites, or starting field implementation on a small scale, prior to developing the full suite of field activities. For example, the Quirino reforestation initiative in the Philippines created a 20-hectare pilot reforestation area to serve as a model for local farmers interested in reforestation activities, and as a demonstration site for potential project investors. The Emas and Muriqui reforestation initiatives in Brazil similarly plan to start implementation based on small pilot sites, to demonstrate to local landowners how the project will work. In the Alto Mayo region of Peru, partners have started developing and testing conservation agreements

(i.e., agreements whereby the landowners commit to conserve forest in exchange for certain agreed-upon benefits) in one of the multiple sub-basins of the Alto Mayo Protected Forest, and are now planning to scale up these activities to the rest of the watershed as part of the larger REDD+ initiative.

The initiatives have also leveraged additional funding by strategically using their seed funds to conduct feasibility analyses that can be used to attract donors and investors, or to establish partnerships that are well-equipped to successfully deliver reforestation or REDD+ activities. For example in Peru, initial funds have been spent on rigorous technical studies like biomass estimation, deforestation analysis and socioeconomic studies with the aim of producing a strong feasibility study that was instrumental in attracting additional donor and/or investor attention. In Colombia, on the other hand, initial efforts have concentrated on creating solid partnerships with key institutions (i.e., the Bogotá Water Company, the six environmental authorities with jurisdiction in the project area and the regional government) to integrate the reforestation activities into their institutional plans and ensure long-term commitment and financing.

Establishing and maintaining a good relationship with donors and investors has also been critical for ensuring continued financial support. The careful nurturing of donor/investor relationships, combined with frequent communication and updates, has not only helped secure funding and maintain investor interest, but has also made it easier to deal with any unexpected delays or problems. For example, when the ChoCO_2 reforestation initiative encountered problems with determining the final project area and proving the eligibility of lands and had to reduce the size of the project the good relationships between CI-Japan and the investor allowed the initiative to overcome this problem and make the necessary adjustments in project scale.

Establishing partnerships with other organizations that share an interest in reforestation or forest conservation activities (beyond carbon) has provided additional funds for development. In addition to initial seed funding provided by CI, most of the initiatives have also received funds from other partners who are interested in reforestation and forest conservation. In fact, since carbon is only one of the several benefits potentially provided by a forest carbon initiative, approaching and making agreements with other organizations/institutions that have goals aligned with one or more of the project's co-objectives (e.g., reforestation, biodiversity conservation, water services, social development, etc.) can be another way to leverage more funds for the carbon initiatives. In the Muriqui reforestation initiative for example, the Brazilian NGO SOS Mata Atlantica, whose mission is to preserve and restore the remnants of the Atlantic Forest in Brazil, provided financial support to establish the tree nursery, while Citigroup Foundation supported the development of the demonstration pilot. In Colombia, the Bogotá Water Company has provided significant financial support to facilitate the development of the Bogotá Corridor reforestation initiative, due to its interest in ensuring continued water supply from the watersheds in Mexico, Reforestamos Mexico (an NGO dedicated to reforestation) provided additional funds to the Selva Lacandona initiative through the local NGO Na Bolom.

Developing forest carbon initiatives in areas where partners already have a track record of working successfully with local communities has reassured donors about the potential success of the initiatives, and led to greater support. Since the success of forest carbon initiatives depends on the support and involvement of local stakeholders, investors are keen to ensure that there are solid, good relationships between project partners and local stakeholders, and that partners build on existing relationships and social structures. In several of the forest carbon initiatives, the fact that partners already had a track record of collaborating with local stakeholders has helped create investor confidence in the forest carbon initiative. For example, in Guatemala the initiative is trying to promote existing social/management structures (i.e., forest concessions within the Maya Forest as a key strategy for reducing deforestation). The Alto Mayo REDD+ initiative is similarly building upon solid, existing partnerships between NGOs and local stakeholders, and using local structures (such as farmer organizations) to receive input on the design of field activities.

Table 19. Main challenges encountered in raising and managing funds.

Challenges	Number of initiatives (n=12)
Need for up-front funding to support design phase	11
Lack of continuous funding	11
Limited sources of available funding	9
High project costs compared to the amount of carbon revenue generated	8
Lack of funding for the initiative's non-carbon related activities	7
Trust issues among partners arising from financial management	2

Main challenges encountered within raising and managing funds

Survey respondents identified several challenges that they encountered while in the process of raising and managing funds for the forest carbon initiatives (Table 19).

Almost all of the forest carbon initiatives have had difficulties obtaining sufficient up-front funding to cover the high initial costs of project design. In order to successfully design a forest carbon initiative and develop the PDD, project managers need to conduct and/or supervise detailed technical work (e.g., biomass measurements, baseline development, etc.), feasibility analyses and stakeholder engagement activities, all of which require significant time and resources. However, because forest carbon initiatives will only begin to generate funds after a few years of operation (once carbon credits have been generated and verified, usually five years after project validation), there is typically no funding available to cover these initial development costs. This creates a difficut situation: projects can't get funds without having a good PDD, yet they need significant up-front funds to develop the PDD. Since most carbon investors are usually only interested in purchasing carbon credits that have already been generated and verified (i.e., ex-post credits), most forest carbon initiatives have had to seek additional, philanthropic funding to cover many of these start-up costs. However, in 11 of the 12 forest carbon initiatives, this funding—whether it came from CI or from other partners and donors—has often been insufficient to cover all of the development costs, or has been particularly difficult to obtain. In fact, finding sufficient funds to cover the completion of the PDDs is probably the single-most important obstacle in developing and implementing reforestation and REDD+ initiatives.

Another common challenge has been ensuring the continuity of funding to support ongoing field activities, stakeholder engagement processes and project monitoring and maintain project momentum. Because forest carbon initiatives are long-term endeavors (minimum of 20 years), it is important to plan the funding accordingly and to find donors and investors that will support the different phases of development until potential revenue from carbon credits is made available, and ensuring that there are no interruptions in funding availability in the meantime. To date, only one of the 12 initiatives has secured sufficient funding up-front to cover the entire costs of development throughout its life span; the rest are still in the process of actively seeking donors and investors and have experienced interruptions in funding availability. In some cases, this lack of continuous funding has made it difficult for the forest carbon initiatives to maintain the trust and involvement of communities, partners and local governments. In fact, one initiative saw several landowners withdraw from the project and a general decrease of project support by major stakeholders when funding for field activities (particularly of tree planting) ran out. Another important risk is that carbon "gains" may be reversed when continuity of funding is not secured, for example if the maintenance of a forest plantation is halted or firebreaks in a REDD+ initiative are not adequately maintained due to lack of funds. In one reforestation initiative for example, the late disbursement of funds

meant that trees were not planted during the ideal period within the wet season, which led to slower growth and higher-than-expected mortality rates.

Many initiatives have also found it hard to find sources of funding for their activities, suffering from a lack of sufficient financial support from other partners or the government. In other cases, initiatives haven't been able to get commercial loans approved by banks, due to their higher risk relative to other investments and the economic unattractiveness of remote lands, which are usually priority areas for forest protection activities. Another constraint that was faced by many reforestation initiatives was the fact that there were no resources for reforestation in public investment plans, which meant they needed to generate all of the start-up money from fundraising efforts.

Another key limitation is that the amount of carbon revenue that will be generated from reforestation and REDD+ activities is often insufficient to cover the entire design, implementation and transaction costs of the initiatives. Compared to other forest conservation or reforestation projects, forest carbon initiatives have higher design costs (i.e., due to all the analyses that need to be incorporated into the PDD, like biomass and emissions estimates), as well as high transaction costs (e.g., due to complicated procedures, validation, verification, registration fees, etc.) which decrease its cost-efficiency. For example, five out of seven reforestation initiatives had an estimated total cost ranging from US $4,000 to US $10,000 per hectare over a 20- to 30-year lifetime in present value terms, with the expected revenues generated from the marketing of carbon credits covering only a fraction of these (Box 7). [Note: initial estimates from REDD+ initiatives indicate that this may be less of an issue since forest conservation activities are likely more cost-effective than reforestation activities on a per hectare basis (depending on the size and the deforestation rate in the area where activities are implemented) and are more likely to generate economies of scale; however, since the REDD+ initiatives included in this report are still in their early phases of development, to date, none have produced complete financial information to enable a thorough analysis.] In addition to the inadequate amount of carbon revenue to cover all of the costs, timing is also an issue, since the availability of carbon revenue does not correspond to the time when most of the financial needs occur at the beginning of the project. This potential mismatch between project costs and the revenues generated from carbon credits means that project managers often need to find additional co-funding from other sources.

In several initiatives, the high costs of non-technical activities (such as community engagement, government outreach, communication and training) have significantly elevated project costs, making them less appealing for potential carbon investors and/or donors. Although the non-technical aspects of forest carbon initiatives are critical for success, they are also often quite expensive and represent a significant portion of the overall project costs. Whereas carbon investors are sometimes willing to fund the direct technical costs of project development, they are much more reluctant to fund the non-technical activities. As a result, just over half of the initiatives have had insufficient funding available for stakeholder outreach and other, non-technical activities, and have conducted these activities intermittently, depending on funding availability. In initiatives covering large areas or including many stakeholders, the lack of funds to support outreach, awareness and training activities has significantly slowed progress. For example, in the remote Xingu Basin REDD+ initiative in the Brazilian Amazon, field visits to a single community in the Basin can cost as much as US$20,000 or more per trip due to the remote location and the need for air, river and land travel. Finding the donors to fund this engagement (especially through grants) has been difficult, so partners have had to contribute substantial financial resources to support these activities.

In a few sites, the lack of transparency about the sources, amount and purpose of funding has negatively affected partnerships and delayed progress. For forest carbon partnerships to be effective, it is critical that funds are managed in a clear, transparent way, and that all partners and stakeholders are aware of what funding is available and how these funds are being managed and distributed among activities. Two of the initiatives have had problems in this regard, with partners misunderstanding the scope of funding and the use of this money, or with communities that were suspicious of how carbon funds would be distributed and used.

Box 7, Part 1. Financial planning for forest carbon initiatives

Pauline Moore (Conservation and Community Carbon Fund - CCCF), Conservation International

Carbon project costs. Determining the short- and long-term costs incurred by a forest carbon initiative is a key component of the project feasibility and design phases. While it is difficult to have a firm grasp on long-term project costs at very early stages of project development, a rough estimate of short- and long-term project costs and projected revenue—including future carbon revenue—will help project partners budget for long-term sustainability, and address the concerns and questions of potential investors. Carbon buyers, as well as other types of investors and/or donors, will first and foremost want to see the specific costs supported by their investment. Furthermore, having a clear idea of the kind of costs incurred by the project, and the timing of these expenditures, will help the project developer raise adequate funds to ensure continuity in implementing and developing a successful project. Therefore, a key role for project developers is to focus on carefully costing out all project activities, from initial project development to long-term management. For most projects, this presents a considerable challenge, given that the costs for various activities differ greatly from one project to the next.

While no two projects are identical, Table 20 presents a list of the common cost categories associated with project design and development, required for and leading to the completion of the Project Design Document (PDD) and certification under an applicable carbon standard. Project start-up and the implementation of project activities themselves will obviously require additional funding, depending on what is needed to reduce deforestation or facilitate reforestation. Given the high costs associated with carbon project development, it will often be the case that a project's carbon revenue will not fully cover its costs. Frequently, actual costs will be higher than anticipated costs, or a project will incur unexpected costs during the design phase, due to unforeseen events or situations beyond the project's control. While this is a significant risk inherent in project development, it can be mitigated through careful fundraising and budgeting, and emphasizes the importance of securing sources of up-front and long-term funding beyond carbon revenue. As the REDD+ market continues to develop, these types of financial risks will likely diminish due to increasing carbon prices, and growing experience with carbon project development. The ongoing development of carbon projects will allow the market to get a better handle on costs as these are tracked and categorized, so projects will be able to better anticipate costs and create more realistic short- and long-term budgets, which will in turn allow them to better forecast the viability of their projects.

Box 7, Part 2. Financial planning for forest carbon initiatives

Table 20. Cost categories and major activities leading to PDD completion and project registration under a carbon standard.

Cost Category	Specific Costs and Activities
Field salaries	Project manager and support team salaries for project partners
Technical support salaries	Salaries or contracts for technical PDD activities (e.g., deforestation analyses, baseline models, PDD writing)
Carbon legal costs	Due diligence to clarify legal issues related to carbon ownership, land tenure, carbon retirement
Travel costs	Travel costs to field sites for meetings, stakeholder engagement work, data collection, monitoring, etc.
Local stakeholder engagement, government and partner meetings and workshops	Sessions with local stakeholders, government and project partners for capacity building, consultation and feedback
Delineation of project boundaries (ground boundary surveys, GPS field mapping)	Work required to undertake land-tenure analyses, map project boundaries, collect spatial data on settlements, roads, etc.
Baseline carbon stock data collection	Forestry expertise and field crews to install forestry plots and collect forest biomass data
Project impact mitigation and monitoring plan	Development of project leakage and monitoring plan; collect baseline data
GIS software and satellite imagery	Software tools and data acquisition for deforestation analysis and spatial aspects of baseline modeling
PDD development, review, refinement and finalization	Compilation and synthesis of data, writing of PDD, and refinement/ support during validation
Validation and registration	Third-party auditing for compliance with standards (e.g., CDM or VCS) and official listing of the carbon project in the standard's registry as meeting the project standards under which it has been validated
Monitoring	Ongoing data collection on project impact, implementation processes, leakage, etc.
Verification and certification	Periodic third-party verification of the monitored emissions reductions generated by the project (ex post') over a defined period of time (called verification period) and certification
Issuance of carbon credits	Creation of carbon credits (Certified or Verified Emissions Reductions, depending on whether the project is registered under the CDM or a voluntary market standard) equivalent to the amount of GHG emissions reductions generated during the verification period. Usually there is an issuance fee associated with this activity.
Other (supplies, communications, etc.)	Costs for office supplies, equipment, rent, communications, etc.

5.4 Local stakeholder engagement

Overview: The role of local landowners and communities

Forest carbon activities typically have a wide range of stakeholders, including local landowners and communities, local government institutions, non-governmental organizations and national governments interested in reducing greenhouse gas emissions and maintaining forest cover. While all of these stakeholders are important, the engagement of individuals and communities living in or adjacent to the project areas is especially critical, as any efforts to reforest land or to reduce deforestation and degradation will only be effective and sustainable with the direct participation and support of local stakeholders. **In this section, we focus on the particular challenges and opportunities for effectively engaging this set of stakeholders in forest carbon initiatives. For this discussion, we define "local stakeholders" as indigenous peoples, local communities and other local stakeholders, such as individual landowners and illegal settlers, living in or nearby the areas targeted for reforestation or REDD+ initiatives, regardless of whether or not they have legal title to the land.**

Since most land-management decisions are made at the level of communities or individual landowners, securing those stakeholders' willing and supportive participation is critical to the success of any forest carbon activity. In the surveyed initiatives, there were several types of local stakeholders, including: local communities that collectively hold title or management rights to land or forest resources (e.g., the community concessions in the Maya Biosphere Reserve); indigenous peoples who hold collective title to their traditional lands (for example the Kayapó and other indigenous peoples in the Xingu Basin in Brazil); individual landholders, who may legally hold private titles (such as in the Emas reforestation initiative in Brazil) or have commonly recognized traditional rights (such as in the TAMS reforestation initiative in Madagascar); and illegal settlers (such as those in the Alto Mayo REDD+ initiative in Peru), who hold few formal rights due to their illegal status.

Activities undertaken to engage local stakeholders

The forest carbon initiatives surveyed in this report have already invested a considerable amount of time and effort in engaging local stakeholders through meetings, field visits and training workshops (Table 21). All of the initiatives have met with communities and/or local groups (such as farmer organizations) to explain the proposed forest carbon initiative and encourage community participation. This community outreach has often been quite extensive; for example, in the CAZ REDD+ initiative in Madagascar, a communication and consultation strategy was created and implemented among 30 communes to promote community engagement and to raise awareness of natural resources conservation and its benefits for local people, with the goal of ensuring widespread knowledge and support for the REDD+ activities. In addition to meetings with communities and farmer associations, several initiatives have met with individual landowners whose participation is key—either because they are allowing reforestation on their land, or because they are leaders who can help garner support for the initiatives among other community members. Local stakeholders have also been involved in various training activities in seven of the forest carbon initiatives, on topics ranging from basic concepts of climate change, to more technical trainings on reforestation methods and agroforestry, as well as forest carbon project management. However, to date only a subset (n=3) of the forest carbon initiatives have developed a formal communication and outreach strategy for engaging local stakeholders and provided updates on activities through regular meetings, communication bulletins and/or radio; the rest are planning to implement such a strategy, but have not yet formalized it.

Level of difficulty encountered in engaging local stakeholders

Our survey of partners involved in the 12 initiatives indicates that the majority feel that they have done a moderate to good job of engaging local stakeholders. Of the 103 respondents to the question, 34% suggested that local stakeholder support for their forest carbon initiative was high, 55.3% reported moderate support and 10.7% felt stakeholder support was low (the remainder didn't have an opinion). However, since only 11% of the survey respondents themselves were identified as local landowners or other community members, additional surveys would be necessary to further investigate the level of local stakeholder support for the initiatives.

Despite the overall impression among partners that the forest carbon initiatives have largely been successful in engaging local stakeholders, 37% of survey respondents indicated that local stakeholder engagement has been one of the most difficult aspects of developing forest carbon initiatives. This is because of the need to gain commitments and support from local communities and other landowners over the long (20- to 30-year minimum) lifetime of these initiatives, and the difficulty of ensuring that local stakeholders receive tangible benefits in the short term. In addition, many respondents noted that there are few formal guidelines on how to effectively engage local stakeholders (unlike the very detailed guidelines for the more technical components of forest carbon initiatives), making it hard to know what strategies to pursue. The TAMS initiative holds regularly scheduled meetings with communities and landowners to receive their ongoing input; other initiatives have gathered feedback on a more informal basis or have had smaller, individual meetings due to the smaller number of stakeholders involved or the more preliminary nature of their initiatives.

Table 21. Local stakeholders involved in the 12 forest carbon initiatives, and the main types of engagement activities undertaken by December 31, 2009, including local/regional government officials.

Initiative	Local stakeholder	Major engagement activities to date
Reforestation initiatives		
Bogotá Corridor, Colombia	Local farmers and municipalities in project area	- Initial meetings with communities (40) and government officials (3) - Regular (every 2-3 months) meetings with stakeholders - Communications strategy including newsletter
ChoCO$_2$, Ecuador	Single private landowner; members of local communities employed by the project	- Initial meetings with communities (2), landowners (several) and government officials (2) - Monthly meetings during planting season - Trainings (3) on nursery management and planting
Emas, Brazil	Large private landowners (5) including a state park; local communities producing seedlings	- Initial meetings with communities (3), landowners (3) and government officials (1)
Muriqui, Brazil	Small landowners surrounding private reserve	- Initial meetings with communities (2), landowners (2) and government officials (1)
Quirino, Philippines	Communities on government-owned land (59% of project land); private landowners (41%)	- Ongoing meetings with communities (1-2 per month), landowners (1-2 per month) and government officials (12 to date) - Trainings (5) on nursery and plantation establishment, maintenance and protection
TAMS, Madagascar	Private landowners; local communities involved in nursery activities	- Initial meetings with communities (<20), landowners (<30), and government officials (<20) - Trainings (<40) on nursery techniques, ecological restoration, sustainable livelihoods methods, land-tenure reform plan, and the carbon project - Ongoing meetings with stakeholders (at least 1 per month)
Tengchong, China	Sujiang Forestry Farm; local villages with communal land; individual landowners	- Meetings with communities (5), landowners (9) and government officials (6) - Trainings (10) on forest carbon accounting and monitoring, PDD development, participatory rural appraisal, etc.
REDD+ initiatives		
Alto Mayo, Peru	Government-protected area management agency; private landowners and communities in the buffer zone	- Initial meetings with communities (4), landowners (5) and government officials (2) - Regular (every 2 months) meetings with stakeholders - Local radio announcements on project issues and importance of environmental services
CAZ, Madagascar	30 communities in and around the protected area	- Initial meetings with communities (1 per village) and government officials (2) - Trainings on climate change and forest carbon/REDD+ - Formal communication and consultation strategy with local stakeholders (30 communes)
Maya Biosphere, Guatemala	Communities holding concessions on government land	- Initial meetings with local government officials (4-6)
Selva Lacandona, Mexico	3 indigenous communities sharing the Selva Lacandona Reserve	- Initial meetings with indigenous communities (4) and local government officials (2) - Trainings on Plan Vivo methodology
Xingu Basin, Brazil	30 indigenous communities living on traditional indigenous lands, also declared by the government as Indigenous Reserves	- Initial meetings with indigenous communities (3) and government officials (several) - Trainings (8) on climate change and environmental services

Table 22. Benefits/incentives that motivate local stakeholder participation in forest carbon initiatives (as indicated by project managers)

Benefits/Incentives	Number of initiatives (n=12)
Potential to gain employment from forest carbon activities (i.e., reforestation or training activities, monitoring work, etc.)	10
Potential for income from forest carbon revenue	9
Existing interest in reforestation and forestry activities among some stakeholders	8
Opportunity to learn reforestation and agroforestry methods	8
Potential for the initiative to help conserve water resources within the region	7
Improved food security and food diversification, through alternative livelihood activities	7
Opportunity to gain training and knowledge of forest carbon initiatives, climate change mitigation and related issues	7
Means of complying with environmental laws (e.g., Forest Code in Brazil)	6
Means of asserting community control over the land and monitoring forest cover	4
Means of obtaining or clarifying land tenure	3

Factors that have enabled the engagement of local landowners and communities

One of the key factors that helped motivate local stakeholders to participate in forest carbon initiatives has been the potential to receive direct benefits from the reforestation or forest conservation activities. Whether through income from carbon credits, generation of employment, improved land security, clarified land tenure, diversified food production (from livelihood activities associated with the forest carbon initiative) or improved environmental conditions (i.e., restoration of degraded land, enhanced provision of environmental services, etc.), the provision of direct benefits has acted as a strong incentive for local communities and landowners to participate in the forest carbon initiatives. Designing effective benefit packages that are attractive to local stakeholders and respond to their needs is thus an essential strategy (Box 8). Based on our questionnaires and the case studies, the benefits that are most attractive to local stakeholders appear to be the generation of employment opportunities (from reforestation activities or forest conservation measures), and the provision of income from forest carbon revenue (either direct payment to communities or in-kind payments through funding of alternative livelihoods, etc.) (Table 22). Most of the forest carbon initiatives included in this report are occurring in regions with limited employment and livelihood opportunities, so the possibility of creating jobs and improving income is very attractive both to local community members and to local government authorities. For example, field managers of the TAMS reforestation initiative in Madagascar highlighted the fact that the local stakeholders were experiencing the tangible benefits of being employed and receiving continuous revenue from the project was very important in maintaining their support.

Another motivation for participating in forest carbon initiatives has been the opportunity to receive training and capacity building on reforestation techniques, agroforestry and sustainable agriculture. Several of the forest carbon initiatives are implementing agroforestry or sustainable agricultural activities in combination with reforestation activities, in an effort to diversify food production and provide an additional source of revenue to farmers. For example, the Quirino reforestation initiative has already developed 20 hectares of agroforestry, planting citrus orchard trees such as Lanzones *(Lansium domesticum)* and Rambutan *(Nephelium lappaceum)* to help enhance nutrition and food security. Similarly, in the TAMS reforestation initiative, farmers are receiving training in agroforestry and sustainable agriculture as a means of reducing the need for slash-and-burn approaches.

Box 8, Part 1. Designing incentive schemes with local communities to protect forests: CI's experience with Conservation Agreements

Patricia Zurita (Conservation Stewards Program) & Eduard Niesten (Economics and Planning Program), Conservation International

Obtaining local community support for avoided deforestation and reforestation activities is crucial for ensuring that forest carbon initiatives can be implemented and sustained in the long term. Although local communities often are in a position to protect their resources, their dependence on them for their livelihoods means that protection could come at the expense of income-generation opportunities. Designing benefit schemes that offset the cost of economic opportunities forgone by maintaining carbon stocks is thus necessary element for aligning the incentives of local resource users with the goals of the forest carbon initiatives.

Since 2005, Conservation International's Conservation Stewards Program has been implementing conservation agreements as a tool that recognizes and compensates the cost of conservation for local communities. These agreements produce visible and measurable conservation outcomes that result from the voluntary actions of resource users, and advance human well-being by directing compensation to investments identified as most beneficial by them through participatory processes.[20]

Many of the over 70 conservation agreements currently being implemented around the world include provisions to avoid deforestation and/or restore forests for habitat protection. Although these agreements were not designed as forest carbon projects, they have generated valuable lessons for carbon initiatives that aim to provide incentives to local communities and resource users to maintain or sequester carbon in their lands. Currently two of the REDD+ initiatives included in this report—Alto Mayo in Peru and CAZ in Madagascar—are testing this methodology to implement avoided deforestation agreements with local communities. Although tailoring agreements for forest carbon initiatives may pose additional challenges, the potential for such initiatives to access additional funding through the carbon market may well offset those challenges.

Key elements for success: lessons learned from conservation agreements

Effective opportunity cost assessment.

Incentives can be an effective tool for changing community behavior and achieving conservation when they offset the cost of conservation borne by the resource uses. Correctly assessing the opportunity cost of conservation by ensuring that assessments incorporate all relevant costs of resource protection is essential for designing appropriate incentive packages. Lack of proper opportunity cost assessment results in incentive schemes that either over- or under-pay resource users for their conservation actions. Over-paying resource users reduces the cost-effectiveness of the intervention. Under-paying resource users is ethically untenable and undermines the success of the agreement as the incentive will not be sufficient to motivate resource protection or restoration.

Sound governance at the community level.

Incentive packages delivered to communities require transparent negotiation processes and fair distribution systems, both of which rely on community leadership that effectively represents all members involved in the agreement. However, sound governance may be lacking in geographically isolated communities where conservation initiatives often are pursued. Limited governance requires implementers to strengthen institutional capacity at the community level. Although building strong governance structures can be quite demanding in time and resources, sound governance structures and principles themselves often become important benefits to local communities and can strengthen support for implementation of conservation agreements.

An engagement team convinced of the quid pro quo principle of providing incentives.

A particular strength of incentive schemes compared to traditional conservation tools is that, since benefits are conditional on conservation performance, financial resources are not expended unless conservation targets are achieved. Successful conservation agreements require that engagement teams fully embrace the approach of conditional transactions and apply agreed-upon sanctions in the event of non-compliance. At the same time, effective implementation includes judicious use of conflict resolution tools to ensure that non-compliance does not necessarily result in dissolution of the agreements.

Clear agreed-upon sanctions.

Negotiation of conservation agreements includes designing sanction provisions, applicable in the event of non-compliance by either party. Sanctions are most effective when proposed by the community, and must be realistic and implementable. The means of verifying compliance also must be defined explicitly in the agreement, fully and openly discussed throughout the design and negotiation process and communicated to the entire community.

Clear and verifiable conservation actions and results.

One of the most important elements of a successful agreement is ensuring that conservation actions and results are verifiable. Avoided deforestation as an agreed-upon outcome requires clarity on how many hectares of forest the community commits to protect, the location of that forest, the drivers of deforestation that are being addressed and the metrics for measuring compliance. Often, one of the first activities to take place under an agreement to avoid deforestation is demarcation of the area that will be protected. The use of maps greatly facilitates the design and negotiation of the agreements.

20 To learn more about CI's portfolio of conservation agreements please visit www.conservation.org/csp

Box 8, Part 2. Designing incentive schemes with local communities to protect forests: CI's experience with Conservation Agreements

Designing incentive schemes for forest carbon initiatives: the challenges ahead

Conservation agreements are designed specifically to achieve key conservation results, but applying this tool to forest carbon initiatives may pose additional challenges:

- The price of carbon may not suffice to offset the opportunity cost of conserving or restoring forests, and inadequate incentives to local communities could undermine the permanence of carbon targets. In such cases, implementing organizations will have to raise additional funds to complement carbon revenue and ensure that forest conservation happens (e.g., through bundling of biodiversity or water payments).
- Communicating the intricacies and technicalities of forest carbon initiatives to communities is difficult. Although conservation agreements can be successful in conveying the quid pro quo principle, introducing carbon elements adds a degree of complexity that requires careful consideration.
- The distribution of benefits generated through the carbon market will often depend on the willingness of governments and other "carbon owners" to equitably share the benefits of the proceeds with local communities. Although conservation agreements are being tested as a tool for fair benefit distribution, questions of carbon ownership introduce new complications.

Local interest in addressing forest degradation or forest loss—or complying with environmental laws—has also helped increase participation in forest carbon initiatives. In at least eight of the initiatives, local stakeholders are concerned about the continued degradation of their forest resources and the potential impacts on water provision. In half of the initiatives, a prime motivation is also the potential to comply with environment laws—such as the Brazilian forest code that stipulates that all landowners in the Cerrado and Amazon must maintain a certain percent of their land (at least 20% and 80%, respectively) under forest, as well as all "sensitive" areas such as steep slopes or riparian areas.

In a few instances, the forest carbon initiatives have also been well received as a means of obtaining or clarifying land tenure. For example, as part of the TAMS reforestation initiative, local landholders have been able to clearly demarcate and consolidate their traditional lands, providing additional land security in the region. In another initiative, the local land office will survey individual pieces of property for inclusion in the initiative, and the geo-spatial information collected, in addition to being included in the PDD, will then also be added to the landowner's official title record.

Additional enabling factors

Several additional conditions have facilitated the participation of local stakeholders in forest carbon initiatives, beyond their interest in obtaining direct benefits from the activities.

The ability to build on good, pre-existing relationships between one or more project partners and local stakeholders, a strong understanding of the local context and a successful track record with environmental activities have been important enabling factors for stakeholder engagement. In all of the sites where forest carbon initiatives are underway, CI and its local partners had already had a long trajectory of working with local stakeholders—often amounting to decades of experience—before establishing the initiatives. In the Xingu Basin, the extensive history of working relationships between project partners (ISA, CI) and the indigenous peoples of the Xingu Basin facilitated effective community engagement. Similarly, the long history (since 1996) of CI's support to conservation activities in the region where the CAZ and TAMS initiatives are implemented in Madagascar has made it easier to develop both the reforestation and REDD+ activities by building on existing partnerships and activities.

In certain sites, stakeholder engagement has also been facilitated by the presence of a local leader who has helped to promote the forest carbon initiative and has encouraged local participation. In some cases, this local leader has been a manager of a local protected area (e.g., Emas initiative) or a particular government representative (e.g., support to the Bogotá Corridor from the Ministry of Environment). In other instances, it has been local community leaders, such as the local priest in the Alto Mayo region of Peru, who have been supportive of conservation activities and willing to take the lead in approaching communities to involve them in REDD+ initiatives.

The existence of informal or formal social structures that could be used as a means of reaching local stakeholders has also been instrumental in obtaining the support of local landowners and communities. For example, the Alto Mayo REDD+ initiative is establishing Rondas Campesinas (local autonomous peasant organizations with a long history in Peru) as a formalized social structure to bring together local settlers to discuss and plan proposed forest conservation activities. In the Tengchong reforestation initiative in China, meetings have been organized through existing villager general assemblies.

Challenges faced in achieving stakeholder engagement

Our survey suggests that almost all partners have found the engagement of local stakeholders to be one of the most challenging aspects in designing and implementing the forest carbon initiatives, due to the need to conduct extensive outreach, training and negotiations with large numbers of individual landowners and community members. Most of the carbon initiatives indicated that local stakeholder engagement was a time-consuming and costly process, and many encountered obstacles in this process, but there were some exceptions. (Table 23). For example, the Emas reforestation initiative in Brazil encountered very few problems in stakeholder engagement due to the fact that private landowners were very keen to reforest their lands, in order to comply with Brazilian environmental law; since their individual landholdings were quite large, it was also financially less burdensome to take a small portion out of production.

The first set of challenges has been related to the ability to clearly articulate to local stakeholders how the REDD+ and reforestation activities would work, and what benefits (and risks) participants would receive. In some cases, partners have oversold the potential benefits that would arise from the forest carbon initiatives (particularly in terms of how much money would be derived from the marketing of carbon credits and how quickly this money would reach community measures), thereby generating unrealistic expectations among project participants. In most cases, partners have found it hard to explain forest carbon initiatives to local stakeholders, due to the technical and complex nature of these initiatives and the difficulty of explaining certain aspects (e.g., carbon credits) in a way that was compatible with local cultures and knowledge. In fact, all of the project managers indicated that they needed additional training on how to explain forest carbon initiatives to local stakeholders, as well as educational materials that could be used in community outreach. In some sites, the lack of a clear communication strategy—or different communication strategies by different partners—has sometimes prevented stakeholders from understanding how forest carbon initiatives work.

A second set of challenges has been that initiatives had underestimated the amount of time and resources needed to contact and engage local landowners and community members, and consequently were under-resourced for this activity. In particular, initiatives covering large areas or large numbers of communities had to dedicate significant time and resources to meetings and workshops with the various stakeholders. A particular problem with reforestation initiatives on private lands was the difficulty of verifying land eligibility for reforestation. Since that step is time consuming and costly, partners were reluctant to undertake this unless a landowner had demonstrated interest in the reforestation activities; however, if the analysis later showed the land to be ineligible, the initiative had to eliminate the property from consideration, creating

Table 23. Key challenges faced in engaging stakeholders in the 12 forest carbon initiatives.

Type of Challenge	Challenges	Number of initiatives (out of 12 total)
Problems of clearly articulating benefits, and creating realistic expectations	Skepticism about whether the initiative will work and whether local stakeholders would benefit from the initiative	9
	Inability to precisely estimate the benefits local stakeholders will receive from the initiative and timing of these benefits	6
	Unrealistically high expectations of project benefits by local stakeholders	5
	Lack of a clear framework for livelihood activities and community engagement	4
Inadequate capacity building and communication strategy	Difficulty of explaining forest carbon initiatives in a way that local stakeholders can understand (i.e., in simple, clear language, and in a culturally appropriate manner)	7
	Lack of a clear communication strategy between partners and local stakeholders	6
Limited funds and time for local stakeholder engagement activities	High costs of outreach activities—due to the number of communities involved or difficulty accessing the project area	10
	High time commitment required to contact and engage all stakeholders	9
	Limited time and opportunities for capacity building, resulting in inadequate community empowerment	6
Problems with identifying, reaching and organizing local stakeholders	Large number of stakeholders involved	8
	Complexity of developing reforestation or REDD+ activities on public lands	6
	Lack of formal associations or cooperatives to work with, making it hard to organize activities across multiple landowners and large areas	3
	Uncertainty of how to deal with illegal settlers present in the area	2
Wariness about initiative participation due to distrust, negative experiences or historical tensions	Distrust of local and regional governmental actors by local stakeholders due to previous conflicts	6
	Negative experiences with prior NGO initiatives that did not deliver on their promises	6
	Historical and cultural tensions among landowners in the area	5
	Distrust of the reforestation or REDD+ initiative due to fear of losing their land	3
Long duration of project development and implementation	Concern over the long time horizon (and time lag) over which carbon revenues will be realized	10
	Frustration among local stakeholders due to the slowness of initiative design and implementation, and time lag between feasibility studies/PDD development and initiative implementation of field activities	6
	Reluctance of farmers and landowners to participate due to strict initiative requirements and conditions (e.g. not clearing any primary forest)	5
Limited knowledge of forestry activities and need for additional capacity on technical issues, and cultural barriers	Lack of a forest culture—or knowledge of forestry—among participants in the forest carbon initiative	7
	Limited experience of local stakeholders with conservation strategies, and lack of information on such strategies	6
	Limited knowledge of local stakeholders of agroforestry and reforestation methods	6
	Difficulty of changing cultural practices that lead to deforestation and degradation	6
	Lack of interest in reforesting with native species (preference for exotic species)	2

mistrust among other landowners. Furthermore, many partners are geographically dispersed, so that in-person meetings are difficult to coordinate, requiring a lot of time and travel expenses. In addition, there has been a strong need (and desire) for training—both on how the initiatives work and on the activities proposed by the initiative (e.g., reforestation activities, agroforestry activities)—which was often difficult to fulfill due to limited funds and personnel.

A related set of challenges were the difficulties encountered in reaching stakeholders and organizing activities with these groups. This was a particular problem in areas that lack formal associations or cooperatives among local communities which could help facilitate meetings or identify key leaders and landowners, but it was also a problem in those initiatives that include large numbers of stakeholders. In one site (Alto Mayo) many of the key stakeholders are families that have recently migrated and settled in a Protected Area, and are reluctant to participate in meetings and activities due to their illegal status. Partners have addressed this issue by facilitating the formation of Rondas Campesinas as a means of organizing local communities into customary institutions that hold a social mandate and provide a space for discussing and planning the proposed forest carbon activities. In the cases of the Xingu Basin and Selva Lacandona REDD+ initiatives, the remoteness of landowners and the difficulty of reaching many sites within the forest carbon initiatives have complicated stakeholder engagement and communication (Box 9).

A fourth set of challenges have arisen from the reluctance of many local stakeholders to participate in the initiative, either due to distrust of local or regional authorities, previous negative experiences with NGO projects, fears that the initiative would lead to loss of their land, historical tensions within the area or basic distrust of the motives of the forest carbon initiative. This has been a particular concern in areas where there were illegal settlers, or in areas with different cultural practices, or in areas with historical conflicts among different cultural groups or communities (e.g., the long-standing conflicts between indigenous groups and migrants in the Selva Lacandona region). In areas where CI and its partners have had a long history of successful involvement with communities, these concerns have been less apparent.

Another challenge encountered has been the timing and duration of both planning and implementation of the forest carbon initiatives. There is often a long time between the initial development of the project concept and the elaboration of the PDD—and an even longer delay before any visible activities were underway on the ground. Most of the initiatives have taken about two to three years to go from concept/feasibility to the completion of a PDD; in some cases however it has taken much longer. For example, in the Quirino reforestation initiative in the Philippines, initial feasibility studies began as early as 2003, while pilot implementation did not begin until 2007 and PDD validation did not occur until 2009. On the other hand the Emas reforestation initiative in Brazil was able to move from the concept phase to a completed PDD in a little over 12 months. In several instances, local stakeholders were initially keen to participate in the initiative but became frustrated by the slow speed of development and the lack of obvious progress. Another obstacle has been that landowners have been generally hesitant to agree to participate in forest carbon initiatives due to the very long time commitment (20 years minimum), and the fact that carbon revenues would only be produced in the future.

The general lack of experience of local stakeholders with forest carbon initiatives has also been a limiting factor. In some areas, stakeholders had little or no experience with reforestation or forest conservation activities, or had cultural practices related to land use (such as slash-and-burn) that had to be changed in order to be aligned with the carbon goals of the forest carbon initiative. In addition, in all sites, this was the first forest carbon initiative to be developed, so significant time and resources were needed to train people in related technical issues and help them understand how forest carbon activities work.

A final obstacle for local stakeholder engagement has been the lack of clear government policies and laws on the development of forest carbon activities—particularly related to carbon and land ownership (See next section for more detail). None of the countries where the initiatives were developed had clear laws on carbon ownership, thus in most cases the partners have had to assume that the legal owners of the land hold these rights. However, in areas where land is communally owned, where there are illegal settlers on public lands, where there are traditional land-use rights or where the land is owned by the government but communities have the rights to use the forest resources, the uncertainty of who owns the carbon (and who can market the carbon credits potentially generated by the initiatives) has complicated project development. These issues can only be resolved if governments adopt new, clear carbon legislation.

Future challenges

It is important to note that all of the challenges described above refer to those encountered in the initial development of reforestation and REDD+ initiatives. Additional challenges will likely arise during implementation, such as how to effectively and equitably distribute carbon revenue, how to ensure that such resources are used in a manner consistent with the goals of the initiatives and how to maintain stakeholder participation during and over the entire lifetime of the activities. Anticipating these challenges—and taking measures to address them—will be critical for success.

Box 9. The importance of social cohesion and trust in stakeholder engagement: The Xingu Basin and Selva Lacandona REDD+ initiatives

Andréa Leme da Silva (CI-Brazil) and Juan Carlos Franco (CI-Mexico)

Establishing a strong degree of trust between local stakeholders and project developers is critical for the success of forest carbon initiatives. Project partners must dedicate significant time and resources to developing solid relationships with local stakeholders, and developing inclusive and comprehensive stakeholder engagement strategies. Even in cases where outside parties such as NGOs or government agencies have a history of successful engagement with local stakeholders in conservation or development projects, the complexity of forest carbon initiatives makes it necessary to dedicate significant time to dialogues, workshops, capacity-building and other engagement processes. It is extremely important to build a common understanding among local stakeholders of the potential benefits and risks of forest carbon initiatives, as well as lifestyle impacts that may occur.

The level of social cohesion among stakeholder groups is often a critical determinant of the success of stakeholder engagement processes, as it influences how easily stakeholders can agree on common goals for project design, and for sharing project benefits and risks. In the Xingu Basin of Brazil, for example, the strong social cohesion among partners and local stakeholders has greatly facilitated the design of the REDD+ initiative. Partners and local NGOs have successfully worked with indigenous communities of the Kayapó people in the Xingu Basin since 1992 and have created strong relationships. The vast territory of the Kayapó and their establishment as defenders of their land and sovereignty mean that community engagement to build consensus around developing a forest carbon initiative is a complex undertaking. However, the partners involved in the design of the REDD+ initiative have worked for more than a decade with the Kayapó to strengthen the communities' autonomy, enhance their capacity for territorial monitoring and support the establishment of local Kayapó NGOs, and this history of collaboration, and the resulting trust among the groups has greatly facilitated the development of the REDD+ initiative. In addition, the common ethnic identity and spoken dialect among the communities of the Kayapó territories have greatly facilitated the community engagement process. As part of the development of the REDD+ initiative, project partners are providing information and training to Kayapó communities on climate change and forest carbon issues, enabling them to make an informed decision as to their engagement with the REDD+ initiative over the long term.

In contrast, stakeholder engagement has been a challenge in developing the REDD+ initiative in the Selva Lacandona Community region in southern Chiapas, Mexico, due to the lack of social cohesion. The area is a legally designated communal land established by Mexican government decrees, and is held in common by three ethnically distinct communities with differing historical practices of land management. One group is composed of 282 Lacandones who practice traditional small-scale agriculture of maize, beans and yucca on an average of one to two hectares per family, and do not raise livestock, maintaining the vast majority of their territory as forest. Recognized as the original inhabitants of the Selva Lacandona area, the Lacandones were declared the legitimate "owners" of the land in the Selva Lacandona through a 1972 Mexican government decree establishing the Lacandona Community Zone. However, two additional groups began immigrating into the Selva Lacandona region in the late 1960s, and these groups were added to the official Lacandona Community Zone by the Mexican government in a second declaration in 1979. These included 4,000 Choles, who generally cultivate maize, beans and squash, but whose increasing cattle production has altered the traditional rotational fallow system. The other group of immigrants, comprised of approximately 7,400 Tzeltales who are originally from northern Chiapas, is mostly involved in low-intensity cattle production, which has significantly increased local rates of deforestation compared to land used by the other two sub-communities. Both immigrant groups' populations have significantly increased beyond their original numbers in recent years, while the Lacandon population has grown more slowly.

These three ethnically distinct communities collectively make major management decisions that affect the Selva Lacandona region, including any long-term commitment to engage in a REDD+ initiative. While each community manages a portion of the land for its members, there are some areas which are held in common, such as the forested La Cojolita mountain range where a REDD+ initiative is being pursued. Although a general assembly process exists to facilitate agreement among all groups for overarching decisions, in practice, reaching this consensus has proven difficult due to historical conflicts among the groups. Since they engage in different agricultural practices, the groups frequently disagree on the economic and cultural value of land and forests. Continuing population growth also creates a need to increase income-generation opportunities, compounding matters. Furthermore, the lack of clearly delineated internal boundaries between the communities has resulted in territorial incursions for agriculture and hunting and a general perception of each other as threats to their individual visions for land-management. The general lack of social cohesion has thus made it difficult to create a common vision for a potential forest carbon initiative. An emerging new generation of community leaders, however, is providing new hope for the sustainable management of the Selva Lacandona area.

5.5 Government role and participation

Overview: the role of government in forest carbon initiatives

Governments can play an important role in supporting the development and implementation of forest carbon initiatives, and their active involvement is often a key element for success. Governments are often involved in a variety of activities, including endorsing initiatives, providing funding and technical support, facilitating access to national databases, satellite images and other information, ensuring political support both in-country and externally, assisting with stakeholder outreach and engagement, integrating initiatives into national development strategies and programs and creating legal mechanisms and policies that facilitate forest carbon activities, among others. Frequently, various levels of governments (ranging from local to national) and multiple governmental institutions are involved.

The degree to which governments participate within forest carbon initiatives varies widely across initiatives, and often depends on the type of initiative (e.g., reforestation or REDD+) and whether the credits will be sold on the regulatory or voluntary markets. In CDM A/R projects, for example, the national government has the legal responsibility for project oversight, and must screen and approve all initiatives through the Designated National Authority (DNA), keep track of all CDM activities and periodically report on progress to the UNFCCC secretariat (UNEP Risø Centre, 2004). In contrast, in reforestation initiatives designed for the voluntary carbon market, the role of the government is less clear and, if the initiative occurs on private land, the government may not have any role, aside from ensuring that activities comply with national environmental laws. The role of the governments in the emerging REDD+ initiatives is still unclear, although it is anticipated that governments will be instrumental in guiding REDD+ demonstration activities and ensuring that these activities fit with both emerging national REDD+ policies and frameworks, as well as the emerging international REDD+ architecture (Angelsen, *et al.*, 2009). Consequently, individual REDD+ initiatives currently vary in their degree of government involvement.

In this section, we explore the roles that governments have played in the 12 forest carbon initiatives, and provide an overview of some of the key enabling factors and challenges encountered in ensuring active government support for these initiatives.

Type of support provided by governments to the forest carbon initiatives

All of the 12 forest carbon initiatives included in this report have received some level of government support, at either the local, regional (or state, in the case of federal governments) or national (federal) level, or a combination thereof (Table 24). Of the 12 initiatives, 10 have worked with governments at more than one level (i.e., both local and higher levels), while the others have only worked with a single level of government. For example, the $ChoCO_2$ reforestation initiative in Ecuador has worked only with the national government, because it is a CDM project requiring national government approval. In contrast, the Quirino reforestation initiative in the Philippines has engaged both the local and regional government levels of the Department of Environment and Natural Resources (DERN) which has regulatory jurisdiction over forestry and other environmental issues; in addition, local government units at three levels (village, municipal and provincial) have provided community support for the initiative.

Table 24. Summary of the types of support provided by local, state and national governments. Numbers in the "Local," "State" and "National" columns represent the total number of initiatives (out of 12 possible) that received this type of support at that level of government. The "Total" column refers to the total number of initiatives that received this support from governments, regardless of which level of government provided the support. Note: the "Total" column is not the sum of the "Local," "State" and "National" columns because some initiatives received support at multiple levels of government for each type of activity.

Type of Support	Level of government at which support was provided			Number of initiatives that received this support (out of 12)
	Local	State	National	
Technical support				
Forest inventory and monitoring	7	2	6	10
Calculation of GHG emissions and reductions from land-use change	4	3	1	7
Environmental Impact Assessment	1	5	3	6
Technical approval of the forest carbon initiative	3	2	2	5
Assistance in the development of PDD	3	2	1	3
Stakeholder engagement				
Identification of stakeholders	7	2	3	8
Outreach to stakeholders (e.g., training workshops, information, etc.)	6	2	4	8
Negotiation with local stakeholders, especially forest dwellers and indigenous peoples	6	1	3	6
Political support (in country)				
Clarification of land tenure and boundary conflicts	7	2	2	7
Clarification of carbon laws	3	1	3	6
Official endorsement of the REDD+ or reforestation initiative	3	2	3	6
Promotion of the forest carbon initiative in international venues and international policy arena	1	1	4	5
Inclusion of the initiative within the national development strategy	0	1	4	4
Development of national-level REDD+ strategy	0	0	5	4
Financial support				
Allocation of government infrastructure and resources (transportation, cars, labor, etc.)	6	2	3	10
Allocation of government staff (or time) to initiative	4	2	3	7
Establishment of tree nurseries and production of seedlings	3	2	1	5
Provision of funds to support the forest carbon initiative	3	1	0	3
Management				
Designation of government point person as liaison	4	2	5	8
Coordination with partners	3	2	2	5
Active supervision of the forest carbon initiative	1	2	1	3
Other				
Inclusion of the initiative in a state plan for avoided deforestation	0	1	0	1

All of the forest carbon initiatives have received some kind of technical support from government agencies, but the type of technical support has varied. In most cases (10 of 12), governments have provided information on forest cover or land use, or participated in forest inventory and monitoring, while in more than half of the initiatives the governments have also provided technical support or input on GHG accounting. Only three of the initiatives have obtained government support in the development of the PDD to date.

Another key role of the government has been to help identify and engage local stakeholders, particularly indigenous peoples and other local community groups. In the majority of cases (eight of 12), government representatives have participated in community workshops, training and outreach activities, and have helped encourage local stakeholder participation. For example, in the Muriqui initiative in Brazil, the state forestry agency has helped identify landowners willing to reforest their land and has provided in-kind support, due to the initiative's complementary nature with a similar state-led reforestation project (ProMata). In the Xingu REDD+ initiative, the local leaders of FUNAI, the National Indian Foundation, have also been involved in stakeholder outreach and negotiation.

Governments have also provided important political support, by officially endorsing or promoting the initiatives, including them in national strategies and helping with legal issues. For example, in the Emas initiative in Brazil, the local environmental secretary has actively promoted and supported reforestation activities. The government of Madagascar has made several presentations on the TAMS and CAZ initiatives in international fora, including UNFCCC and BioCarbon Fund meetings. In at least four cases, governments have officially included the forest carbon initiatives within their national development strategies and/or are planning on incorporating them into their emerging national-level REDD+ strategies.

Governments have also provided human resources, government infrastructure and, to a lesser degree, funding for the development and implementation of forest carbon activities. In 10 of the initiatives, the governments have supported forest carbon activities by providing transportation to meetings, lending cars or allocating staff time. In almost all of the reforestation initiatives, governments have also helped with the establishment of new tree nurseries or the loan of government-owned tree nurseries; and in four instances, governments have provided funds to support the development of the initiatives or to cover gaps in funding availability. For example, the Malagasy government is providing funds through its national Environmental Program (EP3) to fund tree planting within the TAMS site.

A final way in which governments have supported forest carbon initiatives has been through direct support to project management. In eight of the 12 initiatives, governments have appointed a point person to serve as the liaison between government and field activities. For example, in the TAMS initiative in Madagascar, the government has a staff member who is specifically tasked with leading forest carbon initiatives and participating in monthly meetings. However, in most initiatives, the government is only marginally involved in the day-to-day management and coordination of field activities.

Factors that have facilitated obtaining government support

A variety of factors have been key in helping to obtain government support for forest carbon initiatives, and in ensuring government involvement (Table 25).

One of the key factors that has helped advance the forest carbon initiatives has been the pre-existing, good relationships between partners and the government (11 of 12), and, to a lesser degree, solid relationships between the government and local stakeholders (7 of 12). In all of the sites where forest carbon activities have begun, CI and other partners already have a long-established track record of working with government institutions, and these relationships have facilitated further collaboration. For example, the Colombian Ministry of the Environment has been supportive of the Bogotá Corridor, due to its good relationship with CI and its recognition of CI's prior experience with environmental management, biodiversity conservation, climate change adaptation and CDM projects. Similarly, the long history (eight

Table 25. Factors that have facilitated government engagement and support for forest carbon initiatives.

Enabling Conditions	Number of initiatives (n=12)
Good relationships and support of key officials	
Good, pre-existing relationships between partners and the government	11
Good, pre-existing relationships between stakeholders and the government	7
Existence of high-level or key government officials ("champions") who have promoted the REDD+ or reforestation activities within the government	6
Existence of high-level or key government officials who promote the initiative at international workshops and events	3
Government interest in climate change issues	
Willingness of the government to create a coordinating body that will oversee the forest carbon initiative and coordinate among different partners and stakeholders	9
Willingness of the government officials to participate in climate change training activities, organized by CI and partners	9
Willingness of government representatives to participate in field monitoring and meetings	8
Willingness of the government to allow civil society participation in the formulation of climate change policy	6
Interest of the government in supporting initiatives as a means of piloting REDD+ in its country	5
Existence of a clear definition of project roles and responsibilities (including those of the government)	3
Interest in co-benefits and synergies with other policies	
Interest of the government in integrating forest carbon initiatives into its conservation policies and initiatives	11
Existence of complementary state government programs (e.g., reforestation initiatives, or initiatives to stop deforestation or to promote alternative livelihood options)	10
Interest of government in the potential of the forest carbon initiative to address land and food insecurity, and/or enhance rural development	8
Interest of the government in developing the forest carbon initiative as a means of ensuring continued water provision from forests	7
Location of the initiative in an area that is a priority for government activities	5
Availability of financial and technical support from the government	4

years) of CI support to national protected areas in Madagascar and its close relationship with the relevant government agencies (especially the Ministry of Environment, Forests and Tourism) have made it easier for the CAZ and TAMS initiatives to obtain government support. The government of Madagascar has actively supported the creation and implementation of the CAZ protected area implementation, and has signed letters of approval and allocated funds to the TAMS initiative.

Half of the initiatives have also benefited either from the support of a high-level or key government official who was willing to champion the initiative both within the government and externally at international workshops and events, or from the presence of highly trained government officials who were knowledgeable on REDD+ and keen to move demonstration activities forward. For example, the Emas reforestation initiative has greatly benefited from the active leadership of the manager of the Emas National Park and the local environment secretary. Similarly, the TAMS and CAZ initiatives in Madagascar have been widely publicized by the government of Madagascar at various international fora, including UNFCCC and BioCarbon Fund events.

The initiatives have been generally well-supported by governments due to their interest in building their capacity and experience with forest carbon initiatives, and REDD+ more generally. For example, in nine of the 12 initiatives, government officials have actively participated

in training events on forest carbon activities and REDD+, usually organized by CI and other partners. A wide range of training events has been undertaken by partner organizations, ranging from an overview of climate change and the role of forests in mitigation, to more detailed training on tree nursery management, plant production, ecological restoration, agroforestry systems and biomass measurements. In addition to delivering information on how initiatives work, these training events have also provided a space for CI and partners to explain their ideas to government representatives, solicit their input and achieve critical buy-in.

In a few instances, the initiatives have also benefited from government willingness to be actively involved in managing and implementing the forest carbon activities. In half of the initiatives, government officials have participated in field visits and meetings, thereby getting first-hand experience with implementation. In some instances, the government has even helped convene a coordinating body which facilitates oversight of these initiatives. For example, in Madagascar, the government has assembled a coordinating body to oversee the TAMS and CAZ initiatives, due to the fact that the government, which is the owner of the carbon, is ultimately responsible for aggregating and transferring the carbon credits generated to potential buyers. The government has also designated a government representative to participate in field-monitoring activities and monthly meetings, thereby greatly facilitating communication between project partners and the government.

In a few cases, governments have shown interest in testing how REDD+ will be implemented on the ground and using this experience to help develop their national REDD+ plans. For example, in Peru, government officials have been keen to support several REDD+ initiatives as demonstration activities to test how REDD+ might work, and to explore opportunities for "nesting" pilot activities within a future national-level REDD+ framework. In collaboration with NGO partners, the government of Guatemala is similarly exploring how pilot REDD+ field activities will help inform its national policies.

Governments have also supported forest carbon initiatives because they are complementary to existing conservation and rural development policies and have the potential to deliver important co-benefits, such as biodiversity conservation, water provision and improved food security. Almost all governments have expressed interest in the forest carbon initiatives as a means of achieving biodiversity conservation (n= 11), as well as their potential ability to help ensure continued water provision from forests (n=8), enhance land and food security (n=8) and provide employment or income to local people (n=7). A clear example is the Bogotá Corridor reforestation initiative, which has received significant government support, in large part because it contributes to a larger regional conservation strategy focused on ensuring water provision for the city of Bogotá and surrounding municipalities (Box 10). Similarly, the Malagasy government has been supportive of the TAMS initiative in part because of its ability to provide employment and income to local communities, in addition to helping provide alternative livelihood options (through the establishment of diverse agroforestry systems and fuel-wood plantations). The creation of the CAZ protected area was conditional on the potential for ecosystem service revenues, including carbon, to support its long-term management costs. Thus, in many cases, the government participation and support for the initiatives has been due to not only the potential for mitigating climate change (and generating carbon credits), but also the potential for it to deliver important social and environmental benefits beyond carbon, and contribute to ongoing development efforts.

Some of the initiatives have also been helped by the existence of complementary state government programs or funds that can be used to support activities. For example, in the Atlantic Forest of Brazil, the state government has parallel initiatives (ProMata) that are identifying land eligible for reforestation, supplying planting materials and conducting surveys on private properties, all of which are valuable inputs for the Muriqui reforestation project.

Box 10, Part 1. Government involvement in the development of the Bogotá Corridor A/R CDM initiative

Sandra Sguerra, Patricia Bejarano and Fabio Arjona (CI-Colombia)

Securing the successful engagement and involvement of the government is key for ensuring that forest carbon initiatives will be sustained over the long term. This is especially important in large-scale initiatives that cover vast areas of land, in which different lands may fall under different jurisdictions and types of tenure. In these large-scale types of forest carbon initiatives, government engagement is essential for incorporating the forest carbon component within broader decision-making processes affecting land use in the project area.

The Bogotá Conservation Corridor is a good example of how to effectively engage governments in forest carbon initiatives and secure broad political and public support. The partnership leading the initiative has actively engaged the government at various levels (from the Ministry of Environment to department governments and environmental authorities) to obtain significant political and institutional support, and to ensure that the reforestation project is closely aligned with land use planning initiatives. The main objective of the Bogotá Corridor is to design and establish a corridor in an area of approximately 600,000 hectares connecting four areas strategic for the water supply of the city of Bogotá and other municipalities in the surrounding area: the Sumapaz and Chingaza National Parks, Bogotá´s Eastern Hills Forest Reserve and the Guerrero Paramo. These areas are critical not only for biodiversity protection, but also for providing water to the approximately 10 million people in the Cundinamarca and Meta Departments who live downstream. One of the main strategies for establishing the conservation corridor is the implementation of a Reforestation CDM Program of Activities (PoA) in a potential eligible area of 174,000 hectares (Figure 6).

Many strategic actors have been planning and implementing environmental activities in the area as part of their institutional mandates, and this existing work has provided a favorable framework in which to integrate the corridor/CDM initiative. The EAAB (public water company) has been in charge of guaranteeing the supply of drinkable water for Bogotá since 1995, and is now implementing an environmental management plan for seven municipalities in the area directly influenced by the Chingaza watershed. In addition, there are six environmental authorities in the corridor: the Special Administrative Unit of the National Parks System (UAESPNN), which manages the Chingaza and Sumapaz National Parks; four Autonomous Regional Corporations (CAR, CORPORINOQUIA, CORPOGUAVIO and CORMACARENA), with a mandate to regulate the use of natural resources within their jurisdictions; and the District Environmental Secretary (SDA), which is responsible for regulating environmental issues in the urban area of Bogotá. At the same time, several environmental NGOs have been also carrying out projects in the region, thus strengthening local capabilities.

The partnership has engaged relevant stakeholders through a series of open consultations (held during 2008 and 2009), which have included direct dialogues with municipal authorities and meetings at both the municipal and subregional level. To date, more than 50 meetings have been

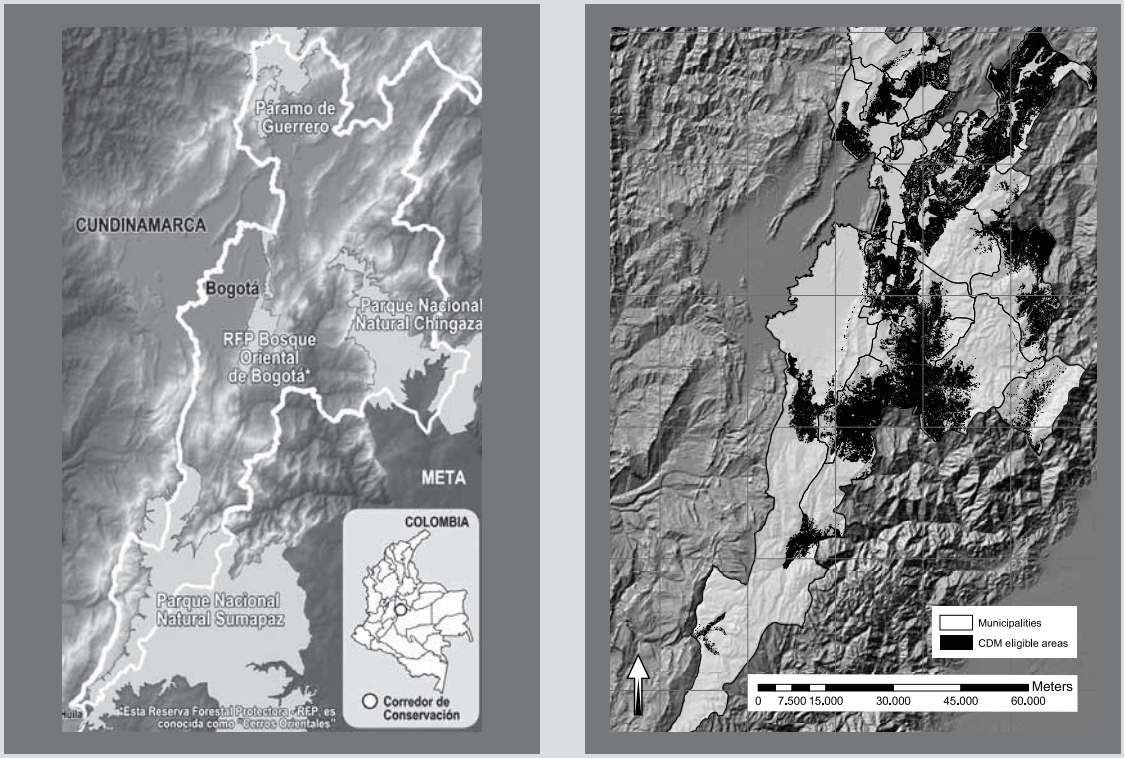

Figure 6. CDM eligible areas (right) in the Bogotá Conservation Corridor (left) initiative.

Box 10, Part 2. Government involvement in the development of the Bogotá Corridor A/R CDM initiative

held, with more than 1,000 people participating. A diverse array of stakeholders has participated in the meetings, including local government officials, community-based organizations, non-governmental organizations, aqueduct authorities, productive sectors, environmental authorities and local governments and technicians, among others. These meetings have allowed the project to socialize its objectives, build support among local stakeholders and receive valuable feedback which has been used to improve the project design.

The CDM program of the Bogotá Corridor is currently in the design process. As the first CDM experience in Colombia to be developed under a programmatic approach, this program represents an important learning opportunity for all partners and stakeholders. By coordinating and aligning the corridor's design with the needs and institutional plans of these key regional players, the partnership expects to set up an institutional arrangement for coordinating the implementation of the CDM forestry program and all associated corridor activities, and integrating this initiatives with the land-management plans and related public policies of all relevant institutions in the area.

Promoting the CDM mechanism as a means for achieving broader scope objectives in watershed protection, protected area management, or land-use planning, can be a useful way of linking the forest carbon initiative with broader environmental and social public policies. By clearly identifying the social and environmental benefits of the project, and linking them with the goals, programs and plans of key public actors such as municipalities and/or environmental authorities, the project is building political support, facilitating partnership agreements and pooling resources (both cash and in-kind) towards its implementation. In addition, by creating clear stakeholder engagement processes, facilitating communication and facilitating the exchange of information, the Bogotá Corridor initiative has also built significant support both among the general public and with decision-makers, enhancing the likelihood of success.

Challenges encountered in working with governments

Although governments have been generally quite supportive, all of the forest carbon initiatives have periodically encountered some challenges in working with governments during the different stages of design and implementation. These challenges range from difficulties in obtaining and maintaining government support, to inconsistent government policies that impede or delay activities, to lack of a clear policy and regulatory framework for REDD+, to limited capacity and resources within the government to address forest carbon issues (Table 26).

An overarching challenge has been the lack of clear national-level climate policies and regulations to guide the design and implementation of forest carbon activities, particularly of REDD+. Most governments are only in the early stages of designing their climate policies and deciding how to tackle mitigation activities, and therefore there is often no clear national policy (especially those related to land use and land use change) framework that can guide site-level initiatives. In addition, while in most countries the oversight of CDM reforestation activities has fallen under the responsibility of the Ministry of Environment, the Ministry of Forestry or the Ministry of Natural Resources, in at least two of the regions where forest carbon initiatives are underway, it is still not clear which ministry or governmental body will ultimately be responsible for activities that fall under REDD+, and this uncertainty hampers progress. Additional clarity on how national-level climate policy—and especially REDD+ policies—will be designed and managed would greatly facilitate the development of forest carbon activities on the ground.

The lack of clarity around carbon rights (i.e., who owns the carbon and who has the rights to market carbon) has also been a major obstacle to the development of forest carbon activities. With the exception of the Tengchong reforestation initiative in China, where there are clear government rules for sharing the proceeds generated through the sale of carbon offsets[21], all of the initiatives have encountered difficulties in determining who holds ownership of the carbon rights, and who has the right to market carbon credits that will be generated

21 The Chinese government allows any sponsor to apply, invest in, and implement a CDM project activity as long as it meets basic requirements stipulated in the *Measures for Operation and Management of Clean Development Mechanism Projects in China* adopted in October 2005. Revenues derived from the transfer of CERs are owned jointly by the Government of China and the project owner (as defined in the official project documents), with different benefit sharing rules under each scope of the CDM. For example, A/R projects are taxed at 2% of the transfer value, while HFC (Hydrofluorocarbon) and PCF (Perfluorocompounds) projects are taxed at 65% and N_20 (Nitrous Oxide) projects at 30% (http://cdm.ccchina.gov.cn/).

Table 26. Challenges that forest carbon initiatives encountered in working with governments, organized by the type of challenge.

Type of Challenge	Challenge	Number of initiatives (n=12)
Lack of clear climate change policy	Lack of national-level climate change policies available to guide the development of REDD+ activities	9
	Uncertainty of which ministry or body is responsible for forest carbon activities	2
Unclear carbon ownership and rights	Lack of carbon legislation, indicating who owns carbon and who can market carbon credits	11
	Lack of clarity about distribution of carbon revenue	7
Land tenure and rights issues	Unclear or disputed land tenure within the area	6
	Uncertainty about carbon rights of indigenous peoples who have rights over natural resources, but live on government-owned land	6
	Unclear user rights in the project area	4
	Uncertainty in how to deal with illegal settlers living within the area	4
Incompatibility with other policies	Lack of integration of the forest carbon initiatives within broader government strategies and programs (e.g., rural development policies, infrastructure projects, agricultural programs)	7
	Limited coordination between different governmental institutions that influence land use and forestry	7
	Conflicting land-use policies (i.e., governments supporting REDD+ while also supporting mining or infrastructure development in the same area)	4
Limited government resources and capacity	Lack of public financial resources or material support available to support the design and implementation of forest carbon initiatives	10
	High government staff turnover and the need for frequent training	8
	Limited government capacity to enforce forest governance in initiative area	8
	Limited knowledge and understanding within the government on CDM rules and procedures	6
	Limited ability to enforce existing environmental or forestry laws	5
Limited coordination or communication	Lack of consistent government commitment and political support	8
	Slow or cumbersome process of coordination with the government	7
	Lack of regular communication and meetings with government officials and project managers	2

by the forest carbon activities. Similarly, the lack of government policies or guidance on how carbon revenues will be distributed among the various stakeholders has slowed or discouraged forest carbon activities. Even in instances where project managers have obtained legal counsel on this issue (e.g., the Maya REDD+ initiative hired a legal expert to analyze pertinent national laws), this issue has not been resolved. While an analysis can point out the legal gaps in resource laws pertaining to forest carbon, it remains the role of the government to create specific legislation. Another complicating factor is that the laws pertaining to carbon can change over the life of the initiatives. For example, in Ecuador, a new constitution was recently adopted in 2008 which specifies that all environmental services (including carbon) are not susceptible to ownership; and that their production, provision, use and exploitation shall be regulated by the government (Constitution of the Republic of Ecuador, 2008).

In roughly half of the initiatives, the lack of clear land tenure and land-use rights has also been a critical barrier. The 12 forest carbon initiatives vary greatly in terms of the patterns of land ownership and land-use rights, ranging from initiatives on government lands (e.g., Maya Reserve), to initiatives on primarily community-owned lands (e.g., Selva Lacandona) or indigenous peoples' territories (e.g., Xingu Basin), to initiatives on private

lands (e.g., ChoCO$_2$, Muriqui), to initiatives on a mixture of different land-use types (see Table 2). Of the 12 initiatives, roughly half have faced issues with unclear or disputed land tenure, or uncertainty about land-use rights within the area where forest carbon activities take place. In some cases, the situation can get even more complex if, for example, above-ground resources belong to owners of the land or use rights, while below-ground resources, including soil carbon, belong to the government. Four initiatives have had to face the problem of dealing with illegal settlers who live on or use the land; involving these stakeholders is critical to the success of the forest carbon initiative, yet their illegal status may prevent their direct involvement. For example, in areas which are clearly owned by the government (such as a declared Protected Area), the state may refuse to deal directly with these stakeholders to avoid "legitimizing" their presence in the area.

Another common challenge is that there is little integration of forest carbon activities with broader government strategies and programs that affect forestry and land use, often resulting in conflicting land-use outcomes. For example, although rural development policies, agricultural policies and infrastructure programs could have important implications for forest carbon activities, these issues are typically dealt with separately—usually by different ministries working in isolation. As a result, while one ministry may be encouraging the development of a REDD+ or reforestation activity in a given area, another ministry may be providing permits for mining activities or funding for road development which could lead to forest loss in the same area. This lack of coordination and synergy among different government institutions (e.g., ministries of transportation, forestry, mining, agriculture and environment, etc.) and policies is a major constraint for both REDD+ and reforestation activities and, if unchecked, could potentially undermine any mitigation success.

Another recurring challenge is the fact that most government institutions have very little experience and limited capacity to help with implementing forest carbon activities, and to enforce related forestry and environmental laws. While some governments have supported a variety of CDM projects, in general, knowledge of A/R projects has trailed significantly behind that of other CDM scopes in the energy sector. Furthermore, in some instances, the lack of familiarity with the CDM rules and procedures has slowed down the approval of reforestation projects by the DNA; while in other cases, governments have been very slow to even develop national forest definitions. Similarly, technical capacity regarding REDD+ is very limited within most government agencies, especially those not directly related to the forestry sector but that have a direct impact on it (e.g., economic development, agriculture, mining, infrastructure, etc.), and this made it hard for REDD+ initiatives to get sufficient government support. In addition, given the rapidly evolving nature of REDD+—and the fact that the design of the international REDD+ architecture has not yet been fully agreed-upon—it is not surprising that governments have little experience on these issues. However, creating broad-scale knowledge and understanding of REDD+ within key government agencies—from the local to the national level—will be necessary if these initiatives are to be successful. Along with limited technical capacity, many governments lack the ability to enforce environmental and forestry laws, which makes it difficult to ensure the permanence of forest carbon activities.

Most of the initiatives have already invested significant time and effort to enhance government capacity on forest carbon activities; however this capacity is quickly lost due to the rapid turnover of government staff. At least eight initiatives mentioned that they trained key government officials on REDD+ and A/R technical issues only to find later that these officials were moved to other positions, or were replaced due to election cycles, and that their replacements knew very little about forest carbon activities, requiring them to repeat the training process.

Many of the initiatives are also hampered by insufficient public financial resources or in-kind support (e.g., government staff time, infrastructure) to support reforestation and REDD+ activities in the field. This lack of sufficient funding and resources is not unique to forest carbon initiatives, but because these initiatives require significant up-front funding (for several years before carbon revenues become available), it can be a major constraint to their development.

Other challenges in coordinating with some government institutions include slow or cumbersome government procedures, limited communication and difficulty in maintaining consistent government political support. In some regions, governments have outwardly supported the initiatives but have not included them among their priorities, so the initiatives have received little attention and it has been difficult for government representatives to dedicate sufficient time or resources to them. In other cases, governments were initially very enthusiastic about forest carbon initiatives (due to their ability to generate income and employment for local stakeholders), but have lost interest in the initiative over time, due to the slow development of the activities. Actively maintaining government interest in and support of the forest carbon initiatives are likely to be ongoing challenges, due to the long lifetime of the initiatives (minimum 20 years) and the fact that most government officials hold short-term, politically appointed positions.

6. Recommendations for project developers and policy makers

CI staff identifying eligible reforestation sites on the TAMS project map in Madagascar.

Nursery manager of local partner, Oreades, explains seedling selection for the Emas initiative, Brazil.

Field technicians conducting socioeconomic surveys in the Alto Mayo Protected Forest, Peru.

Community members with sustainably harvested Xate palm fronds in the Maya Biosphere Reserve, Guatemala.

6.1 Recommendations for developers of forest carbon initiatives

On the basis of the challenges and enabling factors identified in the previous sections, here we provide a list of key recommendations for designing, developing and managing site-level forest carbon activities. Our list is not exhaustive, but instead highlights issues which are central to the success of both reforestation and REDD+ initiatives. Since most of the forest carbon initiatives included in this report are still in their initial phases of development, most of these recommendations pertain to the early stages of reforestation and REDD+ initiatives. It is likely that additional challenges and recommendations will arise in later stages during full implementation.

Recommendations on partnerships and management of forest carbon initiatives

- **Establish a strong, experienced and multi-disciplinary team to guide the forest carbon initiative,** including technical expertise in forestry, biomass measurements and carbon accounting; experience in local stakeholder engagement, familiarity with the local context; solid project management skills; the ability to create good relationships with government officials and detailed knowledge of relevant national and international laws and policies. Ensuring sufficient expertise on social issues is as important as ensuring good technical skills.
- **Involve partners who have extensive experience in local stakeholder engagement** and have already worked successfully with communities and/or indigenous peoples in the area where reforestation or REDD+ activities will be undertaken, as their familiarity and good track record will provide important credibility and facilitate field work. Where appropriate, involve indigenous peoples and/or local community representative organizations as partners in project design and implementation. Such direct involvement increases ownership and credibility of the project among local stakeholders, and brings local knowledge and expertise which could increase the chances of success over the long term.
- **Strive for a simple partnership structure, opting for a manageable number of partners.** The optimum number of partners will vary according to the size and complexity of what the initiative is trying to accomplish. However, simple structures (and small, well-defined partnerships) generally facilitate decision making, communication and coordination.
- **Identify a "central partner" to coordinate activities, manage the initiative and keep other partners informed of progress and problems.** This central partner must be technically strong, understand all aspects of the forest carbon initiative (policy, technical issues, stakeholder engagement, field activities) and have sufficient capacity and resources to lead the initiative. The central partner must have strong management capability, including the ability to maintain the integrity of project finances and to clearly and transparently manage processes such as contract management and donor/investor reporting. The central partner may change over the course of the project's lifetime; however, it is critical to maintain continuity, especially during the design and early implementation phases.
- **Build on successful pre-existing partnerships and relationships** to ensure confidence among partners and local stakeholders and create a culture of trust and collaboration. Since carbon initiatives are complex and novel, and will continue for at least 20 years, partners need to be comfortable in working with each other over the long term.

- **Establish a clear vision of what the forest carbon initiative aims to achieve, and ensure partners and stakeholders agree with these goals.** In addition to establishing clear mitigation goals (e.g., the number of hectares reforested or hectares of forest protected from deforestation), partners should also discuss and agree on the initiative's goals in terms of co-benefits, such as biodiversity conservation and poverty alleviation, since many partners may have a strong interest in such outcomes.

- **Clearly specify the roles and responsibilities of each partner within the forest carbon initiative, and formalize this structure through appropriate agreements and contracts.** Ensure that all partners understand how their "components" relate to the activities of other partners, what outcomes are expected and what their roles are in ensuring the successful delivery of these outcomes, and that partners have the necessary skills and knowledge to be active participants.

- **Assess capacity and knowledge of all partners at the beginning of the initiative to determine key capacity gaps and training needs on forest carbon issues, and create a training program to meet those needs.** While partners do not need to become experts on all technical issues, they should be familiar with the basic concepts of forest carbon and clearly understand how these initiatives work.

- **Create a detailed strategy for communication and coordination among partners** that ensures regular meetings and communication channels, establishes mechanisms (e.g., weekly or monthly meetings or site visits) for regular feedback from the field, facilitates decision making and problem solving, ensures a constant presence in the field and provides sufficient training to both partners and stakeholders and allows for adaptive management.

Recommendations on developing the technical aspects of forest carbon initiatives

- **Use the best available expertise to conduct the technical aspects of forest carbon initiatives (e.g., biomass estimates, deforestation analyses, baseline establishment and calculation of emissions reductions) and to write the Project Design Document (PDD), to ensure scientific rigor and credibility.** Technical experts should be familiar with UNFCCC procedures, IPCC Good Practice Guidelines for LULUCF and CDM or REDD+ methodologies, be aware of the requirements of different certification schemes (e.g., the Clean Development Mechanism, Voluntary Carbon Standard and Climate, Community and Biodiversity Standard etc.) and have detailed knowledge of the project site and context.

- **Prior to beginning project design, identify, collect and systematize all biophysical and socioeconomic data available for the region where forest carbon activities will take place,** including satellite imagery, land-use data, biomass data, information on land-use changes, drivers of deforestation, land tenure and socioeconomic information on stakeholders.

- **Identify any key information gaps which may require additional data collection and establish a process for obtaining this information within a realistic timeframe, considering it may require extensive field work.** Integrate and coordinate this process within the broader project management work plans. In addition, create and regularly update a detailed database of all project-related information (including new information generated by the project) to facilitate data management, PDD development and validation/verification.

- **Carefully determine which certification standards, methodology and/or approach (project or programmatic) is most appropriate for a given forest carbon initiative,** taking into account differences in data requirements, land eligibility criteria, government involvement, technical difficulty, auditing processes and attractiveness for donors and investors. Where possible, adopt or adapt existing methodologies, rather than creating new methodologies (which is costly, difficult and time-consuming). In addition to certifying the social and environmental benefits of their initiatives through the CCB Standards, project developers should strive to adhere to a rigorous carbon accounting standard, such as the CDM or the VCS, to ensure credibility of the emissions reductions generated.

- **Identify and learn from other forest carbon initiatives developed in similar contexts and use proven techniques or adapt successful approaches to local contexts.** Creating dialogue groups and round tables on technical issues among forest carbon practitioners within a country/region can be a good way of exchanging experiences and lessons on how to deal with particular technical obstacles, and foster collaboration.

Recommendations on raising and managing funds for forest carbon initiatives

- **Specifically design forest carbon initiatives so that they deliver clear environmental and social co-benefits, in addition to climate mitigation benefits.** While the robustness of the emissions reductions generated is the major driver of investment in the carbon market, incorporating strong and clear co-benefit components into the design of the initiative will make it more attractive to donors and investors, as well as to the government and local stakeholders, while also facilitating its long-term sustainability.
- **Develop a clear marketing and communication strategy to promote the initiative and attract investment.** Identify unique or special features of the initiative that will make it attractive to investors (for example, highlighting unique conservation benefits or benefits to local communities).
- **Explore a diversity of funding sources (philanthropic, private investments, etc.) to ensure sufficient up-front financing to cover the costs of project design and PDD development.** A well-designed initiative will enhance the chances of successful implementation and the possibility of leveraging additional funding. Whenever possible, seek donors who are willing to be engaged over the entire lifetime of the initiative to ensure there are sufficient resources to cover all the different stages of project development and to avoid any gaps in funding availability.
- **Be aware that carbon revenue might cover only a portion of the design, implementation and management costs of the initiative, and that other, non-carbon-related funding may be needed.** In addition, be conscious of the fact that revenues from carbon finance will only accrue after the carbon credits have been generated and verified, so there will usually be a several-year time lag between the initiation of field activities and the generation of carbon finance. These issues need to be carefully considered in budget design as well as management and fundraising activities.
- **Prepare a financial plan for the project, showing anticipated costs, anticipated revenue based on preliminary carbon estimates and projected cash flow.** Not only can this make a project look more solid in the eyes of a donor, but it can also help the project negotiate on carbon pricing if it can demonstrate what financial resources and what carbon price (i.e., dollars per ton of CO_2 sequestered or reduced) is needed to cover its costs and break even.
- **Use any seed funding or short-term funding opportunities strategically to leverage additional long-term financial resources** by conducting a detailed feasibility study (including financial, technical, social and political viability) which can demonstrate to potential funders that the forest carbon initiative is a good investment. Developing a concept document with which to market projects is a good way to obtain forward financing for final PDD development in return for future credits. Investing in the development of strategic partnerships can also result in in-kind contributions, such as providing the necessary technical support or engagement with local actors.
- **Develop pilot activities to demonstrate that reforestation or REDD+ initiatives are feasible,** and to garner local stakeholder support and attract investor and donor attention, while gaining experience in project implementation.
- **Ensure that there is sufficient funding for not only the development of technical (carbon-related) aspects, but also for stakeholder engagement, outreach and training.** If some funding opportunities are very carbon-specific (i.e., developing carbon baselines), find complementary funding to cover the non-carbon-related activities as well, since they can be equally important to the development of the initiative.

- **Promote financial transparency among all partners and stakeholders** so that it is clear what funds are available and how they are being used, to avoid mistrust or misunderstandings. If financial resources are lacking, be very clear about what each partner is contributing to the project (e.g., in-kind contributions), to avoid conflicts. Create realistic expectations regarding the amount and timing of carbon revenue to be generated by the initiative, and agree early on upon the distribution of such revenue.

Recommendations on the engagement of local stakeholders

- **Create a detailed and adaptable local stakeholder engagement plan to guide outreach, communication and training activities, and to ensure fair, equitable participation of all local stakeholders,** including indigenous peoples, legal or illegal settlers, local communities and individual landowners. This engagement plan should be tailored to the particular stakeholders involved in the initiative and the local socioeconomic context (taking into consideration different cultural aspects) and be developed with input from the local stakeholders themselves if possible.
- **Build upon existing formal or informal social structures** (e.g., farmer associations, traditional governance systems, local committees) and relationships as a means of facilitating meetings, workshops and field visits, sharing information and organizing training activities. Provide information and training to local community leaders to assist them in educating their communities and to gain support and consent for participation in the initiative.
- **Ensure that all local stakeholders understand the activities and requirements of forest carbon initiatives, are aware of both the potential benefits and risks and can make informed decisions about their participation.** It is particularly important to ensure local stakeholders have sufficient information to make informed decisions about their participation, roles and responsibilities within the project. It is also critical to create realistic expectations about the potential magnitude of any benefits, as well as the time frame over which these benefits may accrue, in order to avoid potential conflicts in the future and prevent local stakeholders from losing their enthusiasm for the initiative.
- **Dedicate significant resources to building capacity among local stakeholders, so that they have the necessary skills and information to effectively participate in the initiatives.** Provide training on technical aspects (e.g., forest carbon design, carbon accounting), implementation issues such as how to establish and maintain forest plantations and how to improve farm management, legal and management issues such as land and carbon rights and revenue sharing. In reforestation initiatives, ensure that participants have the necessary capacity to gather seeds, produce seedlings, maintain plantations, monitor growth and control fires. In REDD+ initiatives, ensure local stakeholders have access to information on alternative land-use strategies (e.g., diverse agroforestry systems, woodlots, fruit gardens), that will be used to help reduce deforestation and forest degradation.
- **Using participatory methods, carefully design the forest carbon initiative so that it delivers clear, tangible benefits to local stakeholders, above and beyond the expected future carbon revenue.** Examples of potential benefits—in addition to potential carbon revenues—include training on improved farming techniques, development of diversified agroforestry systems, grants for community projects, microcredit systems for small landowners and working with the government to clarify or formalize land tenure. It is important that these non-carbon benefits are visible early on, so that local stakeholders are encouraged to continue their participation and do not get frustrated with waiting for the promised future carbon revenues.
- **If possible, create a small "pilot" activity to demonstrate that the forest carbon initiative is possible and to increase understanding of how it will work.** For example, establishing a small reforestation project on a few hectares or with a pilot community can provide an example of what the project intends to accomplish, demonstrate

potential benefits and result in wider participation. Similarly, the creation of pilot agroforestry systems or small woodlots can help garner additional community interest for REDD+ activities. Pilot activities are also useful for demonstrating to third-party auditors and potential investors that the activity is viable.

- **Establish a formal procedure for monitoring the social impacts of the forest carbon activities and soliciting/receiving regular inputs from local stakeholders on how they perceive the initiative.** Create a system for adjusting the activities if benefits are not accruing or if unexpected negative impacts are occurring. If possible, involve and train members of the communities so that they can conduct or lead monitoring activities themselves.

Recommendations on government involvement in forest carbon initiatives

- **Actively involve representatives of the government in all steps of the design, management and implementation of the forest carbon initiative to secure government endorsement of the initiative and possible links with future national accounting frameworks.** This can be done by inviting representatives to meetings, workshops, training events and field visits, providing regular updates on field activities and including government officials in decision-making processes, campaigns to raise awareness and outreach strategies. If possible, obtain official endorsement of the initiative by the government.
- **Involve representatives from multiple levels of government (e.g., local, regional, national), as well as multiple government institutions, to ensure broad support, commitment and ownership.** Also, seek "champions" within the government who can help promote the project both within the government and externally (i.e., in international venues).
- **Demonstrate to government representatives how the forest carbon initiative can contribute to key government initiatives or national development plans,** and thus help them to achieve their political objectives, to ensure their support and buy-in. If appropriate, encourage the government to include forest carbon initiatives in its general public policies, to ensure long-term support and funding.
- **Identify government policies or programs which may conflict with the goals of the forest carbon initiative** (e.g., proposed infrastructure development on forest land that is slated for REDD+) and work with the government to resolve conflicting incentives.
- **Build capacity within the government (at both the political and technical levels) so that it can effectively participate in and support forest carbon initiatives,** by organizing regular training events and workshops, coordinating field visits to demonstration sites and providing targeted and ongoing technical support. Training is often needed on forest carbon project management, local stakeholder engagement processes, monitoring and verification and carbon accounting, among others. Technical support is often required on remote sensing, forest inventories and baseline establishment. To avoid problems caused by government staff turnover, regularly provide new training opportunities or 'refresher courses' for government staff.
- **Support the government in the development of national-level policies and legal frameworks needed to implement forest carbon initiatives,** such as legislation on carbon rights and benefits sharing, by highlighting gaps, providing feedback from pilot field activities, conducting a legal review of existing or related legislation and keeping the government informed of emerging policy instruments and legal frameworks elsewhere. In particular, work with the government to clarify issues of land tenure, carbon ownership, rights and benefits sharing prior to implementing the forest carbon initiative.
- **Develop a joint communication strategy with the government for publicizing the forest carbon initiative,** both internally and externally, by developing awareness campaigns, creating effective outreach materials (e.g., leaflets, radio programs) and giving presentations at high-visibility political and scientific events.

6.2 Recommendations for policy makers

Policy makers play a critical role in determining the success of forest carbon initiatives, as they define the international action on climate change, and establish the national policies, measures and rules which determine how reforestation and forest conservation activities are implemented on the ground. If REDD+ is adopted by the UNFCCC, as expected, policy makers will quickly need to formulate the structure of the national REDD+ framework and guide its implementation within their country. On the basis of our experience with 12 pilot forest carbon initiatives, here we provide recommendations to policy makers on how they can help facilitate the design and implementation of effective forest carbon activities (especially REDD+) in the field, by ensuring appropriate policies and measures related to carbon, promoting the participatory involvement of local stakeholders, ensuring sufficient in-country technical capacity to implement REDD+, and guiding investments into efforts to reduce deforestation.

Government policies and legal measures

- **Integrate future national REDD+ policies with broader development strategies to avoid conflicting land-use policies that can undermine efforts to reduce deforestation and degradation.** Economic development plans, infrastructure policies, agricultural subsidies and land-use planning policies should be reviewed to ensure coherence with REDD+ policy. In particular, countries should pay special attention to reforming policies specific to land ownership and use, such as land tenure, use rights and agricultural subsidies, to ensure they do not create incentives to transform forest into non-forest areas.
- **Strengthen the capacities of all relevant government institutions to understand the implications that a national REDD+ policy can have on their activities, and, conversely, how their policies could affect the effectiveness of REDD+.** It is critical that all government agencies that affect forests and land use—whether directly or indirectly—understand how REDD+ works, and what activities, policies and measures will be needed to ensure its success. Particular emphasis should be placed on building capacity within the ministries responsible for infrastructure development, mining, energy and agriculture, to ensure coherence between ongoing development plans and REDD+ initiatives.
- **Develop legal provisions to establish and transfer carbon rights and include specific regulations for a transparent and equitable benefits-sharing mechanism for carbon revenue.** Such provisions should clarify who owns the carbon on any piece of land, and who has the right to use, buy or market any carbon credits potentially generated. In addition, these provisions should provide guidance on how to address carbon rights within traditional land-use rights, on communal lands and in areas where there are illegal settlements.
- **Create a transparent monitoring and transfer system to report how carbon revenue is distributed among the different stakeholders, and to ensure its equitable distribution.** Consider using existing national Payment for Environmental Services (PES) schemes as platforms for carbon payments, since carbon sequestration is an environmental service provided by forests.

- **Carefully consider how protected areas will be integrated into the national REDD+ strategy, as protected areas often hold significant carbon stocks and are effective tools for reducing deforestation.** Particular attention should be placed on improving governance in Protected Areas to ensure the permanence of the carbon stocks in these lands.

Stakeholder engagement

- **Promote alternative, sustainable livelihood activities for local communities, such as sustainable agriculture, sustainable forest management and community land management, to ensure that they have sufficient employment and income-generating opportunities.** These activities can help reduce the rate of deforestation and degradation (and are therefore highly compatible with REDD+), while also providing important social and environmental co-benefits.
- **Develop an inclusive, participatory consultation and outreach program to educate stakeholders at both national and local levels on REDD+, and enable a regular feedback process on the design of the national REDD+ strategy to ensure that concerns of relevant stakeholders are properly addressed.** At the national level, such a program should ensure appropriate information is disseminated to the general public, all government agencies and the private sector on national and local approaches to REDD+. At the local level, the program should provide for appropriate engagement and participation of all local stakeholder groups (including local communities, indigenous peoples, farmers, individual landowners, illegal settlers, etc.) which may impact or be impacted by government REDD+ policies and measures. The outreach program should include capacity-building activities so that local stakeholders have the skills and capacity to participate in forest carbon initiatives. It should also and have clear mechanisms for providing regular updates to stakeholders on REDD+ policies and activities and receiving and responding to stakeholder feedback.
- **Ensure that all stakeholders understand REDD+ and can make informed decisions about their participation by articulating the REDD+ policy in simple language and providing easy-to-understand communication materials.** Develop and disseminate clear, simple, basic information on the concepts of climate change, forest carbon and REDD+ through workshops, meetings and radio programs, to build stakeholder capacity and facilitate their participation. Where possible, take advantage of any pre-existing training and outreach materials that may have been developed by NGOs, consultants and universities with prior experience in forest carbon initiatives.
- **Work with existing local organizations or civil society groups as mechanisms for stakeholder outreach and engagement on REDD+.** Local structures such as forest concession networks, farmer groups, indigenous peoples' organizations, regional government networks and others can be useful allies for organizing outreach activities, disseminating information, organizing training activities and channeling stakeholder feedback.
- **Promote the development of an experience-sharing platform** by which field managers can access the knowledge and experience gained in other forest carbon initiatives, and by which government agencies can learn from collective field experiences and inform the design of national REDD+ policies. Organize workshops among all the partners that work in forest carbon activities (both A/R and REDD+) in the country or region to share experiences regularly and analyze enabling factors and challenges.

Technical Issues

- **Provide guidance and clear frameworks for the implementation of forest carbon initiatives at different scales and their linkage to national REDD+ accounting frameworks and strategies.** These guidelines should ensure that there are clear, common technical guidelines for the development of REDD+ initiatives, and more importantly, establish clear rules for how sub-national carbon accounting will be linked to national accounting frameworks. These national guidelines should clearly stipulate how sub-national initiatives should address social and environmental concerns.

- **Enhance the technical capacity within government ministries and agencies to ensure that the government has the technical capacity to establish national baselines, develop a national accounting scheme and successfully implement REDD+.** In particular, create or enhance capacity on carbon accounting, baseline development, deforestation analyses, land use modeling, forest inventory, forest monitoring and national greenhouse gas inventories.

- **Collect, organize and centralize the technical and socioeconomic data required for REDD+ initiatives, and facilitate access to this information by site-level forest carbon initiatives.** Particularly important information includes technical data such as satellite images, information on forests and land use, biomass data, as well as data on land ownership, land-use activities and socioeconomic conditions.

Financial aspects

- **Consider creating or supporting mechanisms to provide up-front financing to forest carbon initiatives during their initial phases, as access to sufficient funding for early project development is crucial.** Such mechanisms could channel financial donations and investments from a variety of national or international sources, including both public and private funds. It is critical that any financing mechanism be transparently designed and managed to ensure the most effective use of REDD+ funds.

- **Facilitate the flow of funds from a variety of donors and/or investors to the development of forest carbon activities in the field by creating the conditions needed to access financing.** Governments can encourage private investment in REDD+ initiatives by creating favorable investment conditions (e.g., clear forest carbon regulation and trade guidelines) and clear national REDD+ policies, including mechanisms for officially endorsing REDD+ field initiatives and allowing sub-national crediting once a national accounting framework is adopted. Governments may consider using the voluntary market as a means to bridge the financial gap for 'early action' initiatives until a full compliance REDD+ regime is in place.

7. Conclusions

Overview of Xingu Basin landscape, where a REDD+ initiative is being designed, Brazil.

Spectacled Bear *(Tremarctos ornatus)*, found near the forests of the Alto Mayo initiative, Peru.

Forest carbon and CCB Standards training workshop, Tengchong initiative, China.

Training local community members in forest inventory techniques, Selva Lacandona, Mexico.

7. Conclusions

Our report provides preliminary insights into what is needed to make REDD+ work on the ground, based on a detailed overview of the early experiences of 12 site-level forest carbon initiatives and the challenges and enabling conditions encountered throughout their development. Although previous studies have provided broad-scale overviews of forest carbon project initiatives (e.g., Niles, *et al*., 2009; Sills, *et al*., 2009; Wertz-Kanounnikoff, *et al*., 2009) or considered particular aspects of project development (such as criteria for site selection or strategies for securing carbon ownership, Cerbu, *et al*., 2009, Myers Madeira, 2009), this study provides a comprehensive overview of specific forest carbon initiatives and carefully document experiences encountered with key aspects of project design—from technical to social to financial to political.

By providing a holistic and fine-scale analysis of our experiences in implementing reforestation and REDD+ initiatives on the ground, our study reveals many of the real-world challenges that project managers and policy makers will likely face as they design and implement REDD+ activities. It also provides practical recommendations of how to enhance the chances of successful design and implementation in the field that result in the provision of not only climate benefits, but also social and environmental benefits. At the same time, our analysis provides valuable information for the ongoing policy discussions around REDD+, and responds directly to the calls made by the UNFCCC (in Decision 2/CP.13, and repeated in Decision 4/CP.15) to share lessons learned and to integrate and coordinate efforts with regards to the implementation of REDD+ demonstration activities.

Our results suggest that in order to promote successful implementation of REDD+ activities on the ground, site-level initiatives and national-level REDD+ policy makers will need to carefully coordinate a wide range of interrelated activities, ranging from the establishment of multidisciplinary partnerships to detailed carbon analyses, to stakeholder engagement processes, to carbon finance and marketing, to government participation. Strong, multi-disciplinary partnerships (including expertise in technical issues, project management, relevant laws and policies and local stakeholder engagement) are needed to guide the implementation of forest carbon initiatives and to ensure delivery of both climate and other co-benefits. The best available expertise is needed to estimate forest carbon stocks, develop scientifically rigorous emissions baselines, and use appropriate methodologies and standards, for both carbon and co-benefits. In addition, finding ways for bridging the financial gap between the early phases of REDD+ design and implementation and the time when carbon finance might be made available will be crucial. Another critical aspect is the allocation of sufficient time and resources for adequate stakeholder engagement, including basic capacity building in forest carbon concepts and field activities and ensuring that all stakeholders understand both benefits and risks of REDD+ activities. Last, but not least, strong government engagement is required to ensure that the design of REDD+ initiatives on the ground is compatible with the formulation of REDD+ policies and accounting frameworks at the national level. While each of these aspects is a prerequisite for successful on-the-ground implementation, it is the deliberate and careful integration across these different aspects that will ultimately determine whether or not emissions reductions are achieved and sustained over time.

Although REDD+ policies are still evolving and many details remain uncertain, there are clear indications that countries will soon begin designing and implementing REDD+ activities. The Copenhagen Accord recognizes the importance of reducing emissions from deforestation and forest degradation and the need to enhance removals of greenhouse gas emissions by forests, and highlights the need to provide incentives for REDD+. In addition, several countries have pledged a total of US$3.5 billion for early implementation of REDD+ between 2010 and 2012 (Casey, 2009). In addition, many tropical countries are already part of some readiness mechanism such as the World Bank Forest Carbon Partnership Facility[22] and/or the UN-REDD Programme[23]. In the meantime, REDD+ is also being considered as an important pillar of pending U.S. climate legislation (Sheikh, ***et al***., 2009), although this outcome is still uncertain. Together, all of these signs indicate that significant progress will be likely made on REDD+ policy and financing in the near future, and that countries are likely to accelerate REDD+ implementation in the coming years.

As countries begin to create national frameworks, policies and accounting systems for REDD+ and start analyzing options for achieving emissions reductions on the ground, they will likely face many of the challenges experienced by the 12 forest carbon initiatives analyzed here, such as how to create appropriate institutional structures and partnerships, how to secure sufficient technical capacity and infrastructure to design, implement and monitor REDD+ activities, and how to manage REDD+ financing to ensure equitable distribution of costs and benefits among different stakeholders, among others. In addition, they will need to determine how to incorporate sub-national activities into future national accounting frameworks. Although the challenges of designing and implementing REDD+ at the national level will likely be of a greater magnitude than those experienced by the 12 site-level initiatives, most of the key principles and recommendations of how to address and anticipate these challenges should still apply. By sharing our experiences with forest carbon initiatives with the broad community of both forest carbon managers and REDD+ policy makers, we hope to inform the design and implementation of REDD+ policies and programs at all scales to ensure that they achieve real and lasting emissions reductions while providing tangible social and environmental benefits.

22 www.forestcarbonpartnership.org

23 www.un-redd.org

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Degraded landscape near the Muriqui reforestation initiative in the Atlantic Forest, Brazil.

Members of local farmers' association planting a 20 hectare pilot site, Quirino initiative, Philippines.

Field training in biomass measurement methods, Tengchong reforestation initiative, China.

Yellow-tailed woolly monkey *(Oreonax flavicauda)* in the Alto Mayo Protected Forest, Peru.

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9. Appendices

Pasture lands eligible for reforestation in the $ChoCO_2$ initiative, Ecuador.

Community leader explaining the Alto Mayo REDD+ initiative to local stakeholders, Peru.

CI staff and local partners visiting a nursery providing seedlings to the TAMS initiative, Madagascar.

Philippine Eagle *(Pithecophaga jefferyi)*, found in native forests near the Quirino initiative, Philippines.

Appendix A. List of survey respondents (n=124).

No.	First Name	Last Name	Organization	Type
Reforestation Initiatives				
Bogotá Corridor, Colombia				
1	Angela	Andrade	Integrated National Adaptation Program (INAP)	NGO
2	Patricia Andrea	Bejarano Mora	Conservation International-Colombia	NGO
3	Javier	Blanco	Ecoversa Corporation	NGO
4	Andrea	Garcia Guerrero	Ministry of Environment, Housing and Territorial Development (MAVDT)	GOV
5	Oscar Mauricio	Jaramillo	Conservation International-Colombia	NGO
6	Ramón	Leal	Association of the Regional Autonomous Corporations for Sustainable Development	GOV
7	Cesar Augusto	Ruiz Agudelo	Conservation International-Colombia	NGO
8	Sandra Yolima	Sguerra-Castañeda	Conservation International-Colombia	NGO
9	Thomas	Black	Andean Center for Environmental Economics (CAEMA)	NGO
10	Martha Patricia	Cruz Moreno	Bogotá Water Supply Company - EAAB	PRIV
11	Andrea Cristina	Sabogal Florez	National Natural Parks Unit	GOV
ChoCO$_2$, Ecuador				
12	Fermín Epifanio	Benavides	Member of local community	COM
13	Fidel Bernardo	Castro Ullauri	Fundación Maquipucuna	NGO
14	José Antonio	Collaguazo Proaño	Corporation Micro.E. Yunguilla	COM
15	Free	de Koning	Conservation International-Ecuador	NGO
16	Robert	Erreis	Ecopar	NGO
17	Cristina	Félix	Conservation International-Ecuador	NGO
18	Pablo	Moncayo	Ecopar	NGO
19	Luis	Ordóñez	Ecopar	NGO
20	Jaime Neptalí	Perugachi Flores	National College Nanegal / Parish Board	COM
21	Luis Enrique	Urquía Albán	Maquipucuna Foundation	NGO
22	Kana	Yamashita	Conservation International-Japan	NGO
Emas, Brazil				
23	Martha	Carrijo	Environmental Institute of Mato Grosso do Sul State (IMASUL)	GOV
24	Roberta	Carvalho	Oreades Geoprocessing Center	NGO
25	Marcos	Cunha	Chico Mendes Institute of Biodiversity Conservation - ICMBio	GOV
26	Mirella	Domenich	Conservation International-Brazil	NGO
27	Renato	Moreira	Oreades Geoprocessing Center	NGO
28	Maria	Otília Zardo	Rancho Ideal Farm	PRIV
29	Artur	Paiva	Conservation International-Brazil	NGO
30	Paulo	Prado	Conservation International-Brazil	NGO
31	Anonymous	N/A	N/A	N/A

Appendix A, (cont'd). List of survey respondents (n=124).

No.	First Name	Last Name	Organization	Type
Muriqui, Brazil				
32	Lucio	Bede	Conservation International-Brazil	NGO
33	Marcello	Nery	Muriqui Preservation Society (SPM)	NGO
34	Artur	Paiva	Conservation International-Brazil	NGO
35	Luiz Paulo	Pinto	Conservation International-Brazil	NGO
36	Carla	Possamai	Center for Ecological Studies and Environmental Education	NGO
37	Paulo	Prado	Conservation International-Brazil	NGO
38	Guilherme	Prado Valladares	Ambiental PV Ltda	PRIV
39	Fernanda	Tabacow	Center for Ecological Studies and Environmental Education	NGO
Quirino, Philippines				
40	Juan	Acay Jr.	Conservation International-Philippines	NGO
41	Alexander	Barayuga	Department of Environment and Natural Resources	GOV
42	Oliver	Coroza	Conservation International-Philippines	NGO
43	Gilbert	Gambol	Barangay Local Government Unit-Sto.Nino, also part of Maddela and Sto.Nino Integrated Social Forestry Association (STISFA)	GOV
44	Noel	Guillermo	Divisoria Sur Agroforestry Farmers Association (DSAFA)	COM
45	Judy	Macadaeg	Barangay Local Government Unit-Divisoria Sur, Maddela	GOV
46	Lemuel Rey	Maranion	Local Government Unit-Municipality of Maddela	GOV
47	Yoji	Natori	Conservation International-Japan	NGO
48	Elizabeth	Nicolas	Palacian Economic Development Association Inc (PEDAI)	NGO
49	Estrella	Pasion	Conservation International-Philippines	NGO
TAMS, Madagascar				
50	Abdoul	Cheik Abdallah	Ministry of Environment and Forests (MEF)	GOV
51	Simon	Dimanche Randrianjaka	Madagascar National Parks	GOV
52	N/A	Dimasy	Community member	COM
53	Abdoul	Kader Ismael	Rural Commune of Andasibe	COM
54	Nomenjanahary	Landy Seraphin	Sampan'Asa Fampandrosoana/Fiangonan'i Jesosy Kristy eto Madagasikara (SAF-FJKM)	NGO
55	Zo Elia	Mevanarivo	Ministry of Environment and Forests (MEF)	GOV
56	Andoniaina	Narisoa	Ministry of Environment and Forests (MEF)	GOV
57	Pierrot	Rakotoniaina	Conservation International-Madagascar	NGO
58	Hariniaina	Rameson	Conservation International-Madagascar	NGO
59	Jeannicq	Randrianarisoa	Conservation International-Madagascar	NGO
60	Hasina	Randrianjaka	Rural Commune of Andasibe	COM
61	Minombolanoro	Razafafoniaina	National Association of Environmental Actions (ANAE)	NGO
62	Fabrice	Razafimanantsoa	Madagascar National Parks	GOV
63	Anonymous	N/A	N/A	N/A

Appendix A, (cont'd). List of survey respondents (n=124).

No.	First Name	Last Name	Organization	Type
Tengchong, China				
64	Duan	Chengbo	Forestry Bureau of Tengchong county	GOV
65	Xiao	Hua	Forestry Department of Yunnan Province (abbr. FDYP)	GOV
66	Zou	Hengfang	Yunnan Green Environment Development Foundation (abbr. YGEDF), former FDYP	NGO
67	Ma	Jian	The Nature Conservancy	NGO
68	Zhou	Rong	Shan Shui Conservation Center	NGO
69	Duan	Shangheng	Daba Village, Qushi Town	COM
70	LI	Songhui	Sujiang Forestry Farm	PRIV
71	Liu	Tao	Yunnan Forestry Technology College (YFTC)	Other
72	Su	Tengwei	Yunnan Green Environment Development Foundation (YGEDF)	NGO
73	Wang	Tiancan	Gaoligong Nature Reserves Management Bureau, Tengchong	Other
74	Lin	Xiangqun	Yunnan Forestry Technology College (YFTC)	Other
75	He	Yi	Shan Shui Conservation Center (CI employee during project development)	NGO
76	Xia	Zeyuan	Yunnan Forest Inventory and Planning Institution (YFIPI)	PRIV
REDD+ Initiatives				
Alto Mayo, Peru				
77	Segundo Vicente	Calle Castillo	AMPF Management Commission	Other
78	Luis	Espinel	Conservation International-Peru	NGO
79	Benjamin	Kroll	Association of the Virgin of the Miraculous Medallion (AVMM)	NGO
80	Eddy	Mendoza	Conservation International-Peru	NGO
81	Jorge Armando	Paredes Zumaeta	Park Administration Unit, Alto Mayo Protected Forest (BPAM)	GOV
82	Percy	Recavarren Estares	Association for Integrated Research and Development (AIDER)	NGO
83	Claudio	Schneider	Conservation International-Peru	NGO
CAZ, Madagascar				
84	Michèle	Andrianarisata	Conservation International-Madagascar	NGO
85	Lalaina	Andrianavalona	VOI Miaradia	COM
86	Richard	Boda	Regional Division for Environment, Forests and Tourism	GOV
87	Michael	Manesimanana	Group for Research and Studies on Primates (GERP)	Other
88	Marcel Willy	Onjaherisoa	VOI Mendrika	COM
89	Jean Michel	Raherimanantsoa	Conservation International-Madagascar	NGO
90	Pierrot	Rakotoniaina	Conservation International-Madagascar	NGO
91	Andoniaina	Rambeloson	Conservation International-Madagascar	NGO
92	Hariniaina	Rameson	Conservation International-Madagascar	NGO
93	Rene	Randriambohanginja-tovo	Madagascar National Parks	Other
94	Tiana	Raoelizanamanana	Management Platform for CAZ (PlaCAZ)	Other
95	Andriambolantsoa	Rasolohery	Conservation International-Madagascar	NGO
96	Hanitriniaina	Razafindrakoto	Ministry of Environment and Forests (MEF)	GOV
97	Zo	Zatovonirina	Conservation International-Madagascar	NGO

Appendix A, (cont'd). List of survey respondents (n=124).

No.	First Name	Last Name	Organization	Type
Maya Biosphere Reserve, Guatemala				
98	Ingrid	Arias	Conservation International-Guatemala	NGO
99	Roan	Balas	Wildlife Conservation Society (WCS)	NGO
100	Ramiro	Batzin Chojoj	Association Sotz'il	COM
101	Jorge	Cabrera	Kukulkan Foundation	NGO
102	Bayron	Castellanos Romero	Association Balam	COM
103	Miriam Lorena	Castillo Villeda	Conservation International-Guatemala	NGO
104	Carlos	Chex	Association Sotz'il	COM
105	Ana Lorena	Cordova Lopez	Ministry of Environment and Natural Resources	GOV
106	Igor	De La Roca	National Council on Protected Areas (CONAP)	GOV
107	Juan Ramon	Giron	Association of the Forest Communities of Peten	COM
108	Marcel	Oseida	Ministry of Environment and Natural Resources	GOV
109	Carlos	Mansilla	Ministry of Environment and Natural Resources	GOV
110	Victor	Ramos	National Council on Protected Areas (CONAP)	GOV
111	Carlos	Rodriguez	Conservation International-Guatemala	NGO
112	Omar	Samoya	Rainforest Alliance (RA)	NGO
Selva Lacandona, Mexico				
113	Juan	Carlos	Conservation International-Mexico	NGO
114	Froilàn	Esquinca Cano	Institute of Natural History	GOV
115	Elsa	Esquivel	AMBIO Cooperative	NGO
116	Moises	Garcia	Na Bolom Cultural Association	NGO
117	Ricardo	Hernandez	Conservation International-Mexico	NGO
118	Sotero	Quechulpa Montalvo	AMBIO Cooperative	NGO
Xingu Basin, Brazil				
119	Mirella	Domenich	Conservation International-Brazil	NGO
120	Adriano	Jerozolimski	Protected Forests Association	COM
121	Andréa	Leme Silva	Conservation International-Brazil	NGO
122	Artur	Paiva	Conservation International-Brazil	NGO
123	Luis Carlos	Silva Sampaio	Kabu Institute	NGO
124	Barbara	Zimmerman	The WILD Foundation	NGO

Appendix B. List of people interviewed during field visits to the forest carbon initiatives (n=86).

No.	First Name	Last Name	Organization
Reforestation Initiatives			
Bogotá Corridor, Colombia (n=18)			
CI staff (4)			
1	Sandra Yolima	Sguerra-Castañeda	Conservation International-Colombia
2	Patricia Andrea	Bejarano Mora	Conservation International-Colombia
3	Oscar Mauricio	Jaramillo	Conservation International-Colombia
4	Octavio	Rodriguez	Conservation International-Colombia
Technical partners (4)			
5	Javier	Blanco	Ecoversa Corporation
6	Martha Patricia	Cruz Moreno	Bogotá Water Supply Company (EAAB)
7	Angela	Andrade	Integrated National Adaptation Program (INAP)
8	Francisco	Ocampo	PROCUENCA CDM A/R project
Community engagement partners (8)			
9	Maria Mercedes	Medina	Integrated National Adaptation Program (INAP)
10	Héctor	Flórez	Jangada Alta District, Calera Municipality
11	Temilda	Pulido	Mundo Nuevo District, Calera Municipality
12	Doña Celia	N/A	Mundo Nuevo District, Calera Municipality
13-14	President of Junta de Accion Comunal (Community Action Unions), 2 members		Mundo Nuevo District, Calera Municipality
15-16	Leader of Ecological group La Cascada (2 members)		Mundo Nuevo District, Calera Municipality
Government representatives (2)			
17	Andrea	Garcia Guerrero	Ministry of Environment, Housing and Rural Development (MAVDT)
18	Hebert	Rivera	Regional Autonomous Corporation of Cundinamarca (CAR)
ChoCO$_2$, Ecuador (n=11)			
CI staff (3)			
19	Luis	Suárez	Conservation International-Ecuador
20	Free	de Koning	Conservation International-Ecuador
21	Cristina	Félix	Conservation International-Ecuador
Technical partners (3)			
22	Rebeca	Justicia	Maquipucuna Foundation
23	Fidel Bernardo	Castro Ullauri	Maquipucuna Foundation
24	Pablo	Moncayo	Ecopar Corporation
Community engagement partners (4)			
25	Fermín Epifanio	Benavides	Local community member
26	Jaime Neptalí	Perugachi Flores	Local community member (National College Nanegal / Parish Board)
27	José Antonio	Collaguazo Proaño	Local community member and Field assistant, Maquipucuna Foundation
28	Luis Enrique	Urquía Albán	Local community member
Government representatives (1)			
29	Marco	Chíu	Ministry of Environment

Appendix B, (cont'd). List of people interviewed during field visits to the forest carbon initiatives (n=86).

No.	First Name	Last Name	Organization
Emas, Brazil (n=7)			
CI staff (2)			
30	Alexandre	Prado	Conservation International-Brazil
31	Artur	Paiva	Conservation International-Brazil
Technical partners (1)			
32	Renato Alves	Moreira	Oreades
Community engagement partners (4)			
33-36	Community members of Las Formigillas (4 members)		Local community members
Muriqui, Brazil (n=6)			
CI staff (3)			
37	Artur	Paiva	Conservation International-Brazil
38	Lucio	Bede	Conservation International-Brazil
39	Luiz Paulo	Pinto	Conservation International-Brazil
Technical partners (2)			
40	Guillerme	Valladares	Ambiental PV
41	Marcello	Nery	Muriqui Preservation Society (SPM)
Government representatives (1)			
42	Ricardo	Galeno	National Forest Institute
REDD+ Initiatives			
Alto Mayo, Peru (n=16)			
CI staff (3)			
43	Luis	Espinel	Conservation International-Peru
44	Claudio	Schneider	Conservation International-Peru
45	Eddy	Mendoza	Conservation International-Peru
Technical partners (8)			
46	Segundo	Calle	Management Committee of Alto Mayo Protected Forest (AMPF)
47	Jorge	Paredes	Park Administration Unit of Alto Mayo Protected Forest (AMPF)
48-52	Park guards of the AMPF (5 members)		Park Administration Unit of Alto Mayo Protected Forest (AMPF)
53	Lily	Rodriguez	German Technical Cooperation Agency (GTZ), Peru
Community engagement partners (2)			
54	Benjamin	Kroll	Association of the Virgin of the Miraculous Medallion (AVMM)
55	Priest Juan from the local parish	Armildo	Association of the Virgin of the Miraculous Medallion (AVMM)
Government representatives (3)			
56	Elvira	Gomez Rivero	Ministry of Environment (MINAM)
57	Jacqueline	Ramirez	National System of Protected Areas (SERNANP)
58	Patricia	Santa Maria	National System of Protected Areas (SERNANP)

Appendix B, (cont'd). List of people interviewed during field visits to the forest carbon initiatives (n=86).

No.	First Name	Last Name	Organization
Maya Biosphere Reserve, Guatemala (n=10)			
CI staff (2)			
59	Carlos	Rodriguez Olivet	Conservation International-Mexico and Central America
60	Ingrid	Arias	Conservation International-Guatemala
Technical partners (4)			
61	Victor Hugo	Ramos	National Council on Protected Areas (CONAP)
62	Roan	Balas	Wildlife Conservation Society (WCS)
63	Bayron	Castellanos	Balam
64	Omar	Samayoa	Rainforest Alliance (RA), Guatemala
Community engagement partners (2)			
65	Carlos	Chex	Association Sotz'il
66	Jorge	Cabrera	Kukulkan Foundation
Government representatives (2)			
67	Carlos	Mancilla	Ministry of Environment (MARN)
68	Igor	de la Roca	National Council on Protected Areas (CONAP)
Selva Lacandona, Mexico (n=10)			
CI staff (4)			
69	Ricardo	Hernandez	Conservation International-Mexico
70	Juan Carlos	Franco	Conservation International-Mexico
71	Yatziri	Zepeda	Conservation International-Mexico
72	Ruth Jiménez	Cruz	Conservation International-Mexico
Technical partners (2)			
73	Sotero	Quechulpa	AMBIO Cooperative
74	Miguel Angel	Castillo	EcoSur San Cristobal
Community engagement partners (2)			
75	Frolian Esquinca	Cano	Institute of Natural History
76	Maria Luisa	Armendáriz	NaBolom Cultural Association
Government representatives (2)			
77	Alejandro	Callejas	Secretariat for Environment and Housing (SEMAVI)
78	Miriam Jannette	Gonzalez	National Commission on Natural Protected Areas (CONANP)
Xingu Basin, Brazil (n=8)			
CI staff (4)			
79	Artur	Paiva	Conservation International-Brazil
80	Andrea Leme	da Silva	Conservation International-Brazil
81	Alexandre	Prado	Conservation International-Brazil
82	Barbara	Zimmerman	Conservation International-Brazil (former)
Technical partners (4)			
83	Paula Franco	Moreira	Amazon Institute of Environmental Studies (IPAM)
84	Flavia Gabriela	Franca	Amazon Institute of Environmental Studies (IPAM)
85	Osvaldo	Stella	Amazon Institute of Environmental Studies (IPAM)
86	Marcio	Santilli	Socio-Environmental Institute (ISA)

Appendix C. List of participants from the Lessons Learned from Forest Carbon Initiatives Workshop, 15-18 September 2009, Bogotá, Colombia

Country	Forest Carbon Initiative	Participant
Brazil	Emas	Artur Paiva
	Muriqui	Monica Fonseca
	Xingu	Thais Kasecker
China	Tengchong	Ying Liu
		Qiang Deng
Colombia	Bogotá Corridor	Patricia Bejarano
		Javier Blanco
		Oscar Jaramillo
		Octavio Rodriguez
		Sandra Sguerra
		Fabio Arjona
		Erwin Palacios
		Jose Vicente Rodriguez
		Cesar Ruiz
Ecuador	$ChoCO_2$	Free de Koning
		Cristina Félix
Guatemala	Maya Biosphere Reserve	Ingrid Arias
		Miriam Castillo
Madagascar	CAZ	Pierrot Rakotoniaina
	TAMS	Jeannicq Randrianarisoa
Mexico	Selva Lacandona	Juan Carlos Franco
		Yatziri Zepeda
Peru	Alto Mayo	Eddy Mendoza
		Claudio Schneider
Philippines	Quirino	Juan Acay, Jr.
		Estrella Pasion

Appendix D. List of partners and respective roles in the 12 forest carbon initiatives.

This Appendix lists all partners involved in the 12 forest carbon initiatives included in this report, the different types of organizations these partners represent and their respective role(s) within the partnership. Partners are divided into "core" and "extended" according to the definitions outlined in Section 5.1. Types of organizations include non-governmental (NGO), governmental (GOV), or private (PRIV). Indigenous people, local communities and other landowners' organizations are considered local stakeholders and described in Section 5.4. The last column indicates the total number of activities each partner has been involved in.

The different roles and respective activities include:

- Project management: identifying partners and coordinating activities;
- Technical activities: identifying project boundaries and eligible land; creating maps or processing deforestation maps; field forestry, e.g., measuring biomass or creating species growth curves; identifying drivers of deforestation; creating the carbon baseline or calculating emissions reductions; writing the PDD; technical input for monitoring, validation and verification;
- Field activities: creating or running a nursery; planting trees;
- Training: providing training to other partners; leading trainings or workshops for local stakeholders;
- Fundraising: raising funds; providing funds or buying credits (donor or investor);
- Marketing: marketing of carbon credits; and
- Stakeholder engagement.

			Roles within the partneship							
Country	**Acronym**	**Type**	**Project Management**	**Technical Activities**	**Field Activities**	**Training**	**Fundraising**	**Marketing**	**Stakeholder Engagement**	**Total**
Reforestation Initiatives										
Bogotá Corridor, Colombia										
Core Partners										
Conservation International-Colombia	CI-C	NGO	√	√		√	√	√	√	6
Bogotá Water Supply Company (Empresa de Acueducto y Alcantarillado de Bogotá)	EAAB	GOV		√	√		√	√		4
Ministry of Environment, Housing and Territorial Development (Ministerio de Ambiente, Vivienda y Desarrollo Territorial)	MAVDT	GOV				√		√		2
Extended Partners										
Regional Autonomous Corporations (CARs): - CAR (Cundinamarca) - CORPOGUAVIO (Guavio) - CORPORINOQUIA (Orinoquia) - CORMACARENA (Macarena)	CARs	GOV			√		√			2
District Secretary of Environment (Secretaria Distrital de Ambiente)	SDA	GOV			√		√			2
Cundinamarca Administration (Gobernación de Cundinamarca)	GC	GOV			√		√	√		3
Meta Administration (Gobernación de Meta)	GM	GOV			√		√	√		3
Ecoversa Corporation (Corporacion Ecoversa)	Ecoversa	NGO		√		√				2
Procuenca CDM A/R project	n/a	NGO			√	√	√	√		4
Andean Center for Environmental Economics (Centro Andino para la Economia en el Medio Ambiente)	CAEMA	NGO					√	√		3

Appendix D, (cont'd). List of partners and respective roles in the 12 forest carbon initiatives.

			Roles within the partneship							
Country	**Acronym**	**Type**	**Project Management**	**Technical Activities**	**Field Activities**	**Training**	**Fundraising**	**Marketing**	**Stakeholder Engagement**	**Total**
ChoCO$_2$, Ecuador										
Core Partners										
Conservation International–Ecuador, Japan and HQ offices	CI-E, CI-J and CI-HQ	NGO	√	√		√	√	√	√	6
Ricoh Corporation	n/a	PRIV					√			1
Maquipucuna Foundation (Fundación Maquipucuna)	MPF	NGO	√	√	√	√			√	5
Extended Partners										
Corporation for research, capacity building and technical support for the sustainable management of tropical ecosystems (Corporación para la investigación, capacitación y apoyo técnico para el manejo sustentable de los ecosistemas tropicales)	Ecopar	NGO		√						1
EcoSecurities	n/a	PRIV		√						1
Ministry of Environment	n/a	GOV								0
Emas, Brazil										
Core Partners										
Conservation International-Brazil	CI-B	NGO	√	√		√	√	√		5
Oreades Geoprocessing Center (Oréades Núcleo de Geoprocessamento)	Oreades	NGO	√	√	√	√			√	5
Extended Partners										
CantorCO_2e	n/a	PRIV		√						1
Muriqui, Brazil										
Core Partners										
Conservation International - Brazil	CI-B	NGO		√	√	√	√	√		5
Muriqui Preservation Society (Sociedade para preservação do Muriqui)	SPM	NGO	√	√	√	√			√	5
Atlantic Forest Preservation Project, State Forestry Institute of Minas Gerais (Projeto de Proteção da Mata Atlântica em Minas Gerais (Promata), Instituto Estadual de Florestas de Minas Gerais (IEF)	ProMata, IEF	GOV		√					√	2
Extended Partners										
Ambiental PV	n/a	PRIV		√						1
Center for Ecological Studies and Environmental Education (Centro de Estudos Ecológicos e Educação Ambiental)	CECO	NGO		√						1
SOS Atlantic Forest (SOS Mata Atlântica)	n/a	NGO			√					1

Appendix D, (cont'd). List of partners and respective roles in the 12 forest carbon initiatives.

			Roles within the partneship							
Country	**Acronym**	**Type**	**Project Management**	**Technical Activities**	**Field Activities**	**Training**	**Fundraising**	**Marketing**	**Stakeholder Engagement**	**Total**
Quirino, Philippines										
Core Partners										
Conservation International–Philippines, Japan & HQ offices	CI-P, CI-J, CI-HQ	NGO	√	√	√	√	√	√	√	5
Department of Environment and Natural Resources	DENR	GOV	√	√					√	3
Local Government Units	LGUs	GOV	√	√	√	√			√	5
Mitsubishi Research Institute	MRI	PRIV		√			√	√		3
MoreTrees	n/a	PRIV					√	√		2
Palacian Economic Development Association, Inc.	PEDAI	NGO	√		√	√			√	4
Extended Partners										
World Agroforestry Center	ICRAF	NGO		√						1
Peoples Organizations	PO	PRIV	√		√					2
TAMS, Madagascar										
Core Partners										
National Association of Environmental Actions (Association Nationale d'Actions Environnementales)	ANAE	GOV	√	√		√			√	4
Conservation International-Madagascar	CI-M	NGO	√	√		√	√	√	√	6
Ministry of Environment and Forests (Ministere de l'Environnement et des Forets)	MEF	GOV				√	√	√		3
Unite de Coordination Fonds Biocarbone	UCFB	GOV	√						√	2
Extended Partners										
BioCarbon Fund (World Bank)	BioCF	GOV				√	√	√		3
Designated National Authority	DNA	GOV	√							1
Local NGOs (n=7)	n/a	NGO	√	√	√	√			√	5
Winrock International	n/a	NGO		√						1

Appendix D, (cont'd). List of partners and respective roles in the 12 forest carbon initiatives.

			Roles within the partneship							
Country	**Acronym**	**Type**	**Project Management**	**Technical Activities**	**Field Activities**	**Training**	**Fundraising**	**Marketing**	**Stakeholder Engagement**	**Total**
Tengchong, China										
Core Partners										
Sujiang Forestry Farm	n/a	PRIV	√	√	√			√	√	5
Forestry Department of Yunan Province	FDYP	GOV	√	√			√	√		4
Forestry Bureau of Tengchong county	n/a	GOV	√	√	√				√	4
Conservation International-China	CI-C	NGO		√	√	√	√	√		5
The Nature Conservancy	TNC	NGO		√	√	√	√			4
Gaoligong Nature Reserve Management Bureau	n/a	GOV	√	√	√				√	4
Extended Partners										
Baoshan Forestry Bureau	n/a	GOV		√						1
Yunnan Forest Inventory and Planning Institution	YFIPI	NGO		√	√	√				3
Yunnan Forestry Technology College	YFTC	NGO		√						1
REDD+ Initiatives										
Alto Mayo, Peru										
Core Partners										
Conservation International-Peru	CI-P	NGO	√	√		√	√		√	5
Association for Integrated Research and Development (Asociación para la Investigacion y Desarrollo Integral)	AIDER	NGO		√		√			√	3
Association of the Virgin of the Miraculous Medallion (Asociación de la Virgen de la Medalla Milagrosa)	AVMM	NGO		√	√	√	√		√	5
Andean Ecosystems Association (Asociación Ecosistemas Andinos)	ECOAN	NGO		√	√	√	√		√	5
Peruvian Society for Environmental Law (Sociedad Peruana de Derecho Ambiental)	SPDA	NGO		√		√			√	3
Extended Partners										
Management Committee of the Alto Mayo Protected Forest (Comité de gestión del Bosque de Proteccion Alto Mayo)	CdG BPAM	NGO			√				√	2
Users Committee of the Alto Mayo Watershed (Comité de usuarios de la cuenca de Alto Mayo)	JUCAM	NGO							√	1
Nueva Cajamarca government	n/a	GOV			√				√	2
Special Project Alto Mayo (Proyecto Especial Alto Mayo)	PEAM	GOV			√	√			√	3
San Martin Regional government	n/a	GOV	√						√	2
National Service of Natural Protected Areas (Servicio Nacional de Areas Naturales Protegidas)	SERNANP	GOV	√	√		√				4

Appendix D, (cont'd). List of partners and respective roles in the 12 forest carbon initiatives.

			Roles within the partneship							
Country	**Acronym**	**Type**	**Project Management**	**Technical Activities**	**Field Activities**	**Training**	**Fundraising**	**Marketing**	**Stakeholder Engagement**	**Total**
CAZ, Madagascar										
Core Partners										
Environmental and Forests District (Circonscription de l'Environnement des Forets)	CIREF	GOV		√	√				√	3
Conservation International-Madagascar	CI-Madagascar	NGO	√	√		√	√	√	√	6
Regional Division for Environment, Forests and Tourism (Direction Regional de l'Environnment des Forets)	DREF	GOV		√					√	2
Ministry of Environment and Forests (Ministere de l'Environement et des Forets)	MEF	GOV	√							1
Management Platform for CAZ (Plate forme de gestion du CAZ)	PLACAZ	NGO							√	1
Unite de Coordination de Fond Biocarbon	UCFB	GOV	√							1
Extended Partners										
BioCarbon Fund (World Bank)	BioCF	GOV		√		√		√		1
United States Agency for International Development	USAID	GOV		√			√			2
Maya Biosphere, Guatemala										
Core Partners										
National Council on Protected Areas (Consejo Nacional de Areas naturales Protegidas)	CONAP	GOV		√						1
Rainforest Alliance	RA	NGO	√	√		√			√	4
Wildlife Conservation Society	WCS	NGO	√						√	2
Conservation International-Guatemala	CI-G	NGO	√			√	√		√	4
Extended Partners										
Ministry of Environment and Natural Resources (Ministerio de Ambiente y Recursos Naturales)	MARN	GOV								0
Selva Lacandona, Mexico										
Core Partners										
Ambio Cooperative	AMBIO	NGO		√		√			√	3
Conservation International-Mexico	CI-M	NGO	√			√	√			3
Na Bolom Cultural Association (Asociación Cultural NaBolom)	NaBolom	NGO							√	1
Extended Partners										
Reforestamos Mexico	n/a	NGO					√			1
Secretary for Environment and Housing (Secretaría de Medio Ambiente y Vivienda)	SEMAVI	GOV								0
Natural History Institute (Instituto de Historia Natural)	IHN	GOV								0

Appendix D, (cont'd). List of partners and respective roles in the 12 forest carbon initiatives.

			Roles within the partneship							
Country	**Acronym**	**Type**	**Project Management**	**Technical Activities**	**Field Activities**	**Training**	**Fundraising**	**Marketing**	**Stakeholder Engagement**	**Total**
Xingu Basin, Brazil										
Core Partners										
Conservation International-Brazil	CI-B	NGO	√	√	√	√	√	√	√	7
Protected Forest Association (Floresta Protegida Association)	AFP	NGO		√	√	√			√	4
Kabu Institute	IK	NGO			√	√			√	3
Raoni Institute	IR	NGO			√	√			√	3
Para State Environmental Agency	SEMA	GOV					√	√		2
Extended Partners										
Amazon Institute of Environmental Studies (Instituto de Pesquisas Ambientais da Amazônia)	IPAM	NGO		√		√				2
Environmental Defense Fund (Canada)	EDF	NGO					√	√		2
Socio-Environmental Institute (Instituto Socioambiental)	ISA	NGO	√	√	√	√			√	5
National Indian Foundation (Fundação Nacional do Índio)	FUNAI	GOV							√	1
Brazilian Institute of Environment and Renewable Natural Resources (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis)	IBAMA	GOV							√	1

OUR **VISION**
We imagine a healthy, prosperous world in which societies are forever committed to caring for and valuing nature, our global biodiversity, for the long-term benefit of people and all life on Earth.

OUR **MISSION**
Building upon a strong foundation of science, partnership and field demonstration, CI empowers societies to responsibly and sustainably care for nature, our global biodiversity, for the well-being of humanity.

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