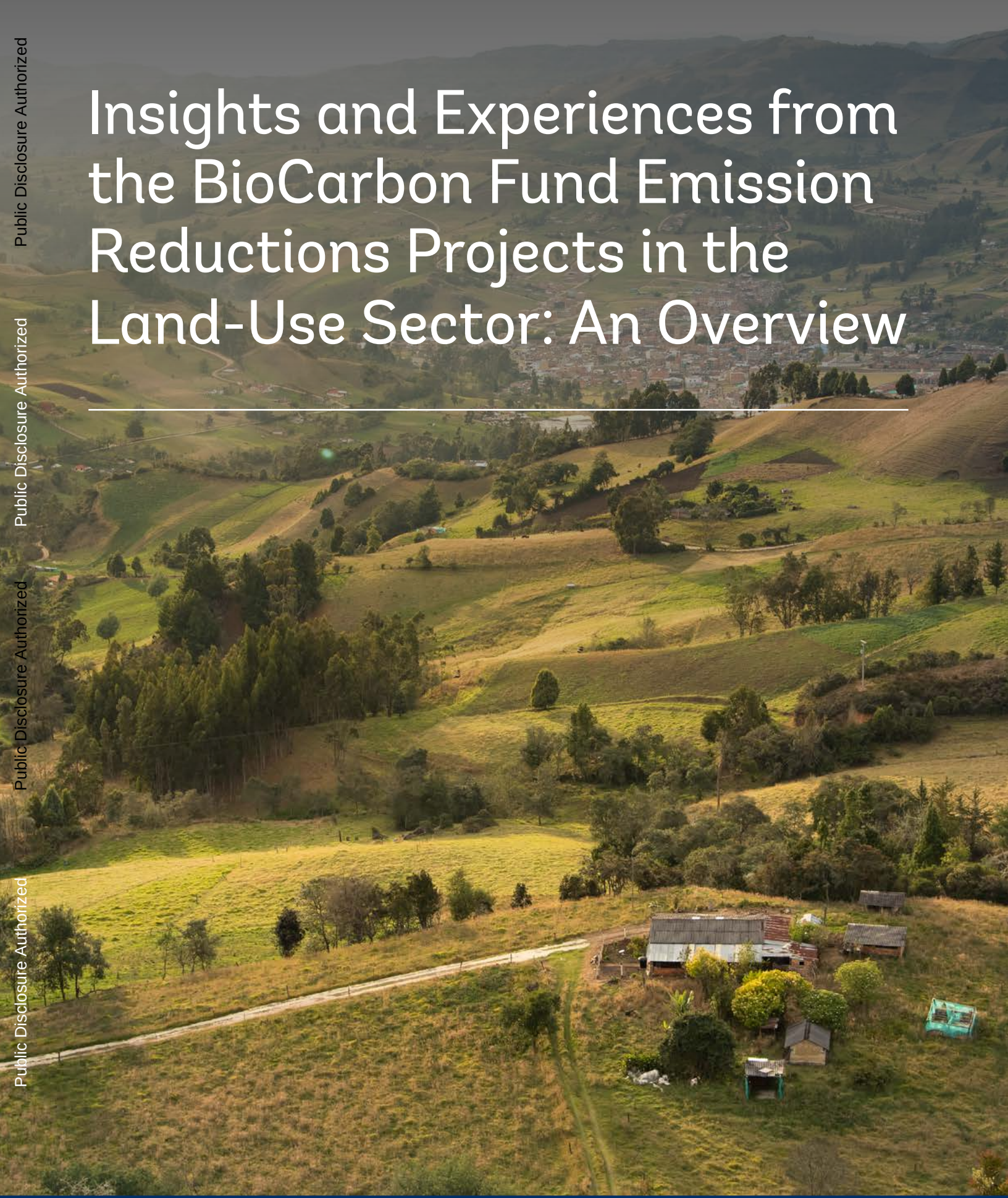
Insights and Experiences from the BioCarbon Fund Emission Reductions Projects in the Land-Use Sector: An Overview



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Contents

ACRONYMS & ABBREVIATIONS

A/R	Afforestation/Reforestation
AES Tietê	Alienação de Ações do Capital Social da Companhia de Geração de Energia Elétrica Tietê
AFD	French Development Agency
AFOLU	Agriculture, Forestry and Other Land Use
AGROSAVIA	Corporación Colombiana de Investigación Agropecuaria
ASI	Achats Service International
BioCF	BioCarbon Fund
BioCF*plus* TA	BioCarbon Fund*plus* Technical Assistance (TA) and Capacity Building Trust Fund
BLL	Brown Bag Lunch
CAZ	Ankeniheny-Zahamena Corridor
CCG	Climate Change Group
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CFAM	Carbon Finance Assessment Memorandum
CFM	Community Forest Management
CFMG	Community Forest Management Groups
CIAT	Consorcio Bosque Tropical
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMACO	Community Markets for Conservation
CORMAGDALENA	Corporación Autónoma Regional del Río Grande de la Magdalena
CORPOICA	Corporación Colombiana de Investigación Agropecuaria
CSR	Corporate Social Responsibility
CSP	Community Support Program
CVS	Corporación Autónoma Regional de los Valles del Sinú y del San Jorge
DOE	Designated Operational Authority
DCR	Democratic Republic of Congo
EB	Executive Board
EP3	Third Environmental Program Support Project
ER	Emission Reductions
ERPA	Emission Reductions Purchase Agreement
ESALQ	University of São Paulo Agriculture and Agronomics Research Center
EU ETS	European Union Emissions Trading System
FCPF	Forest Carbon Partnership Facility
FMNR	Farmer-Managed Natural Regeneration
FINAGRO	Fondo para el Financiamiento del Sector Agropecuario
FONAFIFO	Fondo Nacional de Financiamiento Forestal
FPUA	Forest and Pasture User Associations
FSC	Forest Stewardship Council
GHG	Greenhouse Gases
GIFDCP	Guangxi Integrated Forestry Development and Conservation Project
GP	Gram Panchayat (Indian farmers' cooperative)
GZAR	Forestry Department of Guangxi Zhuang Autonomous Region

IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
INGEOCORP	Ingeocorp Sociedad Comercial de Responsabilidad Limitada
IPF	Investment Project Financing
ISFL	Initiative for Sustainable Forests Landscapes
JKPL	JK Paper Mills Limited
KACP	Kenya Agricultural Carbon Project
LULUCF	Land-Use, Land-Use Change and Forestry
MASBOSQUES	Corporation for Sustainable Management for Forests
MHWDP	Mid-Himalayan Watershed Development Project
MRV	Measurement, Reporting and Verification
NASA	National Aeronautics and Space Administration
NDC	Nationally Determined Contributions
NFA	National Forest Authority
NPV	Net Present Value
NRDP	Natural Resources Development Project
ONFI /A	The French National Forest Office (ONF International /Andina)
PAC III	Niger Community Action Program
PCF	Prototype Carbon Fund
PDD	Project Design Document
PE	Project Entity
PES	Payment for Ecosystems Services
PGC	Producer Group Cooperative
PHRD	Policy and Human Recourse Development
PPP	Public Private Partnership
PSA	Payment for Ecosystems Services
RECPA	The Rwoho Environmental Conservation and Protection Association
REDD+	Reducing Emissions from Deforestation and Forest Degradation-plus
SALM	Sustainable Agricultural Land Management
SAS	Solvay Energy Services
SCCFM	Climate Change Fund Management Unit
SGP	Small Grants Program
SIDA	Swedish International Development Agency
SIF	Sociedad Inversora Forestal
TARAM	Tool for Afforestation/Reforestation Approved Methodologies
tCER/CER	temporary Certified Emissions Reduction
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	UN Energy Programme
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VSL	Village Saving & Loaning Association

Executive Summary

Global annual greenhouse gas emissions (GHGs) have grown steadily by 41 percent since 1990 (Ge et al 2020); and the land use, land-use change, and forestry (LULUCF) sector accounts for 6.5 percent of the world's emissions.[1] The United Nations Framework Convention on Climate Change (UNFCCC) included the LULUCF sector among the sectors eligible for emission reductions (ER),[2] which enables developed countries to meet part of their ER targets under the Kyoto Protocol.[3]

Housed within the Climate Funds Management Unit (SCCFM) of the Climate Change Group (CCG) in the World Bank, the BioCarbon Fund (BioCF), a public-private initiative, has pioneered results-based payments for ERs from the land-use sector. Established in 2004, BioCF piloted the first Afforestation/Reforestation (A/R) projects; Reduced Emissions from Deforestation and Forest Degradation (REDD+) projects; and Sustainable Agricultural Land Management (SALM) activities at project scale. A majority of the 22 projects in the BioCF portfolio, spread across 16 countries in five continents, are registered with the UNFCCC Clean Development Mechanism (CDM); the rest are under the Verified Carbon Standard (VCS).

CDM was established under the Kyoto Protocol in order to give countries that have made ER commitments the flexibility they need to reach their targets, while contributing to sustainable development (Baroudy et al 2011). CDM allows ER projects in developing countries to earn Certified Emission Reduction (CER) credits,[4] which can be used for compliance purposes. VCS was created as a voluntary GHG program that allows certified projects to turn their emission reductions and removals into tradable carbon credits, called Verified Carbon Units (VCUs). These two market mechanisms have enabled BioCF projects to generate and receive payment for carbon credits while contributing to improving rural livelihoods and bringing environmental benefits to communities.

Implementing ER operations in the land-use sector comes with a diverse set of challenges, particularly where poor communities and smallholder farmers and landholders are involved; and where opportunity costs are high. Results take several years to be realized, and only then can ER payments be received and distributed to beneficiaries. Because of this, BioCF project entities (PE), public agencies, NGOs, and private companies have faced implementation challenges, including issues inherently related to the complex requirements of CDM and VCS. The challenges can be daunting: dedicated and continuous engagement by stakeholders, and adequate financial and technical capacity are essential in order to ensure that project objectives are met, and benefits can be realized.

The first BioCF experiences have provided a wealth of knowledge not only on the methodological side—that is, how to quantify ER levels from various land-use activities—but have also helped to pave the way for other land-use carbon initiatives that have followed. BioCF projects have had firsthand experience with issues related to institutional capacity; financing mechanisms; benefit-sharing; and issues with ER title transfers, among other issues. These experiences can offer useful lessons learned for current and future ER initiatives in the land-use sector.

1 According to Historical GHG Emissions Data on ClimateWatch accessed here: https://www.climatewatchdata.org/ghg-emissions?breakBy=sector&chartType=percentage&sectors=843

2 Emission reductions means reductions and enhanced removals of greenhouse gas emissions.

3 The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets.

4 Each CER is equivalent to one ton of carbon dioxide equivalent (tCO_2e).

Lessons Learned

In 2011, a lessons-learned report[5] was published at around the time when most of the BioCF CDM projects were preparing for their first verification under the UNFCCC Kyoto Protocol's first commitment period. At that time, the BioCF VCS project portfolio was not yet fully developed. The 2011 report provided helpful information for project developers, concerning both the challenges and opportunities in designing and implementing CDM Afforestation/Reforestation (A/R) projects. It also provided insights relevant to policymakers and negotiators involved in the debate about reforming the CDM rules, and informed discussions on new market-based strategies for climate change mitigation in the Agriculture, Forestry and Other Land Use (AFOLU) sector.

It has now been more than 15 years since BioCF was established, and close to a decade since the first lessons-learned report was published. A majority of the BioCF projects have undergone at least one verification; have received results-based payments for emission reductions; and have implemented benefit-sharing plans. Some have had to terminate implementation altogether.

This report, therefore, looks back at the 10-15 years of implementation of BioCF projects, and their groundbreaking experience under both the compliance (CDM) and voluntary (VCS) standards. Among these projects are concrete, real-world examples of both the successes and challenges faced in monitoring, reporting, verification (MRV), and communicating project objectives and results to stakeholders, and distributing benefits. While there are common experiences that have been faced by both CDM and VCS projects, even in cases where CDM requirements have impacted projects negatively, some of the projects have been able to achieve successful results despite these challenges.

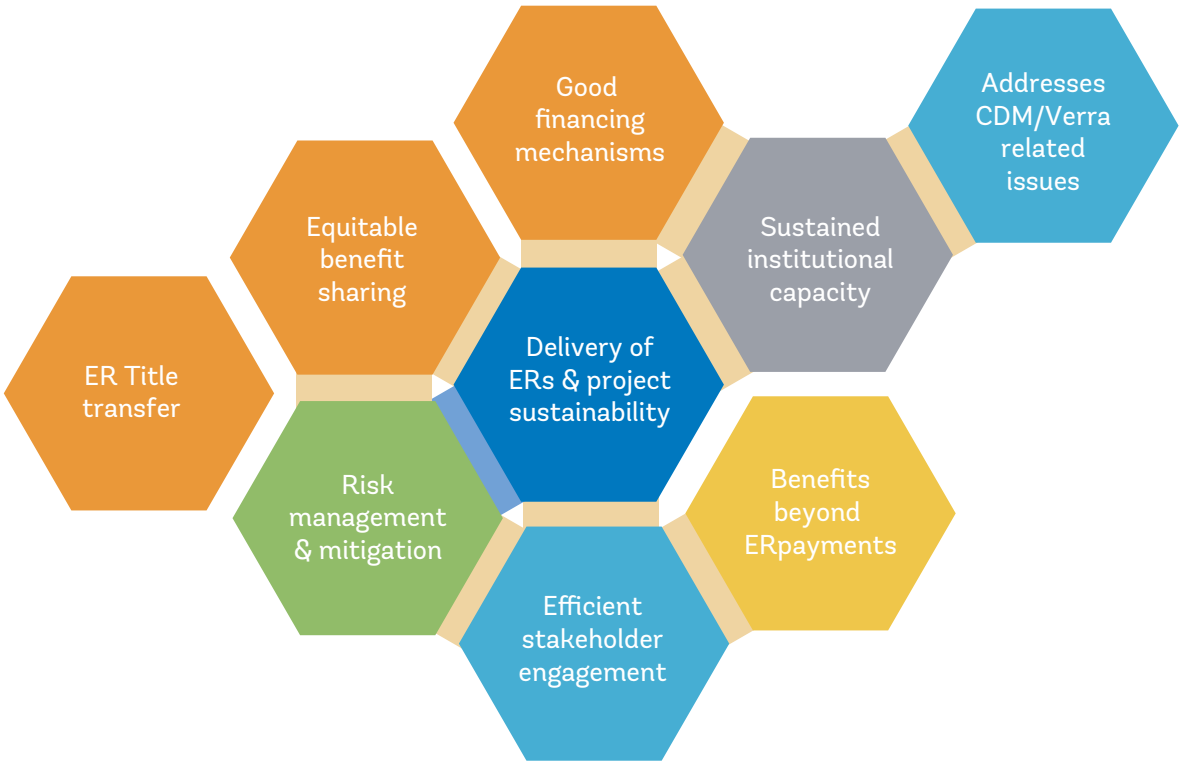
This report is based on a desk review of project documents (including monitoring and verification reports available on the CDM and VCS project pages); World Bank project documents; interviews with World Bank staff involved in the preparation and supervision of the projects, and BioCF administration; and some of the implementing agencies or PEs. Both quantitative and qualitative analyses were used in order to compile the lessons learned.

This analysis includes examination of the issues that have impacted BioCF projects throughout the project life cycle. The relationship of how these various issues have impacted implementation and ER delivery is illustrated in Figure 1.

Issues related to ***financial aspects***, and the high transaction costs incurred in implementing the projects, were exacerbated for stand-alone and small-scale projects. ***Technical capacity*** was another common issue among all of the BioCF projects, given the complex CDM and VCS requirements. The average duration of these projects was 8-10 years, with a maximum of only two verifications, and thus only two payments. Since many of these projects were small scale, and PEs had little or no additional sources of financing, this impacted implementation, including in the monitoring and verification stages. BioCF provided advance payments to some projects which has helped maintain cash flow in between Emission Reductions Purchase Agreement (ERPA) payments following successful verification. BioCF*plus* Technical Assistance and Capacity Building (BioCF*plus* TA) also provided technical assistance for MRV related aspects of the projects; and in some cases, projects were able to leverage resources from cofinancing grants or loans, or through associated World Bank investment projects. These various financing mechanisms have had different impacts on the projects, and on their ER delivery.

5 Baroudy, E., and Z. Salinas. *BioCarbon Fund Experience: Insights from Afforestation and Reforestation Clean Development Mechanism Projects.* 2011. Washington, DC: World Bank Group. The first commitment period of the Kyoto Protocol was 2008-2012, and the second commitment period is 2013-2020.

Figure 1: Relationship of Various Aspects that Impacted BioCF Projects



Benefit sharing and how it was managed, given the long duration of these projects, is also analyzed in this report. Engagement with and communication to stakeholders is an important issue that was directly linked to how well the projects managed benefit sharing issues that cropped up during the years of implementation. ***ER title transfer*** was a critical issue in projects where subproject entities (the project stakeholders) were involved, and their rights to the land was directly linked to their rights to the ERs. In some cases, due to changes in land titles or administrative reforms, benefit sharing was significantly impacted; in some cases, it led to termination of ERPAs altogether. The ***risk mitigation*** strategies used by the Fund, and by the projects to address anticipated negative impacts on ER delivery targets are also analyzed. Finally, since BioCF projects were land-use projects that often involved impoverished rural communities, or vulnerable landscapes, the ***benefits beyond the ER payments*** were also analyzed; several of the projects witnessed the generation of such additional benefits.

Upon analysis of the issues shown in Figure 1, we find that while BioCF projects varied in several aspects there were key factors common among projects that helped in success of the project. These include:

- ***Strong technical capacity of the project entity.*** Availability of technical know-how helped projects to successfully meet the CDM and VCS requirements, as well as effectively generate ERs through proper implementation.
- ***Access to upfront or additional financing.*** Additional financing options available to projects, such as government grants, private investments, and cofinancing, helped some of the projects meet part of their financial gaps.
- ***Leveraged resources provided by the World Bank.*** BioCF*plus* TA, a trust fund dedicated to supporting projects through capacity building activities, and monitoring, influenced project sustainability. Projects

that were part of larger World Bank investment projects benefitted from the additional available financial and technical resources.

- ***A good benefit-sharing plan in place.*** Equitable and transparent benefit-sharing plans positively impacted the perceptions of project beneficiaries, and in some cases incentivized them to sustain project activities.

- ***Successful stakeholder engagement and partnerships.*** Strong public-private and local university partnerships; and PEs that effectively managed expectations of beneficiaries and communities contributed to the success of BioCF projects.

Figure 2 shows a positive linear correlation[6] between availability of the above outlined success factors in a BioCF project (referred to as the "Success Score"), and ER delivery. It should be noted that these success factors are not exhaustive for all land-use projects.

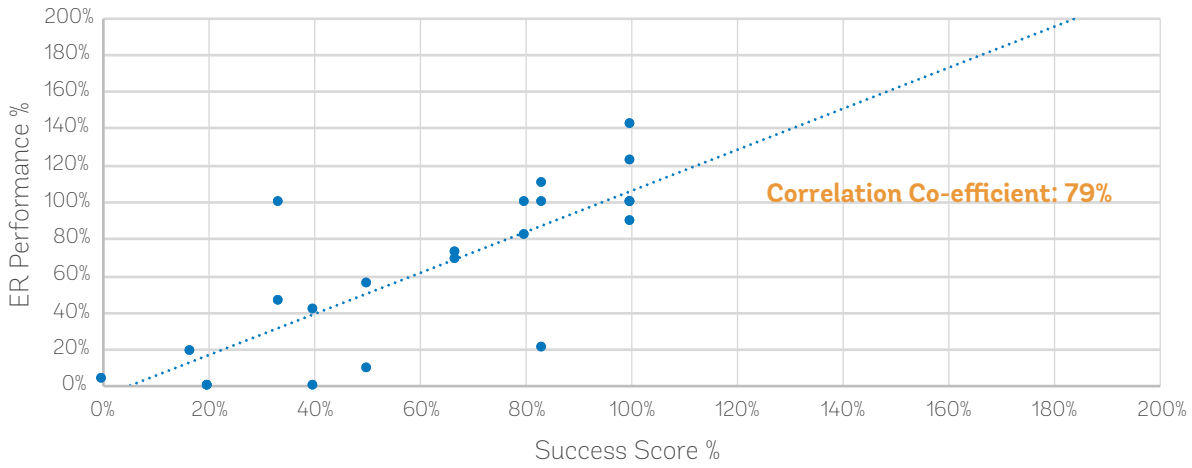
The lessons learned and collected in this study have helped to identify a wide range of issues and challenges, as well as good practices on various aspects of ER operations, which can lead to either the success or failure of these initiatives.

These lessons can be informative for large-scale programs like the Forest Carbon Partnership Facility (FCPF) and the BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL), and other similar initiatives.

The BioCF projects have demonstrated that ER initiatives are very challenging for stand-alone projects, and even more so when they are on a small scale. Since ER payments can only be received when results have been generated, such projects need to have enough upfront capital to be able to implement the required activities. For the projects that were associated with larger investment programs, like the World Bank investment project financing programs, the upfront financial needs for project preparation and technical capacity needs were adequately addressed, and the complementary objectives of the investment projects and the carbon finance (CF) operations helped in overall ER delivery. This is very important, as it can help with scaling up the CF initiative, and mainstreaming it into subnational or national ambitions in the effort to address climate change.

The examples provided in this report underscore the importance of effective communication, and stakeholder engagement throughout all the processes of CF operations. In addition, clearly communicating tangible project benefits *beyond*

Figure 2: Correlation Between Success Factors and ER delivery



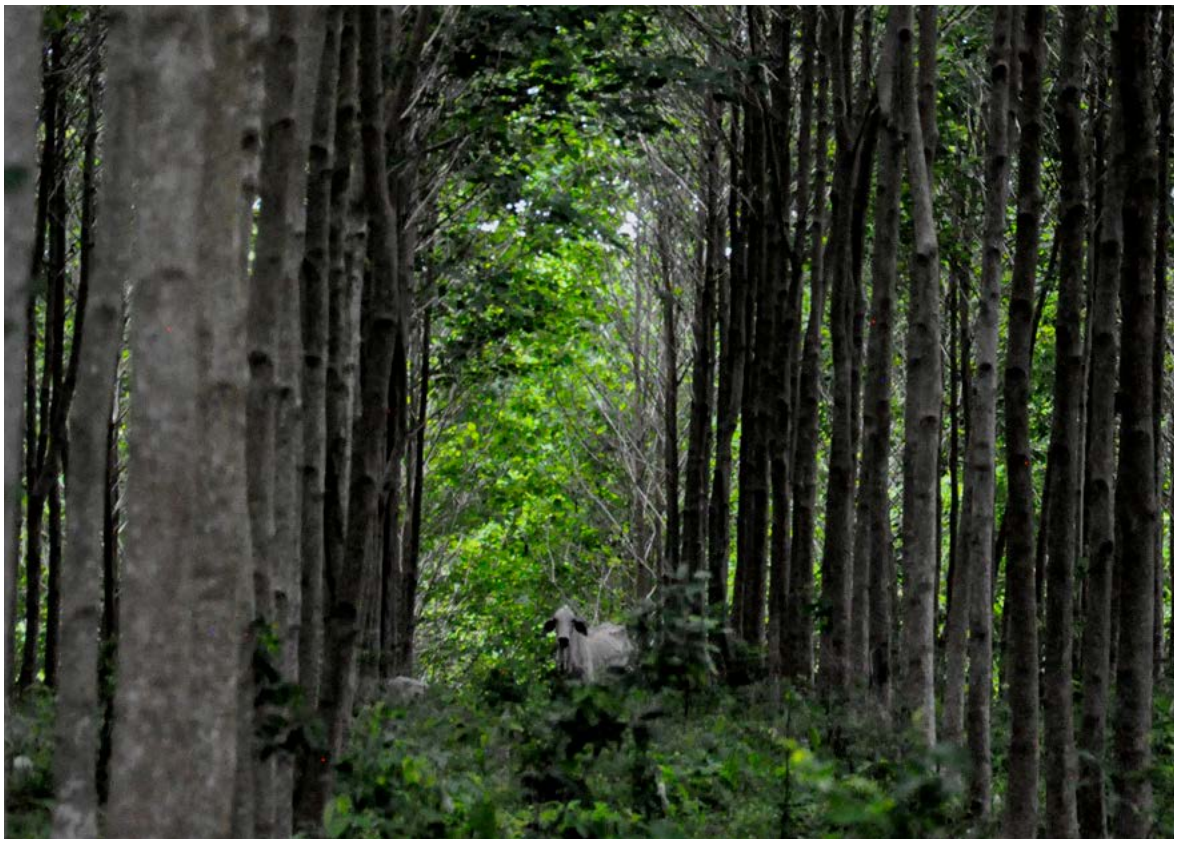
6 Positive linear correlation is a relationship between two variables, in which both variables move in the same direction. (That is, if one variable increases, the other variable will also increase.)

the ER payments is very important in order to get buy-in from project stakeholders, and to sustain their engagement in the project even beyond the close of the ERPA. The projects in which ER payments were seen primarily as an *additional* source of financing were more successful. Equitable and transparent benefit sharing is also very important in results-based initiatives like ER projects. This directly impacts stakeholder engagement and helps to avoid conflicts during the distribution of benefits. Benefit sharing arrangements should also be flexible enough to allow provisions to be updated during the course of implementation, in cases where the arrangements are impacted by administrative reforms.

The experiences of the BioCF projects have shown that building and sustaining institutional capacity, especially technical capacity, is often very challenging, particularly when there is high staff turnover and poor knowledge transfer. Partnering with academic institutions that can integrate the MRV work as part of their curriculum through internship programs can help with cost-effective monitoring and verification and address the problem of high staff turnover that is often common in government agencies.

Given the untested methodologies at the time the BioCF projects were developed, an enabling environment such as the BioCF*plus* TA Fund helped to pilot innovative projects. This will be relevant for new large-scale initiatives, because they are also piloting new methodologies and frameworks at the national or subnational level, in countries that often have limited technical capacity.

Risk management strategies and corrective actions taken early on can help to address issues that threaten a project's ability to deliver ERs and receive payment. This is of overriding importance, and should not be overlooked. These issues include, among other things, illegal encroachment, land title changes, and infrastructure development. These issues can impact ER delivery, and the overall sustainability of the project.



1. Introduction

BIOCARBON FUND (BIOCF)

Housed within the Climate Funds Management Unit (SCCFM) of the Climate Change Group (CCG) in the World Bank, the BioCarbon Fund (BioCF), a public-private initiative, has pioneered results-based payments for emission reductions from the land-use sector. Established in 2004, BioCF piloted the first Afforestation/Reforestation (A/R), Reduced Emissions from Deforestation and Forest Degradation (REDD+), and Sustainable Agricultural Land Management (SALM)[7] activities at project scale. A majority of the 22 projects in the BioCF portfolio, spread across 16 countries in five continents, are registered with the UNFCCC Clean Development Mechanism (CDM); the rest are under Verified Carbon Standard (VCS).

Implementing ER operations in the land-use sector comes with a diverse set of challenges, particularly where poor communities and smallholder farmers and landholders are involved, and where opportunity costs are high. Results take several years to be realized before payments for emission reductions can be received and distributed to beneficiaries. Because of this, BioCF PEs, public agencies, NGOs or private companies have faced implementation challenges. Inherent issues related to the complex requirements of CDM and VCS have posed additional challenges to PEs. Dedicated and continuous engagement by stakeholders, and adequate financial and technical capacity were essential in order to meet project objectives and realize the intended benefits.

The first experiences of the BioCF have provided a wealth of knowledge not only on the methodological side—that is, how to quantify the ERs from various land-use activities but have also helped pave the way for other land-use carbon initiatives that have followed. These projects have had firsthand experience in issues related to institutional capacity, financing mechanisms, benefit sharing, and ER title transfers, among others.

The BioCF purchased verified ER credits from its projects on behalf of the BioCF donors (participants) through Emission Reductions Purchase Agreements (ERPAs) signed with the PEs.[8] These PEs included public entities, private companies, and nongovernmental organizations (NGOs). The payments for ERs were reinvested in project activities and development programs for the benefit of the participating communities.

It has now been 15 years since the establishment of the BioCF; during that time, a majority of the 22 projects have undergone monitoring, reporting, and verification; received ER payments; and distributed benefits from these payments to the beneficiaries. Some of the projects have terminated their ERPAs with the BioCF or have altogether terminated project activities. There are variety of reasons that some projects succeeded, and others were not so fortunate; these factors are thoroughly discussed in this report.

7 SALM projects reduce soil carbon emissions by adopting measures and practices aimed at the protection, conservation, and sustainable use of resources (soil, water, and biodiversity); and the restoration of degraded natural resources and their ecosystem functions.

8 The project entities (PEs) are the institutions that implemented the projects.

Table 1: Emission Reductions: Actual Delivery Compared to Original ERPA

PROJECT	ERPA VOLUME (tCO_2)	ER DELIVERY (ORIGINAL ERPA)	COMMENTS
Albania Regeneration Project	230,360	56%	Second verification to be confirmed in 2020.
Brazil Plantar Reforestation Project	2,264,286	100%	Delivered
Brazil AES Tiete Reforestation Project	400,000	42%	Delivered. ER Delivery against amended ERPA is 83%.
China Watershed Management and Refor-estation Project	462,014	69%	Delivered. ER Delivery against amended ERPA is 100%.
Costa Rica Agroforestry Project	557,940	4%	ERPA terminated in 2019 after first verification. ER Delivery against amended ERPA is 34%.
Chile Carbon Sink Project	850,000	46%	Project terminated in 2016 after first verification. ER Delivery against amended ERPA is 89%.
China Reforestation Project	400,000	73%	Delivered. ER Delivery against amended ERPA is 100%.
Colombia Bajo Seco Commercial Reforesta-tion Project	1,222,507	100%	Delivered
Colombia Carbon Sink Project	246,992	0%	Project terminated in 2015 before verification.
Colombia Agroforestry Project	120,000	0%	Project terminated in 2018 before verification.
DR Congo Fuelwood and Timber Plantation Project	500,000	9%	Delivered. ER Delivery against amended ERPA is 55%.
Ethiopia Humbo Assisted Natural Regener-ation Project	165,000	110%	Delivered. ER Delivery against amended ERPA is 125% resulting in 25% additional ERs.
India Agroforestry Project	276,000	19%	Delivered. ER Delivery against amended ERPA is 29%.
India Watershed Management and Refor-estation Project	150,000	90%	Delivered
Kenya Agricultural Carbon Project	150,000	123%	Delivered
Madagascar Conservation Project	430,000	100%	Delivered
Moldova Soil Conservation Project	600,000	142%	Second verification to be confirmed in 2020.
Moldova Community Forestry Develop-ment Project	550,000	100%	Delivered
Nicaragua Reforestation Project	174,797	82%	Delivered. ER Delivery against amended ERPA is 97%.
Niger Acacia Plantations Project	500,000	21%	Delivered. ER Delivery against amended ERPA is 95%.
Uganda Reforestation Project	261,221	10%	Second verification to be confirmed in 2020.
Zambia Landscape Management Project	265,578	100%	Project actually delivered more than the ERPA volume, in total about 700,000 tons.

In 2011, a lessons learned report[9] was published around the time when most of the BioCF CDM projects were preparing for their first verification under the UNFCCC Kyoto Protocol's first commitment period.[10] At that time, the BioCF VCS project portfolio was still not fully developed. The 2011 report informed project developers of the challenges and opportunities in designing and implementing CDM A/R projects. It also provided insights relevant to policymakers and negotiators involved in the debate about reforming the CDM rules, and informed discussions on new market-based strategies for climate change mitigation in the Agriculture, Forestry and Other Land Use (AFOLU) sector.

The current report, therefore, looks back at the 10-15 years of implementation of BioCF projects, with the aim of highlighting practical examples from them by detailing the challenges faced, the successes, and the good practices used, in order to share informative and practical conclusions. It includes concrete examples of some of the challenges projects have faced during MRV; describes good practices that have been helpful in communicating project objectives and results to stakeholders, and in distributing benefits. While there are common experiences that have been faced by these projects whether they were CDM or VCS, there are examples where CDM requirements have impacted projects negatively and where projects have been able to come out successful despite these challenges.

Both qualitative and quantitative analyses of the data collected were conducted to extract the lessons learned that form the crux of this report. The data collection methods included (i) a thorough desk review of World Bank project-related documents (preparation, supervision, completion reports); CDM and VCS documents (project design documents (PDDs), and validation, monitoring, and verification reports); benefit sharing plans, ERPAs, BioCF annual reports, and the 2011 lessons learned report; (ii) structured interviews with World Bank colleagues who were involved in the preparation and supervision of BioCF projects and fund management, including the World Bank legal counsel supporting BioCF; and (iii) structured interviews with selected PEs, and selected BioCF donors.

For reference, a brief background of each of the BioCF projects is provided in the Annex at the end of this report.

OVERVIEW OF RESULTS

Over the course of implementation and based on the risk assessment conducted during annual monitoring and reporting, some of the project's ERPAs were amended, for a variety of reasons. Reducing the volume was one of the most common reasons for amending ERPAs, as a way to prevent the project from defaulting on its ERPA commitment, and for the BioCF to better manage its portfolio commitment.

Most of the projects have undergone at least one verification, with a maximum of two for any project under CDM or VCS. While most of the BioCF projects have completed their last verification/s, there are some that are still in the final stages of getting their verifications confirmed before the final ER payments can be made. Based on the data of completed verifications and payments, an analysis was made on ER delivery by project comparing the % delivery against the original ERPA before the volume was amended down. Most of the BioCF CDM projects that did not terminate during the course of implementation have gone through two verifications to meet, or at least try to meet, their ERPA commitments.

9 Baroudy, E., and Z. Salinas. *BioCarbon Fund Experience: Insights from Afforestation and Reforestation Clean Development Mechanism Projects.* 2011. Washington, DC: World Bank Group. The first commitment period of the Kyoto Protocol was 2008-2012, and the second commitment period is 2013-2020.

10 The first commitment period was 2008-2012, and the second commitment period is 2013-2020.

2. Lessons Learned

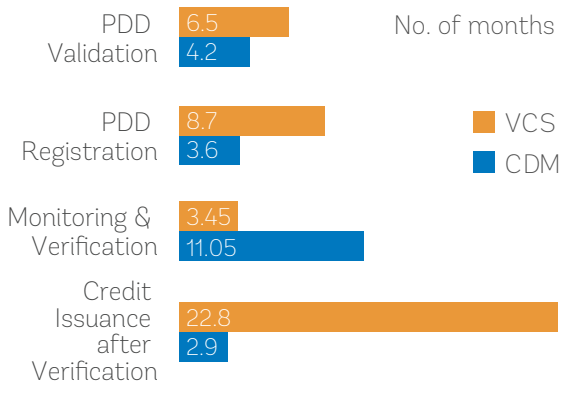
I. Implementation under CDM and VCS

CDM and VCS each have their own specific rules and requirements, and specific methodologies. The projects registered under them must adhere to these requirements—which spell out how project design, implementation, monitoring, and reporting must be done—before ERs can be verified and certified. These standards and processes are crucial, as they provide the basis? for the issuance of credits, and allow for certainty in both the expected volume, and the time of issuance.

Uncertainty regarding ER payments, and regulatory risks, have impacted the performance of projects that relied too heavily on carbon revenues: this limited the number of such projects that were developed and implemented. Since LULUCF projects involve several different stakeholders, who are all expecting ER payments, this kind of uncertainty can impact these projects more than other types.

The BioCF projects have faced several challenges in implementing their activities, given the complexity of the CDM and VCS requirements, processes, and methodologies. Land eligibility issues, technical capacity, and overall transaction costs that led to delays in implementation, as well as issues encountered during verification presented additional challenges.

Figure 3: Duration of validation/monitoring/verification process



PDD - Project Design Document

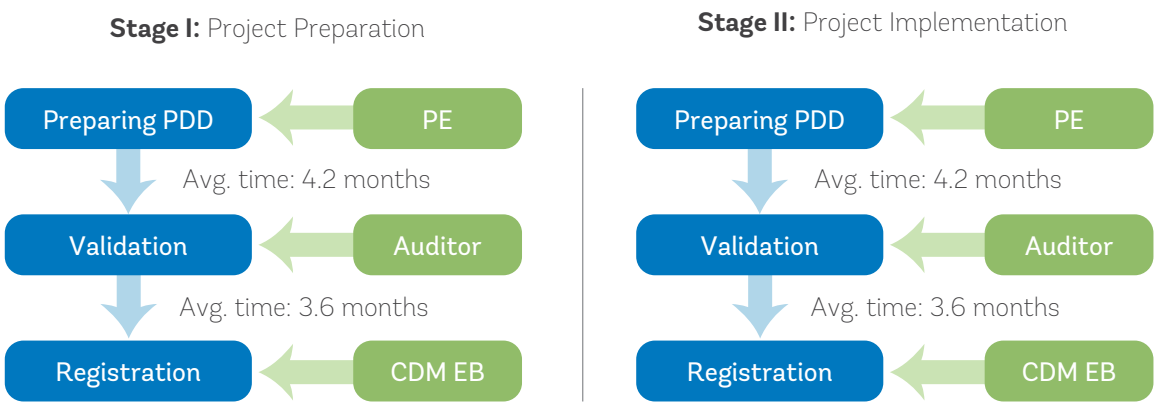
The following sections of this report highlight some of the main experiences encountered in implementing the BioCF CDM and VCS projects.

1. Duration of the registration process, and of the subsequent monitoring and verification process impacted the timely disbursement of ER payments.

BioCF projects receive payments for verified ERs once the verification has been confirmed by the CDM Executive Board (for CDM projects), and VCS (for VCS projects). Figure 3 summarizes the CDM project cycle, and the average time between each process before payments could be made. The process is similar under VCS. For the three BioCF VCS projects, the timeline between each process was also lengthy (as seen in Figure 4).

Figures 3 and 4 show the on-the-ground reality experienced by BioCF projects going through the validation and verification processes. The length of time for verification to be confirmed and payments to be received was often quite long; this led to delays in ER payments. This time lag also often had a negative impact on projects, and on project continuity. Most of the BioCF projects went through two verifications, but not all of them, for several reasons: (i) some were able to successfully deliver their ERPA commitment after only one verification; (ii) others were not ready at the time when most of the BioCF CDM projects were going through verification in the first commitment period of the Kyoto Protocol; and (iii) some of the ERPAs had to be terminated after only one verification, or even before any verification had occurred at all. Figure 5 shows the timeline comparison between the first and second verification for projects that went through two verifications. While the

Figure 4: CDM project cycle



EB - CDM Executive Board; PDD - Project Design Document; PE - Project Entity; Auditor - accredited validation verification body

Source: CDM and VCS project pages

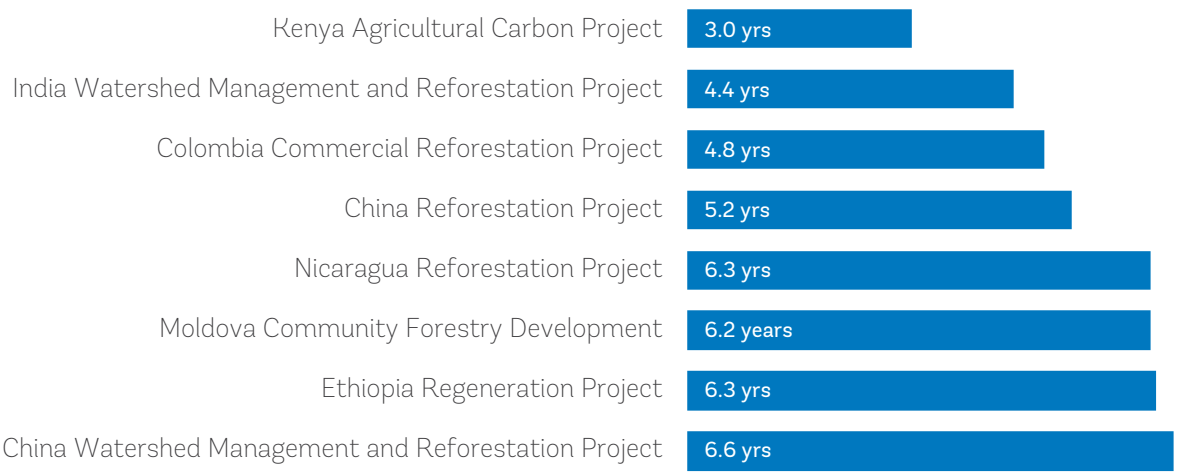
projects in Figure 5 were able to sustain their project activities despite the long waiting period before ER payments and benefits could be realized, some of them had to terminate their ERPAs.

The delay in payments had a particularly negative impact on projects that were heavily dependent on ER payments, with little or no other financial resources to sustain their cash flow. As a result, project stakeholders became less engaged which impacted the overall generation of ERs and the amount of payment received. The wait time plus the small payment made it even more difficult for such projects to sustain project activities.

2. In some cases, the high transaction costs incurred by CDM methodologies prevented registration and implementation of a project altogether.

For most of the BioCF projects, the cost of generating ERs often exceeded the amount of the ER payments. In some cases, the costs related to the application of specific methodologies was too high compared with the estimated results. For example, the Brazil Plantar Reforestation Project was unable to register one of its planned components—reducing the methane emissions resulting from charcoal production—due to the high costs imposed by the applicable methodology, and by the data collection requirements.

Figure 5: Timeline Between Two Verifications of Selected CDM and VCS Projects



3. The timeline for ER payment under the BioCF CDM projects was not aligned with the timeline of national results-based payment initiatives. This led to delays in delivery, and in some cases, termination of projects.

Payment for ERs to BioCF projects depended on the verification results. For the BioCF CDM projects, the verifications took a long time to complete, often because several issues were raised that required multiple iterations of the monitoring results reported. Projects where the participation of farmers was embedded in the local results-based payment initiatives faced issues due to these delays. This impacted their interest in continuing to participate, even in cases where participation was through national results-based program, which subsequently led to termination of the BioCF ERPA.

For example, in the Costa Rica Agroforestry Project, farmers participated in the CDM project through the national Payment for Ecosystems Services (PES)[11] program by signing 5-year subcontracts with the project entity (FONAFIFO). After going through the first round of verification and payment, farmers were aware of the high transaction costs of the project, versus the actual amount of the ER payments, and the long waiting period before they were able to be paid.[12] As a result, they had very little incentive to renew their subcontracts for the second verification, and many of them ended up selling their land to external buyers. Because of this, the volume of ERs expected for the second verification was so low that it did not make economic sense for FONAFIFO to continue with the project. Consequently, the ERPA with BioCF was terminated.

4. Over time, modified CDM land eligibility rules contributed to delays, and in some cases created tensions among landowners that led to the limitation or termination of the project activities.

In the early days of CDM, land eligibility rules may have affected project implementation on degraded agricultural areas due to overly stringent and comprehensive land eligibility analysis. In 2009, the CDM Executive Board (EB) introduced simplified rules, and reduced the level of stringency required to provide evidence of land available for implementing project activities. This gave some BioCF projects the chance to conduct updated land eligibility studies after 2009; however, the struggle to find new eligible areas led to additional delays in the project cycle. Overall, at the Fund level, CDM land eligibility rules caused 13 percent of the BioCF projects to decrease the project area from what had been originally planned.

For example, in the Colombia Carbon Sink Project, in addition to delays caused by conducting a new land eligibility analysis, the project's own limitations in getting enough farmers to participate in the project on time eventually led to termination of the ERPA.

5. There were pros and cons to the various approaches to addressing the nonpermanence or temporary nature of forestry carbon offsets by both CDM and VCS projects.

To address the nonpermanence of A/R projects, CDM established a temporary crediting approach, in which verified ERs were issued as temporary Certified Emission Reductions (tCERs). According to this approach, ERs are reported and verified from the start date of the project activity during each verification event to ensure the validity of tCERs that were previously verified and issued. To BioCF, the portion of ERs that were reverified issued again constitute as reissued ERs. Under the ERPA, payment was only made for ERs that were not paid for previously, to avoid double payment. This means that after the second verification, BioCF projects would not be able to receive payment for reissued ERs. They would only receive payment for ERs that were in addition to those already verified and paid for before. This was very risky for projects, as any negative impacts encountered

11 PES are payments to farmers or landowners who have agreed to take certain actions to manage their land or watersheds in order to provide an ecological service.

12 CDM A/R projects were subject to verification only once every five years following registration; and ER payments are made only after verification is completed and confirmed.

during project implementation would affect their ability to generate additional ERs in the second verification.

Under the tCER approach, tCERs of any commitment period expire at the end of the commitment period that immediately follows the commitment period during which those tCERs were issued. As a result, they tCERs have to be replaced before that expiry date. This is a way to address the risk of reversal "due to fire, disease, or encroachment." This risk is borne primarily by the buyer, who therefore, must replace tCERs before their expiry date; or the project developer, who must conduct regular field verifications (Diaz 2010). In addition, due to skepticism over the nonpermanence of land-use ER projects, the European Union Emissions Trading System (EU ETS) imposed "qualitative" restrictions to tCERs issued from such LULUCF activities.[13] Hence, unlike permanent CERs, tCERs could not be traded under EU ETS, which reduced the demand for them, and the price they could bring as well.

On the other hand, VCUs issued by VCS remain permanent throughout the project crediting period, since a certain percentage of verified emissions are required to be set aside as buffer ERs in the VCS pooled buffer account,[14] to insure against the risk of reversals. Should a reversal event occur in a project, the buffer ERs can be cancelled from the account to compensate for the loss. VCS also allows the release of buffer ERs over time, to be issued as VCUs when at verification the evidence shows that risks have been successfully mitigated or reduced. This encourages better management practices.

Although this approach is a better risk management strategy, setting aside ERs can consume a substantial amount of a project's potential VCUs, particularly when the project

13 Learn more on the use of credits under EU ETS **here**.

14 More information is available on the "Fact Sheet: VCS AFOLU Requirements: Crediting GHG Emission Reductions from Agriculture, Forestry, and Other Land Use" available **here**.

is small and when the amount of eligible VCUs is low. Three of the VCS projects (Kenya, Madagascar, and Zambia) had an average of 10.8 percent verified ERs that were set aside as buffers. Release of the buffer credits set aside from previous verifications can only occur if a verification report submitted to VCS (showing evidence of reduced risks) was issued at least five years after the issuance date of the verification report which reported these buffer credits. Additional information on the release of buffer credits can be found in the VCS rules and requirements for registration and issuance.

6. Despite the complexity of CDM, projects benefited from being registered as CDM projects, and in some cases it facilitated access to other nationally led mechanisms.

The majority of the projects in the BioCF portfolio opted to register with CDM, especially during the early years of the program, when there was a carbon market, and participants were actively using carbon credits for compliance purposes. Since the projects were internationally validated because of their CDM registration, it provided them with credibility, which facilitated their registration with national climate mitigation mechanisms.

For example, the Colombia Bajo Seco Commercial Reforestation Project had the opportunity to acquire additional carbon credit revenues, since they had generated more credits than the ERPA contract volume. After meeting their BioCF ERPA commitment, the project realized that they could market their additional credits under the Colombian national crediting scheme, which is also related to meeting their tax requirements. Although the Colombia Agroforestry Project did not manage to deliver its ERs under CDM to meet its ERPA commitment, it benefitted from the credibility it had gained as a CDM project. This allowed it to also participate in the national standard.

7. Some CDM methodologies were created in collaboration with the project entities specifically for their projects, and are now registered methodologies for other future, similar projects to use.

The World Bank has provided technical support to PEs in developing methodologies that in some cases were scalable to the same sectors in the host countries.

For example, in the Brazil Plantar Reforestation Project, the PE was involved in developing the methodology that was adopted, based on the ER activities adopted by the project, and was later deemed scalable to the entire pig-iron industry in Brazil. It was also used by other companies in the sector. The company implementing the project also set up a "Plantar Carbon" unit to engage with the government, and facilitated the implementation of a policy to use renewable charcoal by 2020.

The Brazil AES Tiete Reforestation Project involved reforesting riparian areas along the banks of 10 hydropower reservoirs with native forest species. A key benefit of this project, on the regulatory side, was the validation of the project methodology for estimating ER volumes in forests planted with native species. AES Tietê adjusted the field protocols and equations in order to estimate ER volumes. The new baseline and monitoring methodology was codeveloped by AES and the World Bank, and approved by the CDM Executive Board.

CONCLUSIONS

- ER projects are results-based initiatives; payments are made only for verified ERs. ***Maintaining a cash flow during the period prior to ERPA payment is essential in order to avoid the problems caused by delays in ER payments*** due to lengthy verification processes, which can disincentivize community engagement in project activities. This is even more prevalent in large-scale programs, which involve larger areas and hundreds of project stakeholders. Links to other sources of financing, including larger investment initiatives, can help. But in addition to simply maintaining the cash flow through other sources of funding, it is very important that tangible nonmonetary benefits, such as improved livelihoods, are clearly communicated to potential project beneficiaries. ER payments should be viewed as additional income or benefits, not as the

sole source of income, nor the sole benefit of participation in the project. Section IX of this report (Beyond Emission Reductions) describes projects that have used this approach, and were successful in delivering not only their ER objectives, but improving livelihoods for the people; and that were able to achieve continued engagement by stakeholders even after termination of the ERPA.

- ***Where projects have participated in upholding international standards, their access to other mechanisms to continue ER initiatives has helped in the overall sustainability of climate change mitigation.*** Furthermore, for projects that have managed to successfully implement ER programs under international standards, scalability also becomes more promising. The scalability of jurisdictional programs to national programs also helps countries scale up their nationally determined contributions (NDCs).

- The BioCF experience has shown the high cost of implementing ER projects, given the need to adhere to international standards like CDM and VCS. ***It is therefore important that projects are adequately financed, and that they have the technical capacity to address the needs that arise during preparation, monitoring, and verification.*** Projects that are embedded in larger investment programs can get the help they need with the upfront costs of preparation and implementation, so that they can meet the international standards and methodology requirements.

- The buffer approach is both a more straightforward way to deal with the problem of nonpermanence, and also a better form of insurance against reversal risks. The tCER approach was not very efficient because the long waiting period before verification and payment can negatively impact stakeholders' engagement in the projects, and therefore, ER delivery as well. Further, once a reversal had occurred, the risk of replacing lost tCERs was even higher, especially if buyers could not replace them with permanent CERs. For the PEs, managing the expectations of project stakeholders was already difficult: the inability to receive payment for tCERs that were previously paid for made it even more difficult for PEs when only very small ERs were generated in subsequent verification.

II. Building and Sustaining Institutional Capacity

Preparing projects to meet CDM and VCS standards requires significant technical capacity: this was challenging for most of the project developers given their limited capacity (Baroudy et al 2011). The duration of the gap between monitoring and verification for land-use projects, particularly under CDM, impacted the technical capacity that could be built in the initial stages, because of frequent staff turnover, and the resulting lack of knowledge transfer; subsequently also negatively affected project implementation. Overall, limited technical capacity was a critical issue that affected most of the BioCF projects, as well as the BioCF portfolio throughout the project cycle. The lessons learned described below shed light on good practices and strategies that were adopted by some of the PEs, with support from the World Bank; and that resulted in successful implementation.

1. Partnerships Can Help Leverage Capacity Building, and Reduce Costs

Successful public-private partnerships (PPPs), and partnerships between local universities, nongovernmental organizations (NGOs), and PEs increased institutional capacity and facilitated cost-efficiency in project design, implementation, and monitoring. Collaboration between government and private companies helped increase institutional capacity, and led to efficiency in the design, monitoring, and

verification phases of the projects. Thirty-nine percent of the BioCF projects were public-private partnerships (PPP): this successfully mobilized the needed financial resources and technical capacity, and aligned objectives in order to create sustainable and scalable models for long-term improved land use. And government partnerships with NGOs led to successful project performance through efficient monitoring of the forest.

For example, in the Colombia Bajo Seco Commercial Reforestation Project, the French National Forest Office (ONFA) provided technical assistance and support to farmers for maintenance work, and advised on carbon commercialization: this led to efficient implementation of the project. ONFA was trusted as the intermediary implementing partner by the other project entities (Corporación Autónoma Regional del Río Grande de la Magdalena (CORMAGDALENA); Fondo para el Financiamiento del Sector Agropecuario (FINAGRO); and A.W. Faber Castell). When CORMAGDALENA, the public entity component, ceased their supervision after two years as per the agreement, ONFA provided training to small and medium farmers on plantation management, agropastoral practices, and the commercialization of wood.

On the other hand, lack of coordination and clearly defined roles can hamper public-private partnerships. For example, in the Colombia Agroforestry Project, the complexity of the institutional design posed challenges. The beginning of the project involved three main components; multiple farmers and indigenous peoples; the planting of several different species of trees on degraded lands; and unclear land tenure situations. Under these circumstances, the regional environment authority Corporación Autónoma Regional de los Valles del Sinú y del San Jorge (CVS),[15] the Corporación Colombiana de Investigación Agropecuaria (CORPOICA),[16] and

15 CVS aims to execute the policies, plans, programs, and projects on environment and renewable natural resources, as well as to comply with timely application of the current legal provisions on their protection, administration, management, and exploitation, in accordance with the regulations and guidelines issued by the Ministry of Environment, Housing, and Territorial Development.

16 Now called AGROSAVIA, this is a decentralized public entity of mixed nonprofit, scientific, and technical participation, whose purpose is to develop and execute research, technology activities, and transfer processes of technological innovation to the agricultural sector.

the consultant firm, Consorcio Bosque Tropical (CIAT),[17] did not resume the planting/replanting program on time, and failed to provide maintenance for some of the project areas. This led to failure to undergo verification, and eventually the project was terminated before full implementation.

In the China Reforestation Project, the mobilization of technical and financial resources through a partnership between the Guangxi Forestry Department and private forest companies resulted in efficient preparation of the PDD, and CDM validation and registration. Validation only took about five months, compared to the market average of about ten months in the CDM project cycle.

Similarly, in the Niger Acacia Plantations Project, Achats Service International (ASI), a Franco-Nigerien agribusiness company oversaw purchasing commodities on behalf of the government, in a situation of mutual trust and collaboration. As seen in Figure 6, the PPP projects were mostly self-reliant, and were able to sustain project activities without upfront or interim financing from BioCF for monitoring and reporting prior to verification.

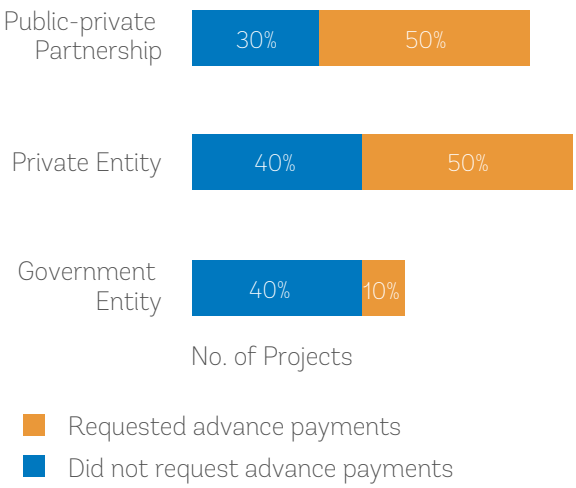
In the Ethiopia Humbo Assisted Natural Regeneration Project, the strong engagement of the NGO World Vision with participating communities helped with efficient monitoring of the forest, which in turn led to successful project performance. World Vision provided technical capacity building for local communities concerning the benefits of project activities—and their relation to the project's sustainability—that enabled communities to continue to feel ownership of the forest.

Projects can also use the support of professors from national universities to help conduct the forest inventory and reporting. The projects that had an efficient organizational structure not only built replicable capacities in the government and in the participating communities: they also reduced costs.

For example, in the Brazil AES Tietê[18] Reforestation Project, AES Tietê partnered with local universities to conduct verification and data-crunching work. Their successful partnership with the University of São Paulo Agriculture and Agronomics Research Center (ESALQ) demonstrates the benefits of having collaboration agreements with universities and research centers. Such agreements can make project design, implementation, and monitoring much more efficient and effective. This project was based on techniques related to the environmental recovery of degraded forestry habitats that was developed by ESALQ. Subsequently, ESALQ provided technical support for collecting growth data for various tree species, as well as developing allometric equations for various native species. PhD students conducted this work for free in exchange for the professional experience they gained—an arrangement that was very helpful for AES in reducing their verification costs.

In the Niger Acacia Plantations Project, professors from the national university conducted the preparation for verification. Efficient organizational structure of this project not only built replicable capacity in the government and communities but also saved costs.

Figure 6: Interim Advance Payments Requests from Various Types of Project Entities



17 CIAT, an international consultant firm, works in collaboration with hundreds of partners to help developing countries make farming more competitive, more profitable, and more resilient through smarter, more sustainable management of natural resources.

18 AES Tietê (Alienação de Ações do Capital Social da Companhia de Geração de Energia Elétrica Tietê) is a large Brazilian electrical energy generator that owns and operates 10 hydropower plants, with an installed capacity of 2,651 MW within the state of São Paulo, Brazil.

2. Staff Turnover and Its Implications for Knowledge Transfer

High staff turnover and poor knowledge transfer can negatively affect project implementation. Due to frequent administrative changes, in many of the projects, knowledge transfer was absent. This was even more evident when government institutions were implementing the projects. The frequent staff turnover that is common in government agencies affected the efficiency of operations, caused delays in verification (and therefore, in ER delivery and payments as well), and negatively impacted the sustainability of land-use projects.

In the Costa Rica Agroforestry Project, the frequent turnover in government staff, and reliance on a small number of technical consultants made knowledge transfer challenging; this ultimately affected implementation. At the design stage, consultants were hired to provide technical expertise on MRV; this involved working directly with the government. However, due to administrative changes this valuable knowledge was not retained over time, and resulted in unnecessary delays that delayed the payments, and made maintaining stakeholder engagement even more difficult than it already was.

In the Uganda Reforestation Project, and the DR Congo Fuelwood and Timber Plantation Project, technical training provided at the beginning of project implementation, and preparation for verification was not sustained. While these projects have been able to continue implementation, preparation for the final verification benefited from technical support provided through BioCFplus TA funding.

On the contrary, when there was low turnover in government staff, or when the management team was actively engaged in the process throughout the project cycle, efficient capacity building was enabled.

For example, in Moldova, the Soil Conservation and Community Development projects together are expected to generate more than 300 percent of the contracted ER volume under the two ERPAs. The PE, Moldsilva, has extensive experience and knowledge of forest management and pest control: this, coupled with continuous technical investment from the forest agencies, and a low level of government agency turnover over a period of 17 years, led to efficient knowledge management and transfer.

And in the Teak Reforestation Project in Nicaragua, the PE, a private sector company (Precious Woods) had several members of the management team who had been active since the very beginning of the project: this helped with successful implementation. The project achieved 82 percent of its original ERPA volume.

3. Lack of Technical Capacity for CDM Requirements Affected Project Design, Preparation, and Verification

The CDM methodologies are complex: they posed challenges for PEs that did not have strong technical capacity. This had implications for some of the projects that eventually impacted the delivery of emission reductions.

In the Uganda Reforestation Project, the project entity, the National Forest Authority (NFA), lacked technical capability in various aspects of the CDM requirements from project design through verification. Specifically, issues of species selection, and incorrect mapping during the project design stage created problems in implementation. For example, one of the community forest management (CFM) areas was outside of the project area, due to a mapping error. In addition, community planting ended up being slower than anticipated in the design stage, which caused delays in the first verification.

Similarly, in the DR Congo Fuelwood and Timber Plantation Project, lack of technical knowledge resulted in fewer ERs than originally contracted. The technical issue in this project concerned methodology: the PE removed the stumps of trees in the project area at the time of project preparation, which led to substantial loss of organic carbon in the trees' roots. The stumps should have been left there: new trees could have been planted around the stumps, and contributed to generating ERs.

CONCLUSIONS

Collaboration among several entities in implementing a project can be beneficial because of the financial and technical resources that can be leveraged from joint partnerships. However, as evidenced by the Colombia Bajo Seco Project, it may be helpful to identify a strong project entity ("champion") that has the resources needed to effectively coordinate project activities, and who can play an intermediary role with other partners. And as was seen in the Colombia Agroforestry Project, despite the potential benefits of implementing a project under a multiple partnership structure, there are also potential risks, for example, delays due to lack of coordination between the partners.

The key lesson learned from BioCF projects regarding high staff turnover is that partnership with academic institutions to assist with MRV work can be very helpful. For one thing, there is less frequent turnover among university professors, which helps to maintain institutional memory. In large-scale programs, where such partnerships could become long-term, MRV work can even be built into the curriculum for university students, creating a mutually beneficial arrangement, where the government benefits from efficient and cost-effective MRV, and the students benefit from gaining knowledge on carbon accounting work.

Building knowledge and capacity of communities in the program area through community workshops can also support the participation of landholders in forestry activities in such a way that they acquire knowledge of forest management practices as part of the process. This can encourage landowners/farmers to continue to be involved in sustainable forestry, and strengthen their sense of ownership while contributing to ER generation.

The availability of more MRV experts who understand the CDM and VCS requirements, and other project mechanisms, could help to avoid overestimation of ERs. The interviews that were conducted for this report revealed that in BioCF projects where technical capacity was low,

there were in some cases errors in calculation. Such lack of technical capacity could impact preparation of the project and the reported ERs, as in the case of the DR Congo project. The lack of MRV experts in most of the projects, along with other issues, including the lack of technical capacity and financial constraints, resulted in significant overestimation of ERs, and ultimate underdelivery compared to what was initially projected or contracted under ERPA.

III. Financing Mechanisms

The financing mechanisms used by BioCF were important, since operations are results-based, and therefore ER payments are made only for verified ERs. Where good financing mechanisms were used, project activities were able to be implemented as planned and to generate the anticipated ERs. However, the cost of implementing these projects was nearly half the value of ER payments received by projects. Figure 7 compares the total cost to BioCF—including the support provided by the BioCF*plus* TA—to the ER payments made. It is important to note that all of the costs elaborated in this section of the report are costs borne by BioCF: they do not include investment or monitoring costs borne by the PEs.

The BioCF costs are categorized as follows:

- **Technical Assistance Costs.** Costs incurred by BioCF*plus* TA to provide support in the preparation for validation, monitoring, and verification;
- **Project Preparation Costs.** Costs that were incurred at the time of preparing the project for approval by BioCF and the World Bank; and the costs of helping with CDM or VCS registration.
- **Implementation Costs.** Costs incurred during supervision (for example, periodic site visits by the World Bank), and in the validation and verification stages (for example, hiring verification bodies to conduct verification).

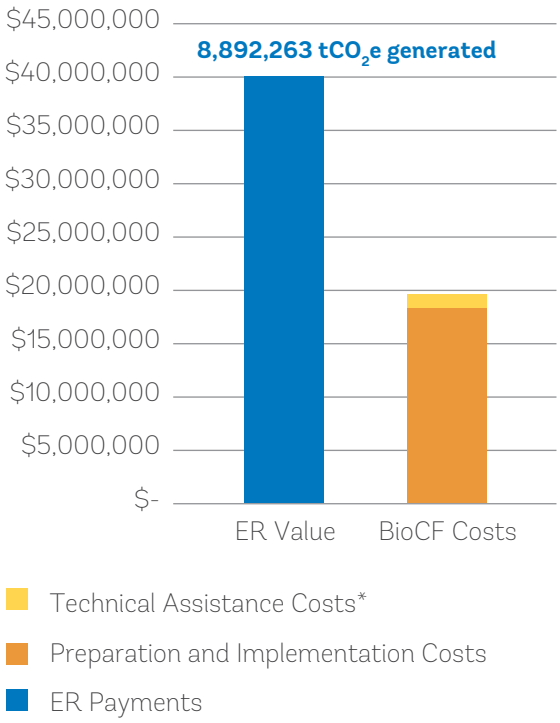
The projects employed a variety of financing strategies to manage costs. This section of the report examines lessons learned both about strategies that helped to ensure project success, and those that did not. It also includes a discussion of good practices that influenced the financial sustainability of projects, for long-term benefits.

1. Financing Through Self-Reliance and/or Through Integration with World Bank Lending Operations

The cost to BioCF for the generation of 1 ton of CO_2e was $6.67

Project entities faced extensive costs in preparing and implementing the projects before results could be generated and payments received. For entities that were able to provide self-financing (in the case of stand-alone operations), or were able to access financing leveraged through larger initiatives (like World Bank investment projects), the investment needs

Figure 7: Total Cost of BioCF Project Operation vs. ER Payments Made



during project preparation and implementation were adequately addressed. BioCF projects that did not have adequate financing, either in the initial stages or later on in the project cycle, faced significant challenges during the course of implementation.

For example, in the Zambia Landscape Management Project, the PE, Community Markets for Conservation (COMACO) was able to avoid financial shortages during the project lifecycle by integrating their project activities into the organization's existing business model. This project included the implementation of sustainable land management practices (SALM) and Reduced Emissions from Deforestation and Forest Degradation (REDD+), which were in line with COMACO's primary operations: supporting communities by training farmers in sustainable agricultural practices; buying crop surpluses; and providing other value-added products. Thus they were able to avoid additional transaction costs for implementing the project. Over the years, COMACO has grown, and in 2019 they achieved $5.5 million in annual revenue.[19]

The India Watershed Management and Reforestation Project provides a good example of a project that was implemented by government agencies, and which showed success in ER delivery as well as stakeholder interest in continuing with project activities after the close of the ERPA. This project was embedded in a larger World Bank investment project (the Himachal Pradesh Mid-Himalayan Watershed Management Project), and has potential to scale up its ER project component.[20] *The BioCF project involved 20 percent of the area included in the larger World Bank project, and technical as well as financial resources were leveraged for implementing its activities, including regular monitoring. The project delivered 90 percent of its ERPA contract volume, and revenues from the ER payments have been distributed to the project beneficiaries—farmers living in and around the project area who are contributing to the implementation of project activities.*

In the Colombia Agroforestry Project, a stand-alone project, the REDD+ component that was part of the initial project design had to be cancelled, since the ERPA unit price of US$2.50/tCO$_2$e could not justify the costs associated with implementing REDD+ activities. At this price, landowners with small parcels of land could not benefit from the ER payments because the transactional costs incurred by the operations were too high. The project continued for a while with only the agroforestry activities; however, even that was challenging to generate ERs, because a significant number of the farmers who were expected to participate in the project did not sign subagreements with the project: again because the opportunity cost was too high.

In the Uganda project, the plantation and monitoring activities were severely impacted by the lack of adequate financing available to the PE, the National Forestry Authority (NFA). Plantation targets were not achieved, and encroachment in the pine forest plantations, and illegal crop cultivation by neighboring communities was common. It should be noted that the lack of proper communication about the project and its objectives, and its potential benefits to the communities may have also negatively affected the results. In any case, the emission reductions achieved were minimal; there were no other incentives provided to communities; and the resulting payments were so small that they were almost negligible.

2. Cofinancing Through Loans, Grants, and Other Modalities to Complement Carbon Revenues

Loans, grants, and other financing mechanisms can be a good way to help projects meet their investment needs in the early phases of implementation. In most cases, however, they are often hard to obtain, and come with their own sets of requirements. For small-scale stand-alone projects, it may be especially challenging to find such sources of funding.

In *the Brazil Plantar Reforestation Project, Rabobank, an agricultural financing institution in Brazil, accepted tCERs that were expected to be*

19 Confirmed by COMACO representative.

20 India Himachal Pradesh Implementation and Completion Report (ICR).

generated from the project as collateral: this played an important role in sustaining project activities. However, this is an exceptional example as not all projects would have been able to access this type of finance as they were not financially strong, and therefore presented a higher risk. For most of these projects there was also a high level of uncertainty about the volume of ER that would be generated, and when it would be delivered.

In the Moldova Soil Conservation Project, the project entity (Moldsilva), financed the afforestation of degraded agricultural lands, while the support for community forest and pasture management was partially financed by a Climate Change Policy and Human Recourse Development (PHRD) grant provided by the World Bank. This grant helped the project develop forest inventories and relevant action plans to improve existing forests, and also helped in the training of community authorities and forestry specialists. Although these grants were made available for targeted use, a World Bank mission in 2013 revealed that not all of the communities were able to use the PHRD grants; some because their needs were not eligible, and others due to insufficient capacity (insufficient number of staff and/or lack of skills) to apply for the grants. Cofinancing through grants can help secure complementary financing for projects, provided that the modalities and design of the grants are closely aligned with the project objectives.

3. Advance Payments to Address Preparation Costs or Maintain Cash Flow

In some cases, upfront, or interim advance payments, were provided for under the ERPA to help projects meet their preparation costs, or maintain cash flow. Both types of advance payments are risky, since the delivery, and the eventual amount, of ERs is always uncertain. That said, if managed well, advance payments can help sustain cash flow, maintain project activities, and ensure ER delivery. But they require an enabling environment, and a strong PE.

Upfront advance payments are even riskier than interim advances, as they are based on ex-ante estimates according to the PDDs; whereas at least interim advance payments are based on the ex-post estimates calculated after the first verification. Some discounts were also applied to the interim advance payments, to account for any anticipated impacts of implementation issues that had been experienced during the project cycle.

Underlying investments and commitments, including robust national climate policies,[21] can provide the necessary enabling environment for ER projects. China provides a good example. Recent NASA estimates show that China is 348 percent greener than the global average of forested areas. These results are largely attributed to the strong commitment and secured investments by the Chinese government (Chen et al 2019). The BioCF projects in China benefitted from this environment,[22] which was complemented by interim advance payments and links to a larger World Bank investment project. On average, the return on investment for these projects was 73 percent against investments made by the Fund; this is above the portfolio average of 69 percent.

The Ethiopia project, and the two Moldova projects, also received interim advance payments. Both projects were managed by strong PEs, and both successfully delivered on their ER targets. However, interim advance payments (that is, payments for monitored but not yet verified ERs), while useful for sustaining activities in some cases, posed risks for projects with more limited institutional or financial capacities. For example, the Chile Carbon Sinks Project received an advance payment for monitored ERs, but not all monitored ERs were successfully verified. This resulted in an overpayment to the PE. The project was unable to reimburse the amount that was overpaid through the advance; this eventually resulted in termination of the ERPA, and of the whole project. To mitigate the risk of overpayment, World Bank generally requires a performance guarantee for loan agreements (a Letter

21 World Bank Group. 2019. *State and Trends of Carbon Pricing 2019.* Washington, DC: World Bank

22 The China Watershed Management and Reforestation Project, and the China Reforestation Project.

of Guarantee) from borrowers; but this is not a viable solution for these BioCF projects with limited financial and institutional capacities, and of course they are the ones who need advance payment the most.

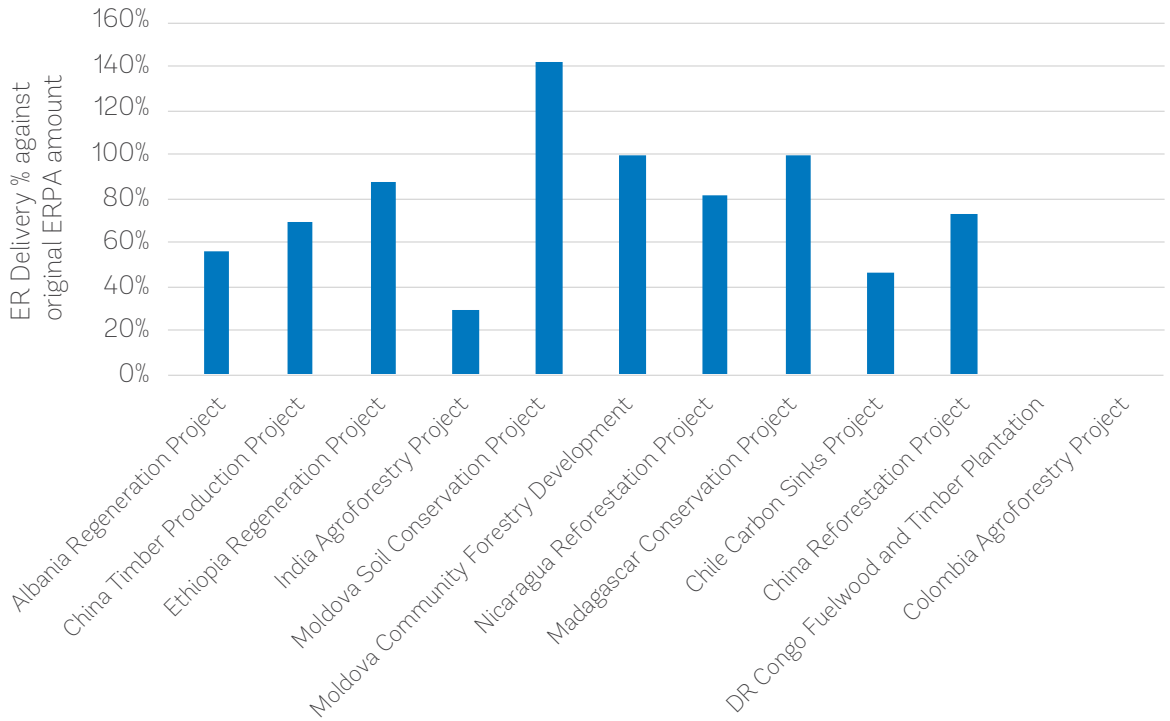
Figure 8 shows the ER delivery of projects that received either interim or upfront advance payments. While most of these projects delivered more than 50 percent of their ER targets, this was not always the case. Advance payments do not always result in successful ER delivery: the quality of management of the advance, technical issues, and political issues can all affect the ultimate results.

CONCLUSIONS

The financial sustainability of BioCF projects was dependent upon the accessibility of additional financing opportunities and the financing capabilities of the PEs.

- ***Financial analysis of project entities—particularly when they are stand-alone operations without other sources of financing—is recommended as a prescreening criterion.*** For pioneering project developers, untested methodologies incurred uncertain costs. Although the benefits from ER payments constitute a valuable incentive for afforestation/reforestation (A/R) projects, some of the operations were limited by the lack of funds to cover significant upfront costs. Especially in small-scale operations, the lack of adequate financial resources, coupled with a lack of technical capacity to fulfill CDM methodology requirements made it very difficult to meet ER targets. The Uganda project is one such example: it was only able to achieve 23 percent of the contracted ER volume following the first verification. And in the Colombia Carbon Sink Project, one of the subproject entities was unable to reimburse costs due to its poor financial health, which was realized only after 8 years of preparing for registration and validation under CDM.[23] Including a financial and institutional capacity analysis of the project entity at the design stage of a project may

Figure 8: ER Delivery of Projects that Received Advance Payments (as of February 2020)



23 Biocarbon Annual Reports 2006-2015.

result in better projections of ER, reduce portfolio risks, and prevent delays. Such feasibility studies will help increase the quality of the portfolio by establishing the agency's financial status; relationship with the project participants; and ability to carry A/R or land-use change activities through to successful ER generation.

- ***Advance payments can be a helpful strategy to ensure the financial sustainability of a project, but may not be the only way to achieve good performance.*** While advance payments did help with upfront financing needs or the maintenance of cash flow for some projects, it alone did not impact project performance unless there were other success factors (for example, a strong project entity, low implementation costs, and so on). For example, the PE in the Colombia Agroforestry Project, despite receiving advance payment, was unable to sustain the project activities: the cost of implementation was too high for the farmers, and they saw more value in alternatives to reforestation activities. Where there are strong PEs that have a high level of technical capacity, strong political will and so on, as seen in the Ethiopia and Moldova projects, advance payments can help bolster the sustainability of projects. However, upfront or advance interim payments have sometimes proven to be risky for the Fund, as in some cases they led to overpayment when financially weak projects were unable to reimburse the investments made by the Fund.

- ***Carbon finance can help bring additional revenue streams to larger initiatives or programs.*** Embedding ER operations in larger World Bank investments, or national government programs, can help ensure the necessary investment costs, while also bringing additional income in from the ER payments. ER projects that were part of larger World Bank investment operations were better able to meet their implementation needs, particularly in the initial phases of operation. Financial

and technical capacity leveraged through the larger programs enabled them to successfully monitor the project activities, meet required standards, and generate the ERs. The India Watershed Management Project, for example, benefited from being included in the larger project.[24] In turn it has provided additional economic incentives to the farmers, including environmental benefits that resulted from adherence to the CDM standard.

Projects that were able to secure additional financing through government or private investors were better able to sustain their operations and leverage the incentives provided by ER payments. However, in some cases PEs did not have the resources needed to obtain funds that could assist with covering their upfront costs. In the case of the Colombia Carbon Sink Project, lack of local governance, as well as a lack of access to additional financing contributed to its termination.

IV. Leveraging Resources

In addition to the potential financial resources discussed in the previous section, resources leveraged through BioCF*plus* TA, played a significant role in supporting BioCF projects during the preparation and monitoring stages, and in enabling them to implement innovative new methodologies.

BioCF*plus* TA is a multidonor trust fund that was originally dedicated to supporting BioCF projects during validation and verification. Later it was reestablished to support work programs beyond the scope of BioCF projects.

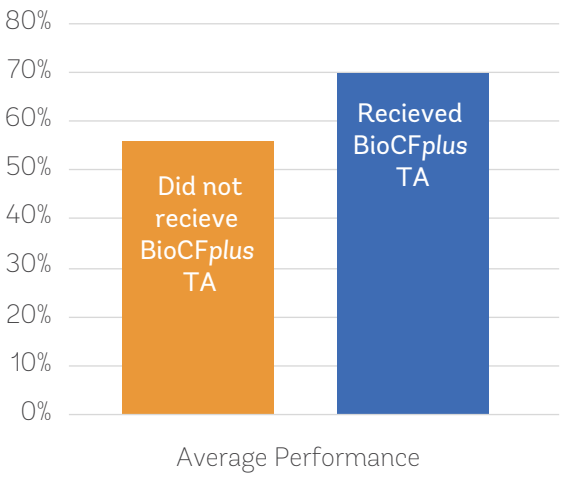
The key findings and lessons learned about resource leveraging through BioCF*plus* TA are summarized below.[25]

1. Support for Capacity Building and Monitoring

Approximately 55 percent of the BioCF projects received financial support and technical assistance through BioCF*plus* TA during the early stages of project preparation, as well as during validation and verification. Given the complexity of CDM and VCS requirements, and the limited capacity of project entities, BioCF*plus* TA has been crucial for a number of projects. This technical support has helped these entities avoid errors, and has enabled successful verification, ultimately allowing ER payments to be realized. The support provided by BioCF*plus* TA includes guidance on forest inventory; preparation of monitoring reports following CDM guidelines; and support for projects in responding to clarifications and corrective action requests raised by the CDM Executive Board (CDM EB).

BioCF*plus* TA also supported some projects with project preparation and design that was crucial to the successful implementation of project activities. Without such technical support, some of the projects might not have been able to realize successful validations or verifications, and could have thus been terminated prematurely. As seen in Figure 9, projects that received technical assistance through BioCF*plus* TA

Figure 9: Impact of BioCF*plus* TA on ER Delivery



24 World Bank investment project financing - Himachal Pradesh Mid-Himalayan Watershed Management Project

25 The BioCF*plus* TA Trust Fund is funded by the Department of Global Affairs, Canada. In its early days, the Fund typically focused on capacity building for project development, and development of the first methodologies and tools used for carbon accounting of A/R projects. While it has continued to provide technical support to BioCF projects, a larger part of the funding now focuses on carbon asset creation, and the development of methodologies for the agriculture and livestock sectors.

29

delivered on average 14 percent more on their ERPA commitments. However, it should be noted that receiving BioCF*plus* TA assistance was not always a direct factor for success; despite this funding, some projects still did not perform well. Financial shortcomings and poor management of implementation activities also significantly impacted performance.

In the Niger Acacia Plantations Project, BioCFplus TA funds were used to hire an experienced consulting firm to design the forest inventory for monitoring and verification purposes. These funds provided training to all stakeholders involved (government staff, community representatives, and professors in national universities). This was very helpful in efficient monitoring of the ERs.

In the Kenya Agricultural Carbon Project, which adopted Sustainable Agricultural Land Management (SALM) practices through VCS, BioCFplus TA provided the PE, as well as farmers, with training in field measurement practices and certification requirements for VCS validation and verification. The project successfully completed validation and two verifications under the BioCF ERPA, and issued more ERs than they had contracted for. The project is now continuing to be implemented in partnership with other institutions, and has gone through additional verifications.

In the Albania Regeneration Project, BioCFplus TA funds helped to build capacity in complying with CDM requirements—in particular, the capacity to help with field monitoring requirements and carbon stock measurement—which resulted in successfully preparing the project for the verification site visit. The successful site visit in turn made the project a sustainable one, and improved the PE's ability to assess and monitor the performance of the project over time.

2. Development of Methodologies

- BioCF*plus* TA also supported the development of methodologies to promote accounting for soil carbon ERs and REDD+. These methodologies were later registered as VCS methodologies and which were used by the Zambia Landscape Management project and the Kenay Agricultural Carbon Project.[26] The SALM methodology allowed accounting for ERs generated from the adoption of cultivation techniques that lead to improvements in soil productivity.[27] As mentioned earlier, this has been a successful project, and it continues to engage with other partners to verify and sell the ERs to then reinvest in project activities.

- BioCF*plus* TA also supported development of the Tool for Afforestation/Reforestation Approved Methodologies (TARAM), which aims to capture *ex-ante* ER projections that were included in the PDD. Although this is a critical tool to forecast project performance and assess risks, some training was required to build knowledge and capacity for using it accurately.

CONCLUSIONS

BioCF*plus* TA funding has been instrumental in creating enabling environments through developing the methodologies and tools that are crucial for innovative pilot projects. In the new generation of funds (like FCPF and ISFL, the availability of such funding may help to avoid the delays and other issues that many BioCF projects have experienced, due to lack of technical capacity in MRV. The experience of these projects has indeed shown the significant impact of an enabling environment supported by the Fund, including funding for technical assistance. Most of the projects had technical capacity issues related to MRV and carbon accounting; without the funding provided by BioCF*plus* TA, they might not have been able to go through the verifications, or even be registered under CDM or VCS.

26 VM0015 Avoided Unplanned Deforestation and VM0017 Sustainable Agricultural Land Management.

27 With SALM methodology, carbon stock changes in different carbon pools (soil, biomass) are determined by combining information on the project area and the management practices adopted (activity data) with coefficients (emission factors) that quantify the emissions or removals per unit of activity.

FCPF and ISFL both have new methodological requirements that are aimed at helping pilot large-scale jurisdictional ER programs. Most of the programs will likely benefit from the availability of some technical assistance to ensure smooth operation and MRV.

V. Managing the Risks Associated with Carbon Finance Operations

Risk management is an integral part of carbon finance (CF) operations, and the type of risk management approaches used can contribute to the success or termination of projects and/or ERPAs. In BioCF, risk mitigation strategies and corrective actions were implemented both at the Fund level and the project level. World Bank fund managers assessed the project risks, especially after the first verification, as a way of better managing portfolio commitments, and also helping projects to avoid defaulting on their ERPAs. The projects were scored as low, medium, high, or no risk. Assessing the risks also helped to identify bottlenecks, and to apply corrective actions to better manage the risks. This section of the report provides insight into the kinds of risks faced by the projects; how they impacted ER delivery; and how some of them were effectively addressed.

1. Risk Management Strategies and Corrective Actions

The conditions for recovering costs and avoiding overpayment were introduced into ERPA in an attempt to reduce investment risks. BioCF invested funding to support projects during their preparation for CDM and/or VCS registration. In cases where underdelivery, or failure to deliver were anticipated, the following conditions were added to the ERPAs, to manage investment and overpayment risks:

- ***Cost-recovery clause.*** Under the cost-recovery clause, the Fund has the right to claim reimbursement from the project, up to a specified amount, for costs incurred during preparation, validation, and verification. In several cases, projects were unable to reimburse these costs due to financial constraints; and in some of them, ER delivery was such that the equivalent dollar value after deduction for costs would have resulted in zero ER payment to the project. As a result, in such cases the Fund had to significantly reduce or waive cost recovery altogether. Based on this experience, it seems clear that cost recovery is not an efficient way to mitigate investment risks.

- ***Reissuance clause for CDM projects.*** BioCF land-use ER projects are subject to reversals due to either natural or anthropogenic causes. To ensure that the carbon stock[28] generated from the beginning of the project activity is retained, and remains valid, ERs generated are always verified from the start date of project activities. As a result of this, ERs that were verified and issued in previous verification events were reverified and reissued. However, payment under the ERPA would always be for ERs generated in addition to what was verified and paid for before. For some projects, where the business model involved the regular harvesting of grown trees, this resulted in a decrease, or loss, of ERs that were generated and paid for following the first verification. Only 38 percent of the projects delivered more ERs in the second commitment period than in the first commitment period; and the rest of them either maintained the same volume, or the volume decreased. To legally mitigate this risk, the reissuance clause was introduced in the ERPAs. It explained that BioCF is not obligated to pay for reissued ERs; this helped to avoid double payment for them. It should be noted that

28 Forest carbon stock is the amount of carbon that has been sequestered from the atmosphere and is now stored in the forest ecosystem, mainly within biomass and soil.

the reissuance clause was a BioCF approach and not a requirement by CDM; therefore, the reissuance clause is a risk mitigation strategy specific to BioCF.

- ***Market and project delivery risk-adjusted prices were adopted as a carbon pricing approach.*** In 2002, the World Bank was the only buyer of ERs generated from carbon operations: this remained true until 2005, when the Kyoto Protocol was put into place. The prices established by the World Bank varied by project, depending on the risk profile. The assessment of risk for each project considered the project methodology; the availability of upfront self-financing or cofinancing; whether or not the countries had active political issues (e.g. sovereign revolutions, political turnover); and donor expectations, among other factors. The price was discounted to the net present value (NPV), and adjusted on a case by case basis. Project entities signed ERPAs with the World Bank at an average price of about $4 per verified ERs.

- ***In order to avoid errors in implementation, and in light of the complex requirements of CDM and VCS, technical support was provided to many of the projects.*** Implementing the projects while ensuring that they met CDM or VCS standards, and their methodological requirements, calls for good technical knowledge. To avoid errors caused by lack of sufficient technical knowledge and capacity, technical assistance through the BioCF*plus* TA Fund was provided to most of the projects. This was particularly important not only in helping projects avoid errors in implementation: it also contributed to the successful delivery of some of the projects. For example, international technical consultants hired through BioCF*plus* TA for the Albania Regeneration Project helped carry out the essential task of verification. Similarly, in the Niger Acacia Plantation and the DRC Fuelwood and Timber Plantation projects, which went through just one verification (in the second commitment period), BioCF*plus* TA helped retrain stakeholders. Subsequently both projects carried out successful monitoring in preparation for verification.

- ***Adjustments to ER payments, and amendments to ERPA volumes were made in order to mitigate the risks of underdelivery and overpayment.*** In addition to the reissuance and cost-recovery clauses in ERPAs, the risk of overpayment was sometimes mitigated through the adjustment of payments, and amendment of ERPA volumes after monitoring the progress of the project. Overall, about 50 percent of the BioCF projects had ERPA amendments that reduced the originally contracted volumes, allowing the projects to achieve 80 percent or more of their commitments.[29] On the other hand, BioCF projects in Ethiopia, Moldova, and Nicaragua received adjusted annual ER payments relative to the project performance outlined in their monitoring reports and site visits, which were later deducted from their payments for verified ERs.

- ***Quick response to issues of illegal encroachment helps to support safeguards and address reputational risks.*** In the Nicaragua project an encroachment issue was uncovered during a World Bank mission. A farmer had illegally occupied a plot of land owned by the project entity (Novelteak). Novelteak tried to persuade the farmer to resettle. However, when this did not work, they had to resort to legal means, and in 2015 the Nicaraguan court ruled in Novelteak's favor; this allowed for a forced eviction of the farmer from the project area. In order to mitigate the risks inherent in this situation, the World Bank immediately conducted a process of due diligence in order to clarify the ownership claims of the

29 Only the Moldova Soil Conservation Project volume of ERPA was increased in 2015, as two ERPAs were combined.

farmer. This included reviewing the process that Novelteak had undertaken prior to the eviction order from the Nicaraguan court. The World Bank also conducted multiple coordinated consultations throughout 2017 with Novelteak, in order to arrive at a process for resettling the farmer in line with standards acceptable to the World Bank. As a result, Novelteak agreed to hire a third-party nongovernmental organization to assist in the resettlement process, and to avoid setting a precedent for any illegal settlers in the future. In February 2018, the World Bank also conducted a third-party audit to be sure that there were no other illegal settlers in other parts of the CDM project area.

- ***Community-managed monitoring or patrolling can also help to keep track of activities that may be threatening the forest plantations.*** For example, illegal encroachment in the project area was also a common issue in the Ethiopia Humbo Assisted Natural Regeneration Project. However, government certifications for forest monitoring were given to communities or individuals who then helped to protect the forests. This gave the communities a sense of ownership and therefore, they were already actively engaged in keeping the forest protected from encroachment when the road was built. In the case of the Ethiopia project, the project ended up delivering more than the amended volume after the second verification; however, it was not possible to increase the volume again, and the fund donors did not want to purchase the additional ERs. Fortunately, since the project already had a successful experience through another project in marketing Gold Standard verified ERs, with the support of BioCF*plus* TA, it registered for participation in the Gold Standard, and was able to market the additional ERs through them.
- ***Access to upfront funding from project partners, or upfront ERPA advance payments, helped to mitigate underdelivery due to financial risks.*** A number of the pilot BioCF projects faced financing gaps in the beginning, due to the significant upfront investments needed in order to implement project activities. Financing gaps in the initial stages increased the risks

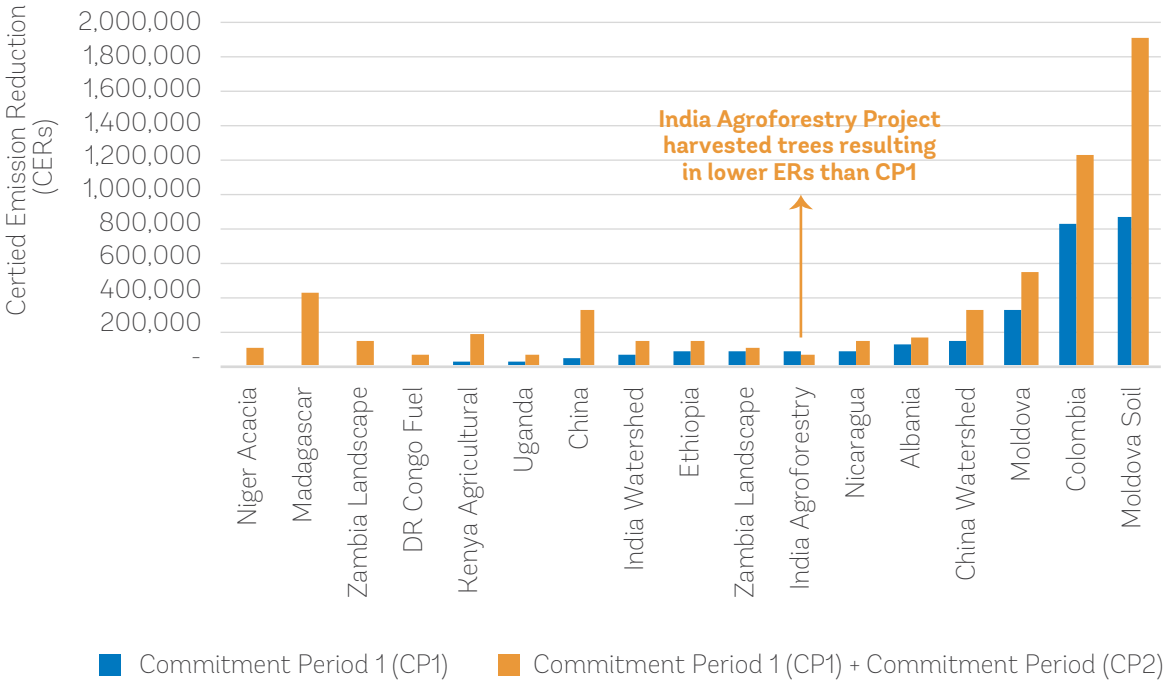
of implementation delays, underdelivery, or project termination altogether. Upfront advance payment was provided to just a few projects, as it was highly risky both for the Fund and for the projects, since they would have to eventually reimburse any advances paid. Projects that were able to secure cofinancing opportunities through larger World Bank initiatives, for example the projects in Madagascar and Moldova, were able to resolve any upfront or interim financing issues.

- ***High opportunity costs due to land-use changes, and incompatible socioeconomic factors can present risks for land-use carbon operations.*** In the India Agroforestry Project, which engaged small landholders in reforesting their land by raising eucalyptus trees, farmers were able to gain more revenues from selling the harvested timber to a local paper mill than maintaining the plantations for ER payments. As a result, the trees were harvested before ERs could be verified: this resulted in loss of carbon stocks. However, expectations had been raised among farmers that payments would still be made after each verification. Since most of the farmers are very poor, and the Fund's aim was to improve livelihoods as well as acquire ERs, the Fund decided to waive the conditions of the reissuance clause. A key lesson learned here is that short-rotation forest plantation activities may not be suitable for A/R CDM projects since, given the CDM rules, it creates both regulatory and contractual risks. However, as seen in Figure 10, the India Agroforestry Project was the only project that did not generate additional ERs in the second commitment period.

2. Impact of Risks Assumed by BioCF Projects and Stakeholders

Environmental risks were hard to anticipate and mitigate, and often resulted in reduced ER delivery. In some of the projects (i.e. Chile, China, Moldova, Nicaragua), when the initially planned project activities were not realized, the most common reason was because of unanticipated environmental risks such as poor soil conditions, drought, floods, snowstorms, fires, and so on. As seen in Figure 11, 22 percent of the projects

Figure 10: ER Delivery, by Project, Over the Two Commitment Periods

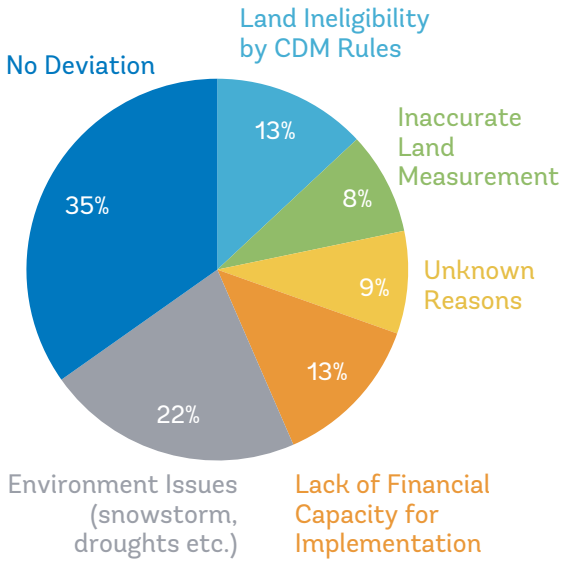


were unable to fully implement plantations on the total land area initially proposed in their PDDs for weather-related reasons. On average, these projects had to reduce the planned area (hectares) by 18 percent, creating the possibility of lost ERs.

When BioCF donors assumed financial risks for potential underdelivery from the beginning of the projects, there was a positive impact. Without the donors' willingness to invest in pioneering projects, the ER operations may not have been attractive enough to small-scale carbon finance projects, particularly given the complex methodologies involved, and with many of the PEs being new to carbon operations. This encouraged them to undertake pilot project activities and, in some cases, yielded successful delivery of ERs.[30]

Reduction in project land area (hectares) contributed to the risk of projects. Notably, 65 percent of BioCF projects were reduced in terms of the size of the project area during the monitoring or verification phases for a variety of reasons (Figure 11). Although several issues (but primarily lack of financial resources and/or technical capacity) contributed to lower ERs being generated from the project activities

Figure 11: Reasons for Deviations from the Plans in the Project Design Document (PDD)



than had been anticipated, it was found that projects that reduced the land area delivered on average 24 percent less. (However, in some cases, ERPAs were amended to reduce the ER volumes corresponding to the reduced land area.)

In the DR Congo Fuelwood and Timber Plantation Project, the land area involved was reduced by 65 percent from what had been stated in the PDD. The monitoring reports revealed that the field measurements found the plantations to be of inadequate quality. Furthermore, unforeseen fire events, and the financial precariousness of the project led to a revision of the original land area. The ERPA volume was also reduced by 84 percent, to correspond with the reduced land area: as a result of this reduction, the project was able to achieve 80 percent of its contracted ER amount. It should be noted that despite the underperformance risks borne by this project, as one of the first land-use CDM projects in West Africa, various social benefits, such as an increase in the number of seasonal and permanent jobs in forest management, were realized.

CONCLUSIONS

Carbon operations in the land-use sector face both anticipated and unanticipated risks that can impact ER delivery and other project objectives. Hence, having effective risk mitigation strategies in place is crucial, since they can help reduce major deviations from the project objectives.

- ***Adequate capacity building can help mitigate the risk of underdelivery due to poor governance.*** In some cases, BioCF invested resources to build technical capacity by hiring international firms, or conducting consultations with available in-house resources. This strategy helped projects to progress with their verifications and achieve their ERPA commitments. An emphasis on capacity building where required may also help with mitigating the risks of monitoring errors and verification results.

30 Small-scale projects ranged from 690 to 20,000 hectares in size.

- ***Amending ERPAs to adjust delivery expectations may be inevitable in order for projects to avoid defaulting on their agreements.*** However, having strong technical capacity from the beginning can also help to avoid overestimation of ERs in the first place. Furthermore, embedding ER initiatives in larger investment programs that can help support the implementation of activities can help to avoid the need for ERPA amendments, and to achieve the targeted ERs. Cost recovery, although it helps fund/buyers of ERs manage the risk of underdelivery or overpayment, may not always be easy to implement.

- ***Regular supervision of land-use projects may help in mitigating illegal settlements and disputes, and avoid negative implications to the ERPA.*** Regular monitoring and supervision of projects can inform PEs of potential risks and limitations, and can help to avoid issues like illegal encroachment that can have safeguards implications.

VI. Stakeholder Engagement and Communications

In most of the BioCF projects, the communication approaches used to manage expectations contributed to the success or failure of the projects. These projects were implemented by government institutions, private sector companies, or NGOs, which in some cases involved local communities and/or individual landowners/farmers participating in project activities. In such cases, the dedicated and continued engagement of the communities or individual landowners was critical to the successful implementation and delivery of ERs, and the overall long-term sustainability of the project activities and outcomes. This section of the report highlights the types of communication approaches employed to gain stakeholder engagement, and how each of them impacted the project, as well as the ultimate results.

1. Types of Communication Approaches

Consultations about, and clarification of project objectives, activities, and benefits were effective in managing expectations when they were held early-on, and throughout implementation. On the other hand, when there was a lack of clarity about payment structures and/or the distribution of roles, it sometimes resulted in overly high expectations, and delayed ER payments. Because some of these projects were pioneering efforts in the countries in which they were being developed, in the beginning there may have been insufficient understanding of carbon offset operations among those who were managing the projects, and the communities that were involved in implementation. In such situations, exercising an approach in the planning, monitoring, and evaluation stages that includes community-based stakeholder participation can help to ensure that implementation will continue after the development phase of projects. Frequent trainings and key stakeholder meetings can also help increase understanding of the project, and establish subagreements with communities.

For example, in the Kenya project, which adopted SALM practices to generate its ERs, a participatory approach to stakeholder engagement, amongst other factors, helped the project to deliver over 20 percent more than what it was committed to under the ERPA. On the other hand, in the India Agroforestry Project, lack of clarity about the rules regarding results-based payments created false expectations among participants. During the first verification it was found that most of the trees on the farmers' lands had been harvested for sale to a local paper mill. As a result, only the still-standing trees could be accounted for in the ER calculation, and only those ERs could be paid for. As the PE had been unclear about this rule to the farmers, it sought to claim payment for ERs from harvested trees following both the first and second verifications. However, BioCF only made payments for standing stock. This kind of miscommunication has caused unnecessary delay of verifications and the ultimate disbursement of ER payments.

In the Madagascar Conservation Project, ambiguities about the financial structure, and the distribution of the roles among the government's ministerial agencies led to a three-year delay in the ERPA payment following verification. The delay was mainly to ensure that the ERPA payment made to the government of Madagascar would reach the communities who were the intended stakeholders and beneficiaries of the project. Benefit distribution among the involved stakeholders, the government agencies, and the communities was not clear, and the timeline for distribution of such benefits to communities was also not clear. The initial plan was to have the payment transferred from the national treasury; however, according to the treasury rules, if payments are not disbursed within one year, they are reallocated for other purposes at the end of a financial year. There was concern that the distribution of the benefits would take more than a year, and therefore, an alternative had to be sought for distribution of the ERPA payment. Establishing this alternative, as well as defining the benefit-sharing distribution and the mode of distribution, took three years to be finalized. This significant delay could have been avoided if these issues had been identified and communicated clearly early on.

Long-term community engagement can contribute to the sustainable management of a project, and may lead to benefits beyond the life of the project. In projects where communities played a significant role in implementation, preexisting as well as continued engagement by the project entity contributed to the successful implementation and delivery of ERs.

In the Colombia Commercial Reforestation Project, the long-term relationship between the PE, ONFI, the Colombian government, and landowners created the confidence in ONFI to effectively implement the operations. ONFI had already worked closely with the municipality of Corporación Autónoma Regional del Río Grande de la Magdalena (CORMAGDALENA)[31] for about 15 years,[32] and landowners appreciated the way they had included and effectively engaged the community in project development and implementation.[33] These robust relationships, and a high degree of trust, helped ONFI to successfully implement the project. The project fully delivered on its ERPA and had no need for any amendments, like reducing the ERPA volume (as has happened with other projects), throughout the ERPA term.

A combination of a top-down and bottom-up approach that involves all stakeholders can create economies of scale. The Brazil Plantar Reforestation Project, one of the first carbon finance projects developed prior to the Kyoto Protocol, emerged from a bottom-up idea that was developed by the project entity Plantar Group, a forestry business company, as opposed to a strictly top-down result of a public policy. The project, which was incubated within the CDM, and supported by the World Bank, resulted in emission reductions through reforestation and the introduction of renewable charcoal for use in the pig iron industry. As has been previously noted in this report, an enabling environment where public-private partnerships are encouraged can result in exponential benefits. Plantar undertook frequent consultations with local stakeholders, for example when they were preparing their reports for Forest Stewardship Council (FSC)[34] certification; and they consulted with stakeholders and incorporated both positive and negative feedback. They also maintained open communication channels with both local communities and global stakeholders by issuing and distributing a newsletter called Jornalipto (De Gouvello et al 2018). These practices set an example of successful strategies for encouraging and supporting stakeholder engagement.

31 CORMAGDALENA is a Colombian public institution with industrial and commercial purposes. It is in charge of the management of the Magdalena River, including sustainable use and preservation of the environment, fishing resources, and other renewable natural resources in the river basin.

32 As confirmed in the interview with an ONFI representative.

33 Colombia Bajo Seco Implementation Completion Report, 2019, pg. 15.

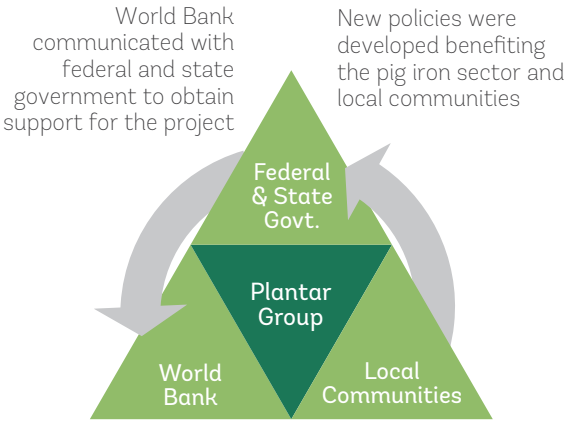
34 FSC certification is considered the "gold standard" designation for wood harvested from forests that are responsibly managed, socially beneficial, environmentally conscious, and economically viable.

In the Ethiopia Humbo Assisted Natural Regeneration Project, a participatory, bottom-up approach of including communities in the planning of "Sustainable Development Plans"[35] created a sense of ownership for the farmers. This was evident from the trust expressed by community and cooperative members toward the project entity, World Vision. Similarly, in the Chile Carbon Sinks Project, a participatory approach and complementary biodiversity initiatives created an environment that facilitated the formation of productive networks of collaboration and trust between the public and private sectors, nongovernmental organizations, and the local community. These engagements enabled the communities to work closely with the National Forestry Corporation, the Tree Club, INGEOCORP,[36] and the Carrizal and Caliboro Schools of Law.[37]

2. The World Bank's Role in Stakeholder Engagement

The World Bank's role as an intermediary between governments and project entities helped raise awareness of BioCF project activities locally and nationally. At the inception of the Brazil Reforestation Project, the government of Brazil had been a part of the Kyoto process, and was actively involved in CDM (De Gouvello et al 2018). Brazil had a large stake in the climate change negotiations, as its national economic, social, and security interests were all contingent upon the growth of the energy sector and development of the Amazon (Johnson 2001). Nevertheless, the topic of tradable credits related to forestry activities was a politically sensitive topic for the Brazilian negotiators at the the United Nations Framework Convention on Climate Change (UNFCCC) at that time. In this critical socioeconomic context, the World Bank supported the Plantar Group in order to secure buy-in from the federal and state government stakeholders. There was evident reluctance from government agencies (for example, the Ministry of Science and Technology (MCT)) to engage with the World Bank and the Plantar Group through the Prototype Carbon Fund (PCF).[38] The World Bank was, however, able to work with the government and managed to obtain support for the project. A letter of no-objection to proceed through validation of the project was obtained from the Brazilian Inter-ministerial Commission on Global Climate Change, and signed by the Minister of MCT in 2000. In 2009, that Commission issued the letter of project approval to the Plantar Group (De Gouvello et al 2018). With buy-in from the government, the Plantar Group became an integral part of Brazil's policy development for the sustainable use of renewable charcoal from planted forests,[39] as a direct result of the project (Figure 12). This demonstrates that the World Bank's role as a strong intermediary can be helpful in raising awareness of project activities that can benefit both national economies and local communities in a sustainable manner.

Figure 12: Relationship of Stakeholders in the Brazil Reforestation Project



35 Sustainable development plans were created by each cooperative, to invest carbon revenues into infrastructure that would benefit the community at large. To learn more about creating community development plans, please refer to the *Benefits Sharing* thematic summary.

36 Ingeocorp Sociedad Comercial De Responsabilidad Limitada - Ingeocorp S.R.L

37 Chile Project Implementation Completion Report, 2017.

38 Established in 2004, the Prototype Carbon Fund (PCF) was the first public-private partnership implemented by the World Bank with a mission to pioneer a market for project-based Greenhouse Gas (GHG) reductions within the framework of the United Nations Framework Convention on Climate Change (UNFCCC).

39 The regulation of the law (Decree 7390 of 2010) specifically mentions "the increase in the use of vegetal charcoal from planted forests and improvement in the efficiency of the carbonization process."

CONCLUSIONS

Collaborative approaches to the design and implementation of carbon finance operations can increase landowners' sense of ownership, and contribution to the environment.

- ***Carbon operations that involve communities can benefit from continuous collaboration to achieve economies of scale.*** On the contrary, involving too many stakeholders in the design stage can pose risks due to delays in decision making; the right balance of technical experts and operational taskforces may help to achieve optimal results.

- ***Timely and transparent dissemination of information and results can help to keep stakeholders updated and maintain public support.*** The progression of a project through the various stages can be positively impacted by timely information sharing. Timely communication of project issues (for example, a lack of funds for plantations) can enable the application of risk-adjusting strategies. Transparency of information may also be an influential factor in creating project sustainability. Projects where beneficiaries' expectations are met may be easier to scale beyond the ERPA terms, as a result of continued interest.

VII. Benefit Sharing

The BioCF projects were not only aimed at reducing carbon emissions; they were also intended to generate environmental benefits and enhance sustainable development, while respecting the rights of landowners; and to provide incentives to stakeholders involved in the project activities. Therefore, determining how incentives and benefits flow to beneficiaries of the project has been an essential component of these initiatives.

Every $1 cost to BioCF =
$0.49 in ERPA payments

Provision of a benefit-sharing plan, or benefit-sharing arrangements, was not initially incorporated under the BioCF ERPAs. However, after the first payments were made to projects, following the first verification, BioCF realized that a few of the projects had not fully disbursed the ERPA payments, or the benefits from these payments, to the communities. And since evidence of benefit sharing was not a requirement, it was difficult for BioCF to legally hold PEs accountable for delaying the distribution of benefits. The only leverage that BioCF had was that most projects were expecting to undergo a second verification and hoping to receive a final payment. Through negotiated ERPA amendments, such provisions were later included in some of the ERPAs; however, it was not possible to do so in all of them. Many of the projects made sure that the payments eventually reached the beneficiaries of the project whether or not their ERPAs were amended. They did not, however, have comprehensive benefit sharing plans, nor had they adopted practices that would help to ensure fair distribution of the benefits from the ERPA payments.

The following analysis presents some of the lessons learned in regard to benefit sharing, and good practices that were adopted by some of the BioCF projects. Experience has shown that the distribution of benefits not only incurred costs but was also time consuming. Based on the lessons learned, some relevant conclusions can be useful for current and future results-based initiatives in the land-use sector in addressing potential issues related to the benefit sharing of ER payments.

1. Good Practices

Clearly defined benefit-sharing arrangements. Some of the BioCF PEs established sub-agreements with the project beneficiaries that clearly outlined the roles and responsibilities of the beneficiaries, and the share of their participation in the project. This practice was helpful in the efficient transfer of funds to project participants (i.e. landowners, farmers) following the receipt of ER payments. Table 2 shows the benefit-sharing arrangements of selected BioCF projects

Table 2: Examples of Benefit Sharing Arrangements

PROJECT	BENEFIT SHARING ARRANGEMENT
India Watershed Management and Reforesta-tion Project	• 90% to beneficiaries; of which 80% distributed to farmers, and 20% to farmers cooperatives • 10% to project management unit (PMU) for administrative fees
Ethiopia Humbo Assisted Natural Regeneration Project	• 85% to communities • 15% retained by the project entity (World Vision)
Niger Acacia Plantations Project	• 80% to communities • 20% retained by project entity Achats Service International (ASI) to cover transaction costs
China Watershed Management and Reforestation Project	• 60% to farmers • 40% owned by the forest companies that invested in the project

Linking the distribution of benefits to community development. In addition to clearly defined bene-fit-sharing arrangements, development plans that were carefully planned and executed by the PEs helped to ensure that carbon revenues would reach the rightful landowners, and bring development to communities.

In the Zambia Landscape Management Project, revenues generated from the project activities are distributed to local multipurpose farmer cooperatives; the chiefdoms of villages; and Community Forest Management Groups (CFMG). The CFMGs, which are responsible for the administration and expenditure of the ER payments, had detailed budgeted activity plans that link carbon payments to livelihood improvements and increased conservation impact.

In the Kenya Agricultural Carbon Project, a comprehensive benefit-sharing plan was made, that detailed how communities would leverage their resources to improve their livelihoods. ER payments were distributed to the farmers in the form of low-interest-rate loans through the Village Saving and Loaning Association (VSL) accounts. These loans were used by farmers to facilitate farm enterprises and other livelihood improvement activities. About 27 percent of the 29,497 farmers who participated in the project preferred to reinvest their carbon revenues, to increase their shares in the VSL.

Clearly defined eligible and ineligible expenses as criteria for receiving ER payments. When handling public money, checks and balances imposed by the PEs have helped to avoid unintended uses of ER payments. For example, in the Zambia Landscape Management Project, upon receipt of ER payments, the PE (COMACO), reviews the budgets for activity plans that have been submitted by the CFMGs prior to transferring the funds. If a line item seems unreasonable or inconsistent with project activities the budget submission is rejected.

Availability of dedicated community/landowner bank accounts, and evidence of distribution of ER payments. Individual and/or community bank accounts for beneficiaries has been an effective mode of distributing the monetary benefits generated from carbon credits. In projects where cash payments were made to communities, the World Bank requires evidence of such payments in the form of receipts signed by the recipients, or bank transfer receipts. For example, in the Kenya Agricultural Carbon Project,[40] the PE (Vi AgroForestry) distributed payments to farmer group bank accounts. As per the project's benefit-sharing criteria, funds were to be transferred to the accounts upon submission of current bank statements as proof that the accounts were active. Similarly, in the Niger Acacia Plantations

40 The Kenya Agricultural Carbon Project implemented Sustainable Agricultural Land Management (SALM) practices, and in return received payment for reducing soil carbon emissions.

Project, carbon revenues were transferred to each *grappe*[41] bank account that had already been set up in the context of a larger World Bank investment program,[42] that the project is part of. Once the payment was received, the World Bank task team reviewed the payments that were allocated to each participating community and their bank account information, substantiated with official bank documents. Upon distribution of the payments to communities, the PE (Achats Service International (ASI)) was responsible for sending receipts for the bank transfers to the World Bank.

Benefit distribution based on area of land forested, and community performance. Projects where the benefit sharing of ER payments is relative to the amount of land involved can help encourage smallholders to expand their participation in the project. BioCF projects in Ethiopia and Niger established subagreements with the involved communities that stipulated that the ER payments would be calculated based on the amount of forested land involved. In Ethiopia's Humbo Assisted Natural Regeneration Project, the seven participating communities ("kebeles") received ER payments based on the amount of their forested land area. The decision to use this as the basis of ER payments was a result of the consultations held with the kebeles during the design of the benefit-sharing plan. And in the Niger Acacia Plantations Project, the PE (ASI) has entered into subagreements with beneficiary communities which stipulate that the volume of carbon credits to be purchased is based on the amount of land area that was provided for the project. According to the 2018 forest inventory, all of the sites had generated their expected minimum ERs, even when some of the sites had planted less hectares than what had been estimated in the subagreements.

2. Challenges

Lack of a benefit-sharing plan requirement under ERPA led to delays in the disbursement of ER payments to some project entities due administrative reforms and in some cases threatened the eventual distribution of

41 Community groups were called "grappe."
42 Community Action Phase (PAC) project.

benefits to beneficiaries. At the time that the Madagascar Conservation Project was designed and implemented, preparation of a benefit sharing plan was not required. Therefore, it was not included as a condition under the ERPA. After the verification was completed in 2013 and payment was ready to be made, the government of Madagascar went through financial reforms and enacted a law stating that all forest carbon revenues would be considered government revenues. Because of this new law, the distribution of benefits had to be explained repeatedly, as the government wanted to retain the rights to ER payments. The World Bank requested that the government develop a benefit-sharing plan in order to receive the ER payments: after almost five years of negotiations, a plan was finalized. And although the ER payment by the BioCF has now been made to the government of Madagascar, the payments have not yet been distributed to the project beneficiaries.

Conflicts between beneficiary groups can impact the distribution of benefits from ER payments. In the Albania Regeneration Project, subagreements were signed between the project entity, (the Ministry of Environment (MoE)), the Forest and Pasture User Associations (FPUAs), and the 24 participating communes. These subagreements defined how the benefits that were accrued from ER payments would be divided between the MoE, the FPUAs, and the communes. Following the first verification, MoE was able to disburse ER payments to most of the communes after they submitted investment plans that included reinvestment in forest maintenance, additional forest protection measures, and so on. Of the 24 communes, two did not receive the ER payments due to disagreements and disputes between mayors and leaders of the FPUAs, creating tensions and a potentially negative impact on project implementation.

Administrative restructuring can cause significant delays and disruption to the initially agreed upon benefit-sharing arrangements. In the Albania project, while the distribution of ER payments was pending completion for the two communes who had not yet received their payments, an administrative reform took place that led to the reorganization of the 24 communes into 12 municipalities. Therefore, it was necessary to establish new subagreements between the FPUAs and each of the municipalities, in order to ensure efficient distribution of ER payments after the second verification. The new subagreements would stipulate that the still-pending first payments to the two former communes would be taken into account when it was time for the second payment. While this has been agreed upon between the World Bank and MoE, the remaining challenge is to ensure that the distribution of the second payment is implemented as per the new subagreements, since BioCF closes at the end of December 2020.

Lack of clearly defined benefit-sharing arrangements and mechanisms can cause significant delays in the distribution of benefits. In the Uganda Reforestation Project (which is a combination of five small individual projects), the project entity (the National Forest Association (NFA)) took about two years to complete distribution of the ER payments to the five participating communities. Although they had subagreements with the communities, the benefit-sharing distribution, and the criteria for determining the calculation of payments, were not defined in the subagreements. As a result, when the first verification was conducted and ER payments were made, NFA had to first determine how the proportion to be distributed to each of the communities would be calculated, and how payment would be shared between the projects that had delivered and those that had not. (It was important that benefits were shared even where ERs had not yet been delivered, to ensure continued engagement in the project activities for the second verification.) Because of this complexity, the payment distribution was delayed for two years from the time that the NFA received the ER payment from the BioCF.

Cash payments where many beneficiaries are involved may be a disincentive to effective engagement in project activities and may

therefore affect the overall delivery of the project. The Uganda Reforestation Project made direct cash payments to the five communities associated with the project. In the first verification, each community group received a payment of about $4,900 payment.[43] The payments were minimal because the project underdelivered in the first verification; it is also expected to underdeliver in the second verification. Because the level of effort required to implement and monitor the project activities outweighed the amount of cash payments received, there was not enough incentive for communities to continue engaging in the project. As has been seen in some projects, investing in development activities for the communities rather than direct cash payments may be more attractive, and could help to sustain project activities and overall development efforts.

Streamlining benefit-sharing mechanisms with local or national institutions, and aligning existing mechanisms with international standards, could reduce transaction costs. In the Costa Rica Agroforestry Project, the PES program[44] was embedded into the results-based payment operation under BioCF; and it was through this mechanism that farmers participated in the project. The PES program had initially imposed high transaction costs on the farmers/participants—for example, requesting irrelevant bureaucratic documents, or requiring proof from farmers that they did not owe anything to the national system.[45] The PES also required formal land titles as eligibility criteria. Such requirements were impractical and resulted in inefficiencies in establishing the PES sub-contracts with potential farmers. These conditions were later improved, by streamlining the project entity's (National Forestry Financing

43 Uganda Project Implementation Completion Report, pg.8.

44 In 1996 the Costa Rican government passed Forest Law No.7575, which recognized four environmental services provided by forest ecosystems: (1) mitigation of greenhouse gas emissions; (2) hydrological services; (3) biodiversity conservation; and (iv) provision of scenic beauty for recreation and ecotourism. The law provided the regulatory basis to contract landowners for the services provided by their lands. The country's PES program, established in 1997, provides the mechanism to achieve this. Benefit Sharing at Scale: Good Practices for Results-Based Land Use Programs, pg. 9

45 Benefit Sharing at Scale: Good Practices for Results-Based Land Use Programs, pg.62

Fund (FONAFIFO)) database with those of other government agencies, and amending the conditions for eligibility by accepting evidence of the right of possession of land for 10 years or more in lieu of formal land titles where these were not available.

The absence of updated subagreements can lead to issues for benefit-sharing distribution involving smallholder farmers. For example, in the Colombia Commercial Reforestation Project, the project entity, French National Forest Office Andina (ONFA), ran into issues in delivering ER payments to some landowners. Out of 31 signed subagreements, 4 had issues that prevented payment from being made to the concerned landowners. These issues included changes in the land titles without updating of the subagreements; inheritance disputes between the children of one of the deceased landowners; and embargos imposed by the local bank on two of the farms.[46] The India Agroforestry Project, which involved more than 1,500 smallholder farmers, also encountered issues in fully disbursing payments, as many farmers had migrated from the area, and left behind unclaimed inheritances (5-10 percent of the funds from the first ER payment were not distributed for this reason). It is therefore critically important to ensure that subagreements and beneficiaries are kept up to date, and that the validity of subagreements is monitored, in order to avoid delays and inefficiencies in the distribution of benefits.

CONCLUSIONS

Clearly defining the benefit-sharing arrangements, beneficiaries, eligibility criteria, and benefit distribution channels at the project design stage can help prevent confusion, delays, and potential disputes during implementation.

- ***Incorporating the requirement to provide details concerning benefit-sharing plans into the ERPA, and reporting on the implementation of such plans following ER payments also help to ensure accountability on the part of the PEs.*** Currently, including a detailed benefit-sharing plan is a requirement for ERPAs that are being signed in new carbon finance operations, such as the FCPF and the ISFL. It is important to note that while this provision can help to ensure that benefits from ER payments reach the intended beneficiaries during the term of the ERPA, a risk still remains for the final payment, which is made just before the ERPA terminates, as has been seen with the Madagascar project.
- ***Benefit-sharing arrangements should be flexible enough to allow for the ability to include provisions for updating during the course of implementation should the previously defined arrangements be impacted by administrative reforms.*** The case of Albania is very relevant in this regard, and would be even more challenging and complex in the case of large-scale jurisdictional programs like those under the FCPF Carbon Fund and ISFL. These programs are implemented by government agencies, which often go through administrative changes. In such situations, elections can result in a total restructuring of the governance structures.
- ***Consulting with beneficiaries to determine the types of benefits that communities will receive, and benefit-sharing arrangements that clearly define the eligibility criteria from the beginning, can help to not only avoid confusion, but also manage expectations,*** and incentivize continued engagement in project activities. This has been seen in the cases of the Ethiopia, Kenya, Niger, and Zambia projects.

46 To mitigate the embargo issue, legal fees were paid through carbon revenues, and were deducted from final ER payments, with interest generated by the bank account.

VIII. Emission Reductions Title Transfers

The ERs from BioCF projects that were purchased by BioCF were transferred to the fund donors either for compliance purposes, or for further sale to other buyers. Given this, rights or title to those emission reductions was also transferred from the project to the BioCF donors upon sale and purchase of such ERs.

Many of the BioCF projects operated under arrangements through which the PE (a government or private-sector institution) had complete rights over the project area, and the associated ERs. In such situations, the transfer of carbon rights, or of ER title, was straightforward. In other cases, the communities or individual landowners who were involved in the project area had rights to their land and the ERs. In such cases these became subproject entities, and clear arrangements had to be established between these subentities and the main PEs, to ensure that the PEs were able to transfer the ER titles to BioCF. Monitoring and maintaining these subarrangements was of critical importance, and there were challenges that impacted both implementation and benefit distribution. In some instances these issues even led to termination of ERPAs.

This section of the report includes both lessons learned, and examples of good practices, from projects where land ownership and ER titles were directly linked to the communities or landowners who participated in the projects. These lessons could be useful for similar ER operations in mitigating or avoiding issues that could impact implementation and delivery.

- ***Government reforms during project implementation can lead to delays in ER payments, and result in the need to reestablish the project entities' ability to transfer title to ERs.*** Where subproject entities are involved in the implementation of a BioCF project, any major restructuring directly impacts any subarrangements that have been made with the subproject entities under the ERPA. This change impacts the distribution of benefits from ER payments as well as the ability to transfer ER titles. For example, in the Natural Regeneration Project in Albania, the territorial administrative reform in 2015 restructured the 24 communes who were participating in the project into 12 municipalities.[47] As a result, new subagreements had to be established, in order to ensure that there would be no disputes regarding carbon rights later on. (To make matters even more complicated, the Ministry of Environment was dissolved and replaced by a new Forestry Agency.) These institutional and territorial reforms led to delays in getting the benefits to the beneficiaries.

- ***Land title transfers during project implementation can also cause delays in the distribution of ER payments, and can impact the project entity's ability to transfer title to ERs generated from the project.*** When landowners end up selling their land for other immediate needs, the PE may not be informed. This can affect the benefit distribution process, and require that ER titles are reestablished.

For example, in the Colombia Commercial Reforestation project, the project entity (ONF Andina) realized during the distribution of ER payments that some of the subcontracts with landowners had not been updated when land ownership was transferred to new owners. This delayed, and in some cases altogether prevented, ER payment to the landowners, if new subagreements could not be established. This type of situation poses a risk to the ERs that were transferred to BioCF.

47 According to the Implementation and Completion Report of the project, the reform consolidated 386 local government units with 61 new municipalities, and elected new mayors and municipal councils.

Similarly, in the Agroforestry Project in India, approximately 5-10 percent of the benefits remained undistributed, since it was difficult for the project entity (Veda Climate Change Solutions Ltd.) to trace several smallholder farmers, who had migrated and left unclaimed inheritances and revenues.

In the Costa Rica Reforestation Project, the subcontracts signed between the farmers and the PE (FONAFIFO),[48] under the PES program specified that all rights to the sequestered carbon was transferred to FONAFIFO in exchange for annual payments under the PES. As the farmers were private landholders who owned the reforested area, the PES program continued as long as the PES contracts were valid. The PES contracts were for 5 years: following the first verification and payment, most of the landholders sold their land, or did not renew their PES contracts.[49] As a result, FONAFIFO had to mutually terminate the ERPA with BioCF, and therefore could not proceed with the second verification, from which they would have received the second ERPA payment.

- ***In some of the projects, carbon rights were differentiated from land rights in order to avoid disputes between government and landowners.*** For example, the Colombia Agroforestry Project, initiated by a public-private partnership, engaged the communities of the San Nicolas region by implementing a plan for the sustainable management of forest resources. The project entity, the Corporation for Sustainable Management for Forests (MASBOSQUES) signed legal agreements with the participating landowners, which established: (i) MASBOSQUES's commitment to implement the forestry and agroforestry plantations, (ii) the landowner's commitment to project maintenance; and (iii) the landowner's agreement to transfer the title for the carbon credits to MASBOSQUES, so that MASBOSQUES could enter into a commercial ER transaction with the World Bank.

In the Moldova Soil Conservation Project to conduct project activities on the

48 National Forest Financing Fund *(Fondo Nacional de Financiamiento Forestal).*
49 Costa Rica Project Implementation and Completion Report (ICR), pg.17.

communal lands, the PE (Moldsilva) signed subagreements with most of the communes, establishing: (i) the usufruct right of the commune land for a period ranging from 5 to 20 years; and (ii) the transfer of carbon rights' ownership from the communes to Moldsilva. Communes were also given the option of investing in the planting and maintenance activities in return for receiving carbon revenues rather than delegating them to Moldsilva via a subagreement. However, according to the Implementation and Completion Report (2019) of the project, none of the communities chose this option; all of the participating communities chose to delegate their responsibilities and carbon rights to Moldsilva, in recognition of their technical expertise. This was evident from the 95 percent of the communities that signed subsequent agreements with Moldsilva to continue the project activities.

CONCLUSIONS

- ***Where subproject entities' rights to their land are directly linked to the title to ERs, it is important that they are made fully aware of the impact that sale of their land can have on ER title transfer.*** Such subproject entities should also be informed that the PE must be notified about any sale or transfer of their land rights to new owners; and the new owner is aware of the ER project and the title to ERs generated from their land.

- ***Clear and consistent communication between the project entities and participating communities can be helpful in minimizing land title transfer issues.*** As can be seen in the examples provided by the Colombia Bajo Seco Commercial Reforestation Project and the India Agroforestry Project, land title transfer issues such as outdated land titles, abandoned land, and inheritance disputes can not only create delays in the distribution of ER payments but can also pose a risk to the validity of the ER titles being transferred. Therefore, in projects that involve several participating landowners, it may be helpful to ensure the validity of subcontracts through open communication and consistent follow-ups with participating communities through monitoring and supervision. For large-scale programs, this can become an excessively complex issue if a robust system of monitoring and updating contracts is not maintained.

- ***Clear communication from the onset of project activities not only helps to avoid delays or conflicts and prevent problems with ER title transfers; it can also incentivize continued engagement by the participating communities.*** In the Moldova Soil Conservation Project, 95 percent of the landowners signed agreements with the project entity, Moldsilva, to continue carbon project activities after the end of the project. The participating communes were well-informed about their rights, and saw the benefits of selling carbon credits by integrating into CDM.

IX. Beyond Emission Reductions Payments

BioCF results-based initiatives combine the financial returns from the sale of emission reductions (ERs) with the indirect benefits realized through improved livelihoods and sustainable land management practices. Implementation of these ER operations in the land-use sector has yielded a wealth of lessons for similar operations.

This section of the report outlines some of the success stories of projects that were able to realize benefits beyond the ER revenues; contribute to community development and improved livelihoods; and have a positive impact on the environment and agricultural land. It will also highlight examples of some of the projects that have already achieved or are planning to scale up their ER operations.

1. Socioeconomic Benefits

- ***Some of the BioCF projects contributed to the improvement of rural livelihoods through job creation for communities within the project area.*** According to the 2018 World Employment and Social Outlook Report by the International Labour Organization (ILO), although climate change mitigation initiatives will cut jobs from resource-intensive industries, the number of jobs created by carbon offset opportunities like BioCF will be greater than the number of jobs lost. This was evident in BioCF operations, where many new operational and seasonal jobs were created to implement land-use change activities (e.g. plantations), positively impacting rural communities. Approximately 72 percent of the BioCF project activities helped to generate employment for the local communities (Table 3).

- ***Where ER revenue was reinvested in development initiatives such as infrastructure development, social inclusion, capacity building, improved soil productivity, improved yield, and so on, the projects were quite successful, and they incentivized continued engagement in project activities.*** In the communities where BioCF project ER revenues were reinvested for the improvement of community livelihoods (for example, through new business ventures) the carbon operations were appreciated, and citizens realized their benefits. This was evident through continued project activities and consistent reporting of how the communities planned to utilize the revenues to their benefit. For example, the projects in Ethiopia and Niger for the restoration and regeneration of degraded lands enabled participating communities to invest in infrastructure development such as new roads, schools, and a health center in Ethiopia; and new mills in Niger. They also invested in purchasing medical equipment and school supplies. In both cases, the communities remained proactively engaged in project activities beyond the term of the Emissions Reduction Purchase Agreements (ERPAs). Another notable example was the project in Zambia for the implementation of REDD+ and SALM activities to sequester carbon. Prior to the project, poor farming practices such as residue burning had led to rapid depletion of soil nutrients. There was also a general lack of land-use planning and forest management, which was leading to forest loss. After receiving ER revenues, business opportunities through the sale of livestock, new poultry businesses, and the renovation of new schools and offices were created; deforestation was reduced; and soil quality was improved.

- ***Projects that incorporated gender development objectives helped to increase women's participation in project activities.*** However, despite gender-sensitive planning, the participation of women in leadership roles was low, due to cultural norms and a low level of literacy among women. Some

Table 3: Jobs Generated in Some of the BioCF projects

PROJECT	JOBS CREATED	TYPES OF JOBS
Nicaragua Reforestation Project	• 21 full-time staff • 72 seasonal jobs	Seasonal jobs for tasks such as planting, maintenance, weeding, pruning, fire control, thinning, and harvesting
DR Congo Fuelwood and Timber Plantation Project	• 30 permanent jobs • 200 seasonal jobs	Permanent jobs in forest management, and seasonal jobs in the maintenance and plantation phases of the project
Ethiopia Humbo Assisted Natural Regeneration Project	• 16 permanent jobs • 250 seasonal jobs	Permanent jobs as forest guards and workers for grain stores and flour mills. Seasonal jobs were temporary labor during project implementation.

BioCF projects made the participation of women in forest management activities one of their development objectives throughout implementation. For example, in the reforestation project in Brazil, and the Ethiopia regeneration project, there were significant gender components built into the project design that aimed to encourage women to participate in project activities. As a result, in Brazil a large number of women did participate in the production of cloned seedlings for the plantations (De Gouvello et al 2018). In Ethiopia, each cooperative participating in the project had female participation ranging from 12.1 to 39 percent (Thiede 2014). This was particularly crucial, since women are often direct users of the forest through traditional practices such as the collection of fuelwood and nonwood forest products for food, medicine, and fodder (Setyowati 2013).

While embedding gender objectives can be helpful, it is also important to consider local cultural norms. For example, it was noted in the Zambia Landscape Management Project that 52 percent of the participating farmers in the 81 cooperatives were women, but only 6 percent of the cooperatives were led by women (LTS International 2019). Women's participation was strongly influenced by the membership of their spouses; for example, the proportion of women in leadership roles was very low since generally the spouse would be given priority for such roles if both of them were participating.

"Revenues from first verification paid for my daughter's education fee to study medicine and the revenues from second verification paid for her to specialize in pediatrics. Today, she is the first pediatrician from carbon revenue of the region."

Landowner testifies at an event organized by the project implementing agency ONFA (French National Forest Office in Colombia – Andina)

- ***Revenues from ER payments can also facilitate local women-led businesses, and access to education for impoverished communities.*** In the Niger Acacia Plantations project, one of the investment plans from the ER revenues included the establishment of microcredit and financing for women and youth. This will encourage vulnerable communities to create business ventures, and improve livelihoods. And in the Colombia Commercial Reforestation Project, which engaged participating landowners in reforesting lands previously dedicated to cattle grazing, landowners who participated in the project activities were able to use the ER payments toward access to education for their children.

2. Environmental Benefits

- ***The environmental benefits from reforestation activities (increased rainfall, access to new water resources, increased biodiversity) created awareness and appreciation of such benefits within the communities.*** In the Ethiopia Humbo Assisted Natural Regeneration Project, the communities acknowledged the project's impacts on the environment (reduced erosion, increased vegetative cover, improved soil fertility, reduction of pests, and increased water streams). Ultimately, these benefits also impacted the day-to-day lives of the communities: for example, with access to new water sources closer to their homes, children did not have to travel as far to fetch drinking water, which allowed for increased school attendance, and better personal hygiene. According to an interview with members of the communities led by the project entity, World Vision, more than 50 percent of community members realized the environmental benefits that were evident from the plantations, and regeneration of degraded lands. Similarly, as they became aware of the tangible benefits in the project area (increased rainfall, and biodiversity) communities in the Colombia Commercial Reforestation Project became more environmentally conscious. ONF Andina reported that although in the beginning farmers did not have a theoretical knowledge of carbon operations, they were proud to be part of having an impact on a global level from their region.

- ***Project activities helped participants acquire knowledge of technical procedures, learn how to form cohesive groups, and other useful skills.*** Several BioCF projects were piloting operations in developing countries where carbon initiatives had not yet been widely known or practiced. With the help of BioCF*plus* TA funding, these projects were able to acquire knowledge through capacity building workshops that helped them sustain project activities within and beyond the term of the ERPA. For example, during a World Bank mission to monitor the Chile Carbon Sinks Project, the team visited a school to review the environmental education and activities that were being carried out with children in the project area. The students demonstrated their knowledge of birds typical to the area and the importance of conserving the native forests, especially for its function in recharging groundwater. The field trip with the students was also an effective outreach method for spreading awareness within the communities, as those community members then adopted conservation measures initiated by the project.[50]

In other cases, projects gained substantial technical knowledge that can positively impact the land-use sector at large. For example, in the Brazil Reforestation Project, which aims to reforest lands along the banks of hydropower reservoirs, the project entity, AES Tiete,[51]

50 Chile SIF Project Implementation Completion Report, 2017.

51 AES Tietê S.A. is a large Brazilian electrical energy generator that owns and operates 10 hydropower plants, with an installed capacity of 2,651 MW within the state of São Paulo, Brazil.

"Six years ago, a child would be washed maybe every three days. Now they are washed every day. Children also wash themselves at the standpipe. Children and their clothes are cleaner now."

Female cooperative members in Ethiopia project testified in World Vision interviews.

assimilated technical knowledge of how to reforest lands with 400 native species. This was previously considered a major hurdle in Brazil, especially in large-scale reforestation projects using native species. AES's technical know-how was disseminated through technical visits, presentations, and publications by its trained personnel in seedling plantation and management. According to the Carbon Finance Assessment Memorandum (CFAM) document of the project, acquisition of new knowledge and techniques for A/R around reservoirs was the most substantial social contribution expected from the Brazil Reforestation Project.

3. Scalability of Projects Beyond BioCF

- ***Political will, an enabling environment, available funding, and farmers' dedicated interest in a project can facilitate the scaling up of project activities.*** Some BioCF projects have been able to replicate or scale up project activities beyond their involvement or participation in BioCF through the ERPAs. For example, in the Kenya Agricultural Carbon Project (KACP), 68 percent of the farmer groups were interested in sustaining the project activities because they realized that their improved farm productivity and incomes had resulted from improvement of the soil. This motivated the project entity, Vi-Agroforestry, to not only continue supporting the farmers in the KACP project, but to replicate the methodology used in another project ("Mount Elgon Livelihoods") in partnership with Livelihood Venture. This project aims to improve the livelihood of 30,000 farmers through introducing sustainable farming practices, and to increase milk productivity by 30 percent through reforestation of degraded lands on Mount Elgon in Kenya; and this is all thanks to the success of the Kenya BioCF project. It should be noted, however, that scalability of projects requires robust financial resources to implement and supervise.

While private financing can help in countries where public resources are lacking, some countries, such as China, are driving carbon projects forward with strong political will and government resources. This was evident from two Chinese projects in the BioCF portfolio,[52] led by the National Guangxi Forestry Department. Despite being the first A/R projects in the country to be registered under CDM, the technical and financial resources mobilized through the partnership between the Guangxi Forestry Department and the forestry companies resulted in highly efficient preparation, validation, and registration of the project. (For example, validation only took about 5 months, compared to an average of about 10 months for most projects.)[53] The Guangxi Forestry Department worked closely with the forestry companies in allocating funding resources and experienced staff not only to support CDM preparation, but also throughout implementation. This was crucial to the success of the projects.

52 The China Watershed Management and Reforestation Project, and the China Reforestation Project.
53 BioCF Tranche 1 Window 1 Annual Report 2009.

CONCLUSIONS

BioCF has yielded a wealth of lessons learned for future initiatives, as well as benefits for participating stakeholders that include environmental and livelihood improvements, and the acquisition of knowledge. Furthermore, by mobilizing the resources made available through the funds, some of the projects were able to achieve scalability.

Encouraging landowner participation in forestry activities by promoting the long-term benefits, while managing expectations, may help to promote sustainable and climate-friendly land management practices beyond the duration of the project. Several projects created both seasonal and permanent jobs for rural communities. They also built capacity and knowledge that could be transferred beyond the term of the project. Encouraging landowners to participate by communicating the potential benefits of the operations can ultimately lead to continued good practices in forest management, and ultimately the creation of more jobs.

- ***Emphasizing the importance of the potential socioeconomic and environmental benefits, and presenting ER payments as added revenues can help gain and sustain stakeholder participation in the project.*** Projects that promoted ER revenues as an additional incentive, while putting more emphasis on benefits such as additional income from land-use change, were more successful. A robust plan to raise awareness and to direct participants more toward the more comprehensive benefits can help encourage community participation and better implementation of project activities. It is also important to manage expectations through clearly communicating the benefits; misinformation can cause farmer/landowners to either overestimate or underestimate their expectations, and this can have an ultimate impact on their participation in carbon operations.

3. Conclusions

The lessons learned and collected in this study have helped to identify a wide range of issues and challenges, as well as good practices on various aspects of emission reduction (ER) operations, which can lead to either the success or failure of these initiatives. A number of these lessons can be informative for large-scale programs like FCPF and ISFL, as well as other similar initiatives.

The BioCF projects have shown that ER initiatives are very challenging as stand-alone projects, and even more so when they are small-scale in nature. As ER payments can only be accessed when results are generated, such projects need to have enough upfront capital to implement the ER generating activities. Where projects did not have such upfront financing on their own, advance payments or grants helped to some extent, but usually the amounts provided were not enough, and did not help much with ER delivery. Where projects were associated with larger investment programs--like the World Bank investment project financing programs--the upfront financing needed for project preparation, as well as technical capacity needs, were adequately addressed.

In addition to addressing the upfront financial needs, integration into larger programs whose objectives complemented those of the project, helped to further enhance the ability of the project to deliver ERs. This was even more prevalent for large-scale initiatives that involved major investment needs and stakeholder engagement in order to achieve the intended results. Not only can large investment programs help leverage

resources for ER programs; they can also lead to scalability and long-term sustainability since they can be easily mainstreamed into subnational or national ambitions.

Communicating the benefits beyond the ER payments is very important, as has been seen in some of the successful BioCF projects. For project stakeholders, particularly those who are directly involved in implementing the ER generating activities, the benefits have to be tangible: improved livelihoods, income generation, and the like. ER payments should be viewed as additional sources of finance, not as the sole benefit of participation in the project. Where these projects are embedded into larger investment programs, ER payments should also be seen as a source of finance that can be reinvested in project activities that benefit the project stakeholders while also generating more ERs.

Experiences from the BioCF projects have shown that building and sustaining technical capacity is often very challenging, particularly in situations where there is high staff turnover and poor knowledge transfer. Some projects have shown that successful partnerships with academic institutions can help with the problem of high staff turnover, and even more importantly can help to provide cost-effective and efficient monitoring and verification. This is very relevant for large-scale programs, which could leverage local resources by partnering with nearby academic institutions that can integrate the MRV work into their curriculum as internship programs.

Equitable and transparent benefit sharing is very important in results-based initiatives like ER projects. It directly impacts stakeholder engagement and prevents conflicts during the benefit-sharing process. Benefit-sharing arrangements should also be flexible enough to allow for updating during the course of implementation if the previously defined arrangements are impacted by administrative reforms. The case of Albania is very relevant, and it will be even more challenging and complex in the case of large-scale jurisdictional programs like those under the FCPF Carbon Fund and ISFL. Such programs are implemented by government agencies, which often go through administrative changes: elections can result in a total restructuring of the governance structures.

The experience of BioCF has indeed shown the impact of an enabling environment supported

by the BioCF*plus* TA fund. The availability of such resources has helped in piloting innovative projects, since most of the projects had technical capacity issues related to MRV and carbon accounting. Without the TA funding they might not have been able to go through verifications, or even be registered under CDM or VCS. This will be relevant for new large-scale initiatives, because they are also piloting new methodologies and frameworks at the national or subnational level in countries that often have a low level of technical capacity.

We also see the overriding importance of risk management strategies and corrective actions that are taken to mitigate the risk of zero delivery, or underdelivery, of ERs. While ERPA amendments can help to mitigate the risk for the Fund, they have no advantages for the projects. In fact, closer attention should be paid, during the regular monitoring and supervision of activities on the ground, to detect implementation issues early on and take the necessary corrective measures. Of course, sometimes natural hazards are the cause for the failed activities; this cannot always be predicted or dealt with very easily. However, once again, when projects are linked with larger investment initiatives, major issues such as these, which could potentially hamper project delivery can be addressed more easily.

Regular monitoring of land title transfers during project implementation helps to ensure that the ability to transfer titles to ERs is maintained, and to avoid delays in ER payment distribution. Consistent communication between the PEs and communities can be helpful in minimizing land title transfer issues. In large-scale programs that involve a much greater number of project stakeholders and beneficiaries, this monitoring becomes even more crucial.

BioCF project examples underscore the importance of stakeholder engagement and effective communication throughout all of the processes of carbon finance operations. Frequent consultations and clarifications of project objectives, activities, and benefits early in the project cycle can be helpful in managing expectations of the involved communities. In addition, timely and transparent dissemination of information and project results can keep stakeholders updated and can help to maintain community support.

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ANNEX I: Project Summaries

Albania Regeneration Project

Objective: Restoration of 5,357.36 hectares of degraded lands, by assisting with the natural regeneration of vegetation.

Project Background: This project supported a participatory approach within the community to arrive at a common agreement on the selection of sites and their protection from grazing, and facilitates the implementation of the interventions needed to accompany this change. The project was embedded under the larger umbrella of the Natural Resources Development Project (NRDP), a World Bank investment project financing (IPF) project to the government of Albania. Activities financed under NRDP included: (i) protection from grazing, to promote natural regeneration; (ii) supplemental planting to enrich species diversity and to stabilize highly eroded areas; and (iii) silvicultural measures to enhance biomass density. The Ministry of Environment, Forests, and Water Administration and its regional and district directorates were responsible for project implementation and supervision, as well as monitoring, reporting, and verification (MRV). The Forest and Pasture User Associations (FPUA) were responsible for planting, tending to trees, and annual reporting.

Brazil Plantar Reforestation Project

Objective: Establishment of plantations in 11,731 hectares of land, to supply all of the iron production needs in the state of Minas Gerais, located in the Southeastern region of Brazil, with charcoal from renewable wood supplies, instead of GHG-intensive reducing agents.

Project Background: The project areas covered the São Francisco Basin: the main sub-basins are the Paraopeba and Três Marias reservoirs. The project-integrated activities were implemented in response to the Clean Development Mechanism (CDM) incentive, which allowed the project entity, the Plantar Group, to overcome the constraints to obtaining supplies of sustainably produced biomass. The establishment of plantations as a renewable source of energy for industrial needs resulted in a twofold benefit to the climate: (i) generation of carbon stocks and greenhouse gas (GHG) removals by sinks, in addition to those that would occur in the absence of such plantations; and (ii) the use of sustainable sources of biomass in place of fossil fuels and nonrenewable biomass, to reduce GHG emissions in one of Brazil's major industrial sectors, the iron and steel industry. The harvesting of the project plantations established in 2000 commenced in 2007/2008; this project entity was the first of its kind to have 100 percent of its iron production based on renewable charcoal.

Brazil AES Tietê Reforestation Project

Objective: Reforestation of 2,001.2 hectares of riparian areas along the banks of AES Tietê's 10 hydropower reservoirs in the state of São Paulo, with native forest species.

Project Background: The project used a mix of native tree and shrub species, which were selected based on their traditional occurrences in the reforested areas, as well as their ability to provide a long-term sustainable riparian forest habitat. The project entity, AES Tietê S.A., is a large Brazilian electrical energy generator that owns and operates 10 hydropower plants. Between 2001 and 2007, AES Tietê reforested about 1,568 hectares of noncontiguous lands along the reservoirs. The results demonstrated that the riparian areas will only regenerate forest cover through human intervention, as the areas were no longer able to regenerate naturally; therefore, reforestation activities were required.

Chile Carbon Sinks Project

Objective: Reforestation of 2,917 hectares of marginal and degraded "Secano Interior" lands in Regions VII and VIII of Chile.

Project Background: The project was implemented by Fundaćion Chile, a leading nonprofit organization that is devoted to innovation and technology transfer. Through land-use contracts, small and medium landowners received annual payments for the use of their lands, plus 10 percent of the revenues at the time of harvest. The principal goals of the project were to: (i) promote reforestation; (ii) provide an alternative, productive land-use opportunity for small landowners; (iii) support small landowners in converting part of their landholdings into planted forests, thus allowing them to retain their property rights; (iv) reverse and control soil erosion and degradation through planting; (v) enhance biodiversity values, as well the livelihood of local landholders; and (vi) sequester carbon dioxide from the atmosphere.

China Watershed Management and Reforestation Project

Objective: Facilitatation of reforestation for the Guangxi Watershed Management in the Pearl River Basin, by establishing about 3,000 hectares of multiple-use forests with mostly native species, on degraded lands in the Huanjiang and Cangwu counties of Guangxi Province.

Project Background: The reforestation in Huanjiang included sites neighboring the Mulun National Nature Reserve and the Shiwanshan National Nature Reserve, and sites with severe soil and water erosion in Cangwu. The project was implemented separately but linked with a larger umbrella project—the Guangxi Integrated Forestry Development and Conservation Project (GIFDCP)—which supported the monitoring of environmental and social impacts on natural forests, as well as watershed and biodiversity aspects of the Guangxi Zhuang Autonomous Region. The project demonstrated an innovative technical and methodological approach to credible carbon sequestration. It enabled the carbon that was being sequestered by the plantations to act as a "virtual cash crop" for local project beneficiaries. Beneficiaries gained direct benefits from harvesting the plantation for timber and nontimber products, as well as income from the sale of carbon credits, which in turn reduced the threats to natural forests.

China Reforestation Project

Objective: Reforestation of 8,000 hectares of multiple-purpose forests on degraded lands in Northwest Guangxi.

Project Background: The project contributed to controlling soil and water erosion, as well as to restoring degraded lands. Most of the tree species that were planted were native to the region (including a mix of birch, China fir, Chinese red pine, and sweet gum), and some of the area was planted with eucalyptus to meet small timber and fuel wood needs. By bridging the income gap and mitigating financing risk, carbon finance helped the project overcome investment barriers, namely the lack of commercial bank loans available for forestry activities in degraded areas. The project was implemented by the Guangxi Longlin Forestry Development Company Ltd, in association with the Forestry Department of Guangxi Zhuang Autonomous Region (GZAR). It benefited from GZAR's experience in the first CDM A/R project ever registered (the China Watershed Management and Reforestation Project), which was registered in 2006. The project was also developed under the umbrella of the World Bank-financed Guangxi Integrated Forestry Development and Conservation Project.

Colombia Bajo Seco Commercial Reforestation Project

Objective: Reforestation of 4,400 hectares of land traditionally devoted to extensive cattle grazing in northern Colombia, in the lower part of the Magdalena River Basin (Magdalena Bajo Seco).

Project Background: The covered region included six municipalities—Santa Bárbara de Pinto, Plato, Tenerife, Zapayán, Pedraza, and Piñón—and is one of the most deforested areas in the country. The program became the first example of a public-private partnership for the forestry business in Colombia. There has been a shift away from the traditional approach of using donations, loans, or government subsidies for forestry initiatives, to an internalization of forestry as a business. Participating landowners now perceive the forestry initiative as their own business, since they receive the payments for emission reductions.

Colombia Carbon Sink Project

Objective: To restore and increase the productivity of 2,194.8 hectares of degraded land across six municipalities through three interventions that will actively involve, and bring benefits to, the surrounding communities.

Project Background: The project area, located in the savannah landscapes in the northern part of Colombia, in the department of Cordoba, was characterized by soils that were under a significant process of degradation due to exhaustive livestock systems. The Centro Internacional de Agricultura Tropical (CIAT), the Corporación Colombiana de Investigación Agropecuaria (CORPOICA), and the Corporación Autónoma Regional de los Valles del Sinú y del San Jorge (CVS) partnered to pilot the use of silvopastoral and reforestation systems as a tool for arresting the process of land degradation in the coastal plains of Colombia. The first intervention focused on recuperating 492.4 hectares of degraded pastures by establishing forage shrubs and trees for fruit production, which also feeds the animals in the area. This activity was carried out by the Zenu indigenous community, and local cattle ranchers. The second intervention focused on the reforestation of 1,502 hectares of land with rubber trees: this was undertaken by local small-scale farmers who have traditionally used the degraded area for cropping. The third intervention concentrated on reforestation of 200.2 hectares of land with high-value timber species, and is being carried out by local medium-scale farmers.

Colombia Agroforestry Project

Objective: The establishment of forestry and agroforestry systems on 617.15 hectares of natural grasslands; securing their sustainable management with active community participation; and generating ERs from the reforestation activities.

Project Background: This project was located in the subregion of the valley of San Nicolas, which is made up of nine municipalities in the eastern part of the Department of Antioquia, Colombia. More specifically, it was situated in the hydrological basin of the Rivers Negro and Nare. The project implemented a plan for sustainable management of the forest resources in the Antioquia region of San Nicolas through the establishment of forestry and agroforestry systems on natural grasslands, with active participation of the local communities.

Costa Rica Agroforestry Project

Objective: Carbon sequestration through agroforestry practices in small and medium privately owned farms in the Brunca region of Costa Rica.

Project Background: Farmers in the Brunca region worked with a cooperative (COOPEAGRI) to introduce forestry activities on their privately-owned farms. COOPEAGRI is a cooperative of farmers dedicated to agricultural activities such as raising coffee, sugarcane, and cattle. Located in the Perez Zeledon County, the region covered by the project encompassed a total area of 892.42 hectares of rolling hills covered with pastures, coffee, sugarcane, and small patches of forest. The project was promoted and implemented by Fondo Nacional de Financiamiento Forestal (FONAFIFO), which was created by the Costa Rican government to implement a Payments for Environmental Services (PES) to promote reforestation and forest conservation on private lands in the country. The PES program was managed by FONAFIFO; COOPEAGRI provided technical assistance to the farmers participating in the CDM afforestation/reforestation (A/R) project, who individually subcontracted with the PES program.

Democratic Republic of Congo (DR Congo) Fuelwood and Timber Plantation Project

Objective: Conversion of 4,220 hectares of natural grassy savannah into an abundant and sustainable fuelwood supply for charcoal production in the Ibi Batéké region.

Project Background: This project worked with the local population and with farmers to stop the destruction of the natural forests, and to concentrate on planting managed forests. Degraded lands were transformed into a managed forest of acacia, eucalyptus, and other indigenous species that sequester carbon and contribute to the supply of fuelwood for the capital city of Kinshasa. The project was developed by NOVACEL, whose founders are native to the Ibi Batéké region. It integrated agricultural, livestock, and forest production with the agroindustrial production of commodities such as cassava flour, corn flour, and charcoal, resulting in the strong involvement of local communities. BioCF played a pivotal role in enabling NOVACEL to obtain the private sector loans needed to finance the project's upfront investments, and facilitated the participation of a second carbon buyer, Orbeo, a subsidiary of the French conglomerate Société Generale and Rhodia. UMICORE, SUEZ, and AFD (the French Development Agency) financed some of the investment needs for the project, and the United Nations Environment Program (UNEP)'s CASCADE program provided technical assistance. At the end of 2016, due to financial difficulties, all of the obligations of the project were transferred from NOVACEL to a new company called Mushiete & Cie. In addition, Orbeo was incorporated under Solvay Energy Services (SAS).

Ethiopia Humbo Assisted Natural Regeneration Project

Objective: Restoration of 2,700 hectares of a biodiverse native forest through an assisted natural regeneration project, while supporting local income and generating jobs.

Project Background: The project restored indigenous tree species to the Humbo area, a mountainous region of southwestern Ethiopia. The local community has been actively engaged, with seven community cooperative societies managing the regeneration areas, and a system in place to monitor the project's environmental and social issues. The project was the first of its kind in Ethiopia in that it has employed farmer-managed natural regeneration (FMNR) techniques. FMNR techniques enable rural communities to assist with the resprouting of native species by identifying, selecting, and pruning existing tree and shrub root stocks in the soil. The project was jointly implemented by World Vision Ethiopia, Australia, and the community cooperatives.

India Agroforestry Project

Objective: Mobilization of resource-poor farmers to raise tree plantations on highly degraded agricultural lands.

Project Background: The project was implemented in the Indian states of Orissa and Andhra Pradesh, engaging small landholders spread over a total of 1,600 hectares in six districts: the Rayagada, Koraput, and Kalahandi districts in Orissa; and the districts of Visakhapatnam, Srikakulam, and Vizianagaram in Andhra Pradesh. It was implemented by a joint partnership between VEDA MACS Ltd., a cooperative society that addresses issues related to sustainable development in general, and sustainable agroforestry practices in particular; JK Paper Mills Limited (JKPL), as the key industrial partner of the project; and Veda Climate Change Solutions Ltd., a new company created for the purposes of this project. The partners arranged short-term credit to farmers for upfront investment costs and provided subsidized planting materials; they also committed to purchasing the timber at market prices. Long-term credit for small and marginal farmers was also arranged, to help meet the costs of plantation and maintenance.

India Watershed Management and Reforestation Project

Objective: Reforestation of 4,000 hectares of the Siwalik Hills of Himachal Pradesh, in catchment areas for three major rivers: the Ravi, the Beas, and the Sutlej.

Project Background: This project was developed by the government of Himachal Pradesh (the Department of Forests), under the Mid-Himalayan Watershed Development Project (MHWDP) of the World Bank. It was implemented under four guiding principles: (i) adopting native and locally preferred tree species for reforestation (including more than 50 native species); (ii) involving the local Gram Panchayats (GPs), and small and marginal farmers, in reforestation activities that will strengthen the ongoing watershed interventions; (iii) facilitating technical, financial, and capacity development support from MHWDP for reforestation activities; and (iv) distributing carbon revenue to the village communities (GPs and farmers).

Kenya Agricultural Carbon Project

Objective: To promote and implement a combination of Sustainable Agricultural Land Management (SALM) practices within smallholder farming systems, and the generation of GHG removals through soil and tree carbon sequestration.

Project Background: This project targeted smallholder farmers and small-scale business entrepreneurs organized in farmer groups and primary-level cooperatives. The project implemented SALM on 45,000 hectares of land owned by 60,000 smallholders, organized into 3,000 registered self-help groups. It was implemented by Vi Agroforestry, an NGO that has provided agroforestry advisory services to farmers in East Africa for over thirty years. It was financed by the Foundation Vi Planterar träd ("We plant trees"), and the Swedish International Development Agency (SIDA). This project was the first agricultural land management carbon project in the world to successfully issue emission reductions (ERs) under VERRA as a result of the successful implementation of sustainable land management practices. The financial incentive derived from carbon finance served as a catalyst for the adoption of sustainable practices, and complemented the key incentive of the 15-20 percent increase in farmers' yields that has accrued from adoption of SALM practices. The carbon revenues were designed to end as carbon pools become saturated, while farmers continued to register increased yields and incomes from the healthier and more productive soils that resulted from the adoption of SALM. As the targeted farmers were typically poor, with limited assets, a reliable source of financing was required to help them meet the initial costs related to SALM adoption. Under this project, farmers were able to access financing through their Village Savings and Loan Associations (VSLs).

Madagascar Conservation Project

Objective: To implement reduced emissions from deforestation and forest degradation (REDD+) activities in the areas around the Ankeniheny-Zahamena Corridor (CAZ) of Madagascar, in order to provide direct incentives and alternative livelihood activities for local communities.

Project Background: The Madagascar Conservation Project covered 370,032 hectares of Madagascar's humid eastern rainforest, and provides important ecosystem services to both the surrounding area and greater region. CAZ has long been regarded as one of Madagascar's top conservation priorities; numerous studies have catalogued its rich biodiversity. To date over 2,043 species of plants have been identified, 85 percent of which are endemic. It protects the headwaters of eight large rivers that directly supply approximately 325,000 residents with water. By far the greatest threat to the forest corridor is slash-and-burn agriculture, which threatens the long-term existence of the corridor. If this pressure is not alleviated, CAZ will soon disappear, and with it the incredible biodiversity it houses; but also the essential ecosystem services it provides to countless rural families in the area.

Moldova Soil Conservation Project

Objective: To restore the productivity of degraded lands; enhance forest product supplies for local communities; and promote net GHG removals by creating sinks across a total area of about 20,300 hectares spread throughout the country.

Project Background: The project was implemented by the National Forest Agency of Moldova (Moldsilva). It covered degraded lands in the northern, central, and southern regions of the country. Locally adaptive and naturalized species planted along with native species provided a cost-effective way to prevent soil erosion and landslides; stabilize slopes; and generate both wood and nonwood products for rural communities. Experience has demonstrated that the use of locally adapted naturalized species offers the best chance for the first stage of land reclamation and soil stabilization, prior to the establishment of native species, which require better soil conditions. Reforestation on poor and marginal lands was therefore first undertaken with locally adapted nonnative species; secondary plantings were undertaken later using native species. When possible, native species were planted directly on partially degraded sites.

Moldova Community Forestry Development Project

Objective: Creation of new community forests through the afforestation of 10,000 hectares of eroded and unproductive lands; the application of agroforestry practices; and the creation of forest protection belts.

Project Background: This project enhanced GHG removals by sinks; improved forest and pastoral resources at the local and regional level; provided wood to the local population; and contributed to local and regional sustainable development projects. It was implemented by hundreds of local councils, in association with the National Forest Agency of Moldova (Moldsilva), which registered the second-ever A/R CDM project: Moldova Soil Conservation.

Nicaragua Reforestation Project

Objective: Reforestation of 813 hectares of degraded pasture lands near Sapoá and Esperanza with teak and other native wood species.

Project Background: This project contributed to the sustainable development of Nicaragua through reforestation, and helped to generate sustainable wood supplies that reduced pressure on natural forests and served as carbon sinks. The project was developed by Precious Woods Holding AG, a Swiss private agroforestry company that has operations in Brazil, Costa Rica, and Nicaragua. Precious Woods and its subsidiaries already have Forest Stewardship Council (FSC) certification for several of their existing agroforestry activities. In 2014, implementation and management of the project was transferred to Novelteak AG, which is also in the process of earning FSC certification.

Niger Acacia Plantations Project

Objective: Restoration of deforested and highly degraded land in the Sudano-Sahelian zone of the Republic of Niger by empowering rural communities to adopt sustainable agroforestry practices, and by establishing plantations of the native species Acacia senegalensis (Acacia Senegal) on more than 7,000 hectares of land.

Project Background: The project was integrated as an activity under the larger World Bank Community Action Program. It represented the first effort in Niger to establish Acacia Senegal plantations on a large scale in regions where dry forests are unable to regenerate by natural means. The sale of emission reduction (ER) credits from the carbon that is sequestered in the plantations made the project more viable by providing an additional revenue stream that supplemented income earned from the sale of Arabic Gum from the acacia tree. The project was an innovative public-private partnership involving the following parties: Achats Service International (ASI), a dynamic Franco-Nigerien agribusiness; the Ministry of Water, the Environment, and the Fight against Desertification (ME/E/LCD); and the rural communities that benefited from the project through job creation, and by developing their own plantations. Implementation and management of the project was transferred to Novelteak AG, which is also in the process of earning FSC certification.

Uganda Reforestation Project

Objective: Establishment of 2,000 hectares of pine and mixed native species plantations in the Rwoho Central Forest Reserve, grassland areas previously degraded due to deforestation and erosion.

Project Background: This project promoted private and community-based tree-planting initiatives with investor shares. The project design can be easily replicated, and the plan is to extend it across the country to a number of deforested public forest reserves. This project became the first African forestry project to be registered under CDM in August 2009. It was implemented by Uganda's National Forestry Authority (NFA) in association with local community organizations. The Rwoho Environmental Conservation and Protection Association (RECPA) managed 17 percent of the project area within the framework of a collaborative forest management agreement. NFA provided seedlings and technical advice to RECPA, which in return was in charge of protecting the plantations and the remaining patches of natural forest from fire. RECPA also linked the project with local communities.

Zambia Landscape Management Project

Objective: The main objectives of the project were twofold: (i) to sustainably increase smallholder farmer agricultural productivity, income, and welfare; and (ii) to reduce uncontrolled forest loss and degradation, and increase net forest cover.

Project Background: The project stretched across nine chiefdoms in five districts in the Eastern Province of Zambia: Chikomeni, Chikuwe, Jumbe, Luembe, Magodi, Mwasemphangwe, Mwape, Nyamphande, and Zumwanda. Community Markets for Conservation Ltd. (COMACO) is a Zambian social enterprise that uses a model for rural development that links 107,000 smallholder farm families to market incentives and value chains to achieve poverty reduction; sustainable land management; and conservation impact at a landscape scale. The project consisted of two components: (i) the Sustainable Agricultural Land Management (SALM) component; and (ii) the REDD+ component. The purpose of the project was to promote widespread adoption of agricultural practices that increase food production per unit area, and farmers' incomes. This approach taught farmers techniques such as how to plant leguminous nitrogen-fixing trees or shrubs alongside crops; residue management such as mulching, rather than burning branches, needles, and logs on the ground; and reduced tillage, all practices that optimize carbon sequestration. The second part of the project focused on reducing forest loss, protecting and expanding areas under the natural forest, and conserving biodiversity. This was achieved primarily through land-use planning and the creation of Community Conservation Areas (CCAs), coupled with the sustainable production of nonextractive forest products like honey and mushrooms.


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