Building Forest Carbon Projects

A Step-by-Step Guide

FOREST TRENDS

the katoomba group

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investment in nature

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Building Forest Carbon Projects:

A Step-by-Step Guide

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***A Note about this Version**

This is a streamlined summary of the key steps in project development aiming to provide high-level initial guidance to project developers. This step-by-step guide is part of a larger compendium to be launched in mid-2011, which will also provide additional in-depth guidance on key thematic issues. An appendix to this document provides overview summaries of forthcoming thematic chapters which will be referenced throughout the text.

This version is also being released for the purpose of gathering feedback from experts, project developers and potential users. Please send any suggestions to improve this document to Jacob Olander (jolander@ecodecision.com.ec) or Johannes Ebeling (ebeling.johannes@gmail.com).

Forest Trends' mission is to maintain, restore, and enhance forests and connected natural ecosystems, life-sustaining processes, by promoting incentives stemming from a broad range of ecosystem services and products. Specifically, Forest Trends seeks to catalyze the development of integrated carbon, water, and biodiversity incentives that deliver real conservation outcomes and benefits to local communities and other stewards of our natural resources.

Forest Trends analyzes strategic market and policy issues, catalyzes connections between producers, communities and investors, and develops new financial tools to help markets work for conservation and people.

www.forest-trends.org

The Katoomba Group seeks to address key challenges for developing markets for ecosystem services, from enabling legislation to establishment of new market institutions, to strategies of pricing and marketing, and performance monitoring. It seeks to achieve the goal through strategic partnerships for analysis, information sharing, investment, market services and policy advocacy. The Katoomba Group includes over 180 experts and practitioners from around the world representing a unique range of experience in business finance, policy, research and advocacy.

The **Katoomba Ecosystem Services Incubator** provides comprehensive support to bring promising ecosystem services projects to the point where they can access markets or other sustainable finance. The Incubator focuses primarily on communities and small to medium landowners, a sector that plays a critical role in providing ecosystem services but faces particular barriers and challenges to finance, providing an integrated suite of support that can include technical, business and legal resources.

www.katoombagroup.org

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Table of Contents

Overview

Developing forest carbon projects is complex and often daunting for project proponents, whether they are from the private sector, civil society organizations or government agencies. Successful project development requires complying with rigorous requirements for analyzing and documenting carbon benefits as well as an array of legal, business, community relations issues – in addition to the challenging work of carrying out reforestation, forest and land management activities that go beyond business as usual – in order to create carbon benefits.

This document aims to provide streamlined guidance to project proponents and developers[1] to help navigate these challenges. It focuses on outlining key steps and components of developing a forest carbon project that can produce marketable emissions reductions under what are currently the most widely utilized carbon standards: the Voluntary Carbon Standard (VCS), the Clean Development Mechanism (CDM), and, as co-certification, the Climate, Community and Biodiversity Standards (CCBS).[2]

Forest carbon project development requires a set of rigorous methodological approaches to quantify carbon benefits that will be elaborated in a Project Design Document (PDD) and are independently validated and later verified for issuance of certified carbon credits. A significant portion of the steps in this document provide overview guidance on these technical elements. However, project development requires work far beyond the challenges of compiling a PDD and going through at least two third-party auditing processes; it also encompasses crucial business, legal, environmental, and community relations dimensions. This guide attempts to outline the key actions and considerations to ensure a successful and sustainable project.

A considerable amount of guidance information is already available for forest carbon project developers, and this guide aims to complement rather than replace these,[3] referring project proponents to existing detailed tools and resources for specific steps of the project development process. This guide also recommends where to seek specialized guidance and support. An outside perspective can be vital for ensuring realistic project aims and design aspects, and expert advice is often indispensible in light of the complex and fast-changing nature of methodologies, standards and market demands.

There continues to be considerable uncertainty in the policy and market environment for forest carbon projects. Reforestation projects are still excluded from key regulatory markets and international REDD+

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[1] The term “project proponent” has specific legal connotations in the language of certain standards, and “project developer” is often used to refer to a commercial entity. However, these terms are used interchangeably in this document to refer to the organization undertaking the development of a forest carbon project.

[2] Other standards, e.g., the Plan Vivo Standard, which may provide alternative project development and financing options, are also referred to but not discussed in detail.

[3] In addition to specific tools and references mentioned throughout this guide, valuable comprehensive guidance for project developers can also be found in other publications including: 1) Calmel, M., A. Martinet, N. Grondard, T. Dufour, M. Rageade, and A.Ferté-Devin. 2010. REDD+ at project scale: evaluation and development guide. ONF International; 2) Ingram, J. C., T. Stevens, T. Clements, M. Hatchwell, L. Krueger, R. Victurine, C. Holmes and D. Wilkie. 2009. TRANSLINKS: WCS REDD Project Development Guide, Wildlife Conservation Society and USAID; 3) Pearson, T., S. Walker, and S. Brown. 2006. Guidebook for the Formulation of Afforestation and Reforestation Projects under the Clean Development Mechanism. ITTO Technical Series. Yokohama, Japan, International Tropical Timber Organization.

negotiations remain inconclusive. Despite considerable enthusiasm for REDD+ and other forest carbon projects amongst many stakeholders, the actual volume of forest carbon offset transactions remains relatively small. In addition, the future of projects in future REDD+ schemes is far from clear. Recent trends in regulatory proposals on the level of the UNFCCC and in the United States increasingly point towards national-level emissions reductions and government-mediated forms of financing. How and if projects may "nest" within government-led frameworks is undefined and leads to considerable uncertainty for project proponents and investors.

We nevertheless believe that the approaches to effectively generating and quantifying carbon benefits that are currently used for projects will continue to be relevant. Afforestation and Reforestation (AR) activities may continue as discrete projects or may eventually be integrated as part of an international REDD+ approach but will nevertheless serve as important precedents for evolving national systems. Projects are likely to form an important component of many national systems, providing a crucial, tangible entry point for local benefits, private investment, and bilateral support measures. In addition, there are no indications that voluntary carbon markets would disappear in the presence of regulatory schemes. In fact, given the uncertainty regarding when and if regulatory schemes might be created and to what extent they will incorporate carbon credits and market elements, voluntary markets remain for now the most certain market outlet. With this in mind, we have focused this guide principally on the approaches required by the CDM and the VCS, as the leading standards and methodological pioneers for forestry under the Kyoto and voluntary markets, as well as the CCB Standards, which provide assurance of significant additional social and biodiversity benefits.

This guidance is presented as a series of logically sequential steps. Projects will vary in their approaches and requirements, however, and many activities will need to occur in parallel or in a slightly modified sequence. Similarly, it may be advantageous to break down certain activities into parts which can support project evaluation, the design of activities and stakeholder engagement early on while leaving some more costly components for when major roadblocks have been cleared.

Box 1: VCS, CDM and CCB Resources Frequently Referred to throughout this Guide

The following key documents of the VCS, CDM and CCB Standards are commonly referred to throughout the guide. Project proponents should be aware, however, that respective guidance, document templates and policy documents are updated periodically particularly under the VCS and CDM. Therefore, the below policy update sections should be regularly consulted. In addition, it is usually indispensible to seek specialist advice in order to be aware of and comply with any recent updates and changes.

Voluntary Carbon Standard (VCS):

All VCS program documents, including program and process guidance and templates are available at http://www.v-c-s.org/policydocs.html. This includes in particular:

- VCS 2008. Voluntary Carbon Standard Guidance for Agriculture, Forestry and other Land Use Projects
- VCS 2008. Voluntary Carbon Standard Program Guidelines 2007.1
- VCS Policy Announcements, including updates to guidance and documentation, can be found at http://www.v-c-s.org/policyannounce.html.

In addition, it should be noted that the VCS is currently undergoing a broad update and consolidation which also affects forestry project guidance and procedures. The VCS Program 2011 will come into effect in 2011, and an overview of the planned changes can be found at http://www.v-c-s.org/vcs2011.html.

Clean Development Mechanism (CDM):

The official portal to all CDM rules, procedures, methodologies, tools etc., including updates, clarifications and guidance is http://cdm.unfccc.int/Reference/index.html.

A very useful synthesis and explanation of relevant terms, procedures and tools is provided by Baker McKenzie's CDM Rulebook which also includes updates on recent policy developments. Available at :http://cdmrulebook.org/home.

Climate, Community and Biodiversity (CCB) Standards:

Climate, Community and Biodiversity Alliance. 2008. Climate, Community and Biodiversity Project Design Standards, Second Edition. Available in English, Chinese, French, Japanese, Portuguese, Spanish, and Vietnamese at http://www.climate-standards.org/

Overview of Steps

1. PROJECT IDEA AND PRELIMINARY ASSESSMENT
2. PROJECT DESIGN AND PLANNING
3. DEVELOPING A PROJECT DESIGN DOCUMENT
4. REVIEW PROJECT ACTIVITIES AND DEVELOP PROJECT IMPLEMENTATION STRATEGY
5. FINALIZING FINANCING AND INVESTMENT ARRANGEMENTS
6. APPROVALS, VALIDATION AND REGISTRATION
7. IMPLEMENTATION AND MONITORING
8. VERIFICATION AND ISSUANCE

Abbreviations

AFOLU	Agriculture, Forestry and Other Land Use
AR	Afforestation and Reforestation [CDM project category]
ARR	Afforestation, Reforestation and Revegetation [VCS project category]
CCB	Climate Community and Biodiversity [Alliance or Standards]
CDM	Clean Development Mechanism
CER	Certified Emission Reduction [CDM]
DNA	Designated National Authority [for the CDM]
EIA	Environmental Impact Assessment
FPIC	Free, Prior and Informed Consent
GHG	Greenhouse Gas
IFM	Improved Forest Management
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval [CDM]
PD	Project Description [VCS]
PDD	Project Design Document [CDM]
PIN	Project Idea Note
PoA	Programme of Activities [CDM]
REDD	Reducing Emissions from Deforestation and Degradation
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Unit [VCS]

1. Project Idea and Preliminary Assessment

1.1 Project Conceptualization

Project proponents need to define from the outset what the project's objectives are, what the activities will be to achieve these objectives, and where the project will take place. They also need to identify the critical project participants and partners to implement activities and reach objectives.

While it would seem obvious, defining what the project will do to enhance or maintain forest cover and biomass should be seen as the very first step for designing a carbon project. A surprising number of project proponents embark on a complex project-design process focusing on carbon accounting (and potential carbon revenue), without having thoroughly defined what the project will actually do to create underlying carbon benefits that can then be measured and monetized.

A key conceptual and practical distinction in this regard is between the project activities that generate carbon benefits – i.e., planting trees, conserving forests, improving forest management – and the technical design component – i.e., calculating and documenting the carbon benefits created by the project activities and getting them certified under a specific standard. In addition, there may be an 'underlying project' that goes beyond these components and is linked to proponents' broader objectives (below). This is true of integrated conservation or rural development projects and may also hold for commercial enterprises that may involve components (e.g., timber processing) which are not integral to the 'carbon project' but nevertheless important to the overall enterprise. More important than terminology is the realization that a 'carbon project' involves more than quantifying carbon benefits, and this has to be kept in mind throughout project design and feasibility assessments.

1.1.1 Clearly Stating Objectives

For all forest carbon projects an essential key objective will involve either increasing carbon stocks or reducing carbon stock losses. However, there will almost always also be other objectives, more closely related to the core mission of the organization proposing the project, for which carbon finance is a valuable tool. These could relate to rural development and poverty alleviation aims, the protection of biodiversity, or generating corporate revenues.

In any situation, the creation of economic returns, whether for local resource holders or private investors, or both, will feature as a key component of project objectives and is needed to ensure long-term viability of the project and its overall sustainability. Economic returns need not exclusively arise from the sale of carbon credits. Though some restoration or conservation projects may be focused on carbon as the primary or sole source of revenue, aiming to create more than one revenue stream can lead to a much more resilient and attractive project setup (e.g., through the sustainable production of timber in an AR, REDD, or IFM project).

1.1.2 Preliminary Definition of Project Activities

What underlying activities will achieve project objectives? At this early stage, not all details will be fully defined, but project proponents should be as comprehensive as possible in defining key project interventions that will lead to emissions reductions or removals, including consulting potential participants and seeking outside advice. In principle, several different types of project activities may be combined in a single project description under the VCS, though each will require application of distinct methodologies. In general, projects with a single activity type are more straightforward in terms of technical design and validation.

Afforestation and Reforestation (AR) Projects

AR refers to planting trees or otherwise converting non-forested to forested land.[4] Afforestation refers to establishing forests on land that has historically not had forest cover, while reforestation refers to lands that had been deforested, generally prior to a specific cut-off date. At a minimum, considerations are likely to include:

- Assessing available areas for reforestation, with an eye to (1) favorable geographic and ecological characteristics, (2) relatively secure land tenure, and (3) eligibility criteria of the target standards. How many hectares could the project realistically cover, and where are lands located?
- Describing species mix and planting arrangements taking into account the objectives of effective carbon sequestration as well as other aims, such as producing timber or generating biodiversity benefits;
- Determining overall management and silvicultural approaches, including possible harvest regimes.

Reduced Emissions from Deforestation and Degradation (REDD) Projects

REDD projects aim to avoid the conversion of forests to non-forested areas (deforestation), or to avoid activities that reduce their carbon stocks without leading to outright conversion (degradation). It is worth noting that the VCS makes a distinction between degradation and logging that is legal vs. illegal. Only illegal degradation and logging form part of the REDD category, while areas that have been designated or approved for logging by regulatory bodies fall into the Improved Forest Management (IFM) category (described below). These considerations are likely to include:

- Analyzing key drivers and agents of deforestation as the basis for describing the specific actions – within the control of the project proponent and potential partners – that will be implemented to address these deforestation pressures. Try to be as specific and realistic as possible regarding the likelihood of certain interventions to influence deforestation drivers and regarding the capacity of your organization and partners to implement these.

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[4] AR is defined under the CDM as the "direct human-induced conversion of non-forested to forested land through planting, seeding and/or the human-induced promotion of natural seed sources" on lands where no forest has existed for 50 years (afforestation) or where deforestation has taken place more recently but prior to 1989 (reforestation) (16/CMP.1, Annex, paragraphs 1(b) and 1(c)). Under the VCS, Afforestation, Reforestation and Revegetation (ARR) is defined as "establishing, increasing or restoring vegetative cover through the planting, sowing or human-assisted natural regeneration of woody vegetation to increase carbon (C) stocks in woody biomass and, in certain cases, soils." (VCS 2008: 9)

For example, what sort of alternative agricultural production systems, conservation area management, incentive payments, land titling, land or concession acquisition, etc. will be put in place to lower deforestation or degradation pressures?

- Developing a causal model and a systematic driver-agent-analysis which can provide a useful framework for a preliminary description of pressures and help elaborate counter-measures.

Improved Forest Management (IFM) Projects

IFM projects seek to actively improve forest management to maintain and/or increase carbon stocks in forest areas or remaining forests. At a minimum, considerations are likely to include:

- Analyzing key drivers of degradation or unsustainable forest management;
- Describing the specific actions, within the control of the project proponent and potential partners, that will counter degradation pressures and/or lead to improved forest management. This could include, for example, extension of rotation length, reducing logging damages through improved road planning, increasing conservation set-aside areas , controlling illegal logging, introducing practices to enhance regeneration, etc.

1.1.3 Preliminary Determination of Project Scale, Area and Boundaries

At this stage, project developers should aim to clearly identify the scale and location that will be subject to project interventions (reforestation, improved forest management and/or REDD). Although project boundaries are likely to be modified over the course of project development, landowner outreach, land acquisition, and eligibility criteria of specific standards and methodologies, a preliminary and conservative estimate of project boundaries and size provides an essential starting point. Project areas need to be under the control of the project proponent to implement activities.

Existing forest carbon projects range from small – several hundred hectare reforestation efforts – to large – REDD projects covering hundreds of thousands of hectares or more. The voluntary market and carefully crafted partnerships may provide a niche for even tiny projects. It is important to consider, however, that transaction costs of project development (e.g., validation, monitoring, verification and market engagement that typically cost hundreds of thousands of dollars per project) will prove prohibitive for many small projects. While there is no fixed lower bound, most market intermediaries and investors look for projects offering 10,000-20,000 tCO_2/year at a bare minimum. This means, for example, that it will be difficult for AR projects covering less than a few thousand hectares to be economically viable, especially if slow-growing tree species are used. This size barrier might be overcome for some projects if considered as part of a Program of Activities (PoA) or aggregated set of projects; however, at the time of this writing there are no approved PoAs for forestry projects as these have proven very complex even for straightforward project types.[5]

[5] California's Climate Action Registry is developing rules for the aggregation of small forestry projects, though initial applicability will be limited to North America

1.1.4 Defining the Key Project Participants

Projects are likely to involve multiple participants for different phases and activities. These include groups involved in implementing project activities (e.g., farmers engaged in improved agricultural practices and an NGO introducing new techniques and coordinating training efforts), as well as land and/or forest owners. For many REDD projects, participants will also include neighboring populations benefiting from current land uses and deforestation.

Project development prior to implementation typically involves a number of different entities (discussed again in more detail in Section 2.3). It is important to determine the leaders and partners for each segment (of design, coordination and implementation of strategies and activities) so that the most competent partners implement parts of the project that may be outside the core capacity of your own organization (e.g., certain forestry or agricultural activities).

1.2 Draft Project Idea Note (PIN)

A Project Idea Note (or "PIN") is a summary description of a proposed project and is commonly used as an initial summing up of the project and is useful for engaging governments, investors and technical support. It should be noted that developing a PIN is neither a formal requirement under the VCS or CDM, nor does it have to follow any particular format. In some countries, however, a PIN is required by the Designated National Authority (DNA)[6] for issuing a formal Letter of Approval required for CDM projects or to secure an early Letter of Endorsement which may be useful to indicate conditional government support for a project when engaging with potential investors. A Letter of Endorsement may also provide additional credibility for voluntary market projects, which do not otherwise require any formal government approval.

The PIN should be considered as a valuable tool for project proponents and others to review basic assumptions about the project. It should reflect all the elements highlighted above (project objectives, activities, and participants), as well as:

- *Characterization of the baseline:* What, realistically, would happen without the project? Who are actors and what are the driving forces of land use and land-use change? For REDD: Is the process primarily one of degradation, deforestation, or a sequence of degradation leading to deforestation? To the extent possible, describe and substantiate this scenario with data on historical degradation or deforestation trends in the project area or its vicinity. Note any recent changes in land-use trends, e.g., deforestation trends in the last ten versus five years. Be careful to critically re-examine common

[6] A Designated National Authority, under the CDM, refers to the official government entity granted responsibility to authorize and approve participation of CDM projects and in particular to review their contribution to the country´s sustainable development. A list of DNAs can be found at http://cdm.unfccc.int/DNA/index.html.

perceptions of land-use and environmental degradation trends and try to find objective evidence for such developments.

- *Estimate of forest carbon stocks or sequestration potential:* What are carbon stocks of any existing forests on project lands (differentiate intact and degraded forests or different forest types)? What are carbon accumulation rates of planted trees or regenerating forests? This information should ideally be based on available data from the project site or similar forests or plantations. In the absence of local data, use IPCC default values and, for AR projects, potentially consult existing carbon calculators (see Box 2).
- *Preliminary estimate of carbon benefits*: This refers to the differential between baseline (without-project) and project scenario, i.e., net carbon losses or gains. What is the realistic impact of the proposed project activities in terms or reducing emissions and on what time-scale? How fast can planting activities be launched and scaled up? Try to be conservative and realistic in your assumptions – overly optimistic calculations and inflated objectives are unlikely to convince investors or other stakeholders; a cautious and well-documented argument is more likely to impress.
- *Additionality:* What are the arguments for claiming that comparable project activities or carbon benefits would not have happened in the absence of a carbon project? Is the expectation of carbon revenues truly vital for implementation of activities?
- *Social and environmental impacts:* What are likely key impacts on local populations and ecosystem services? How will potential adverse impacts be managed and mitigated? How will any economic benefits be allocated? These questions can be important arguments for convincing certain types of stakeholders and investors to become engaged in the project; be brief and objective in laying out these aspects.

A commonly used PIN format has been developed by the World Bank's BioCarbon Fund (see Box 2). More important than the specific format, however, is a succinct and substantiated summary of the above aspects that is easily accessible for the target audience. Many DNAs have also prepared guidance tools and can provide support for project developers.

The elaboration of a PIN should not lead project proponents to believe that project feasibility is assured. A critical and rigorous feasibility assessment needs to be carried out (see next step) before significant resources are committed or any firm engagements made with other parties. A PIN should only be shared with potential investors and government authorities once a feasibility assessment has been concluded with a positive outcome, and in many cases a PIN should only be drawn up at this stage. On the other hand, many of the preliminary assessments carried out while developing a PIN can later be used in a more thorough feasibility analysis.

Box 2: Useful Resources for PIN Development and Feasibility Assessment

Default values for carbon stocks and sequestration potential: Annex 3A.1 of the IPCC Good Practice Guidance for Land-Use, Land-Use Change and Forestry (IPCC 2003).
http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/App_3a1_HWP.pdf

USAID Forest Carbon Calculator Tool: An online tool designed for providing a rough estimate for carbon benefits of different project types (reforestation, REDD, forest management, agroforestry) using drop-down menus and project-specific details.
http://winrock.stage.datarg.net/gcc/login.aspx

CO2FIX: A forest carbon sequestration software package developed by several research institutions with input data for a range of commercial timber species in tropical and temperate countries.
http://www.efi.int/projects/casfor/

A detailed project feasibility assessment template used by the Katoomba Incubator is available at: http://www.forest-trends.org/~foresttr/publication_details.php?publicationID=2550. For an example of this feasibility assessment in practice, see a study from Uganda available at:
http://www.forest-trends.org/publication_details.php?publicationID=2549

A feasibility screen developed by CCBA and SocialCarbon for REDD projects is available at:
http://www.climate-standards.org/projects/redd.html

ENCOFOR developed spreadsheet-based decision support systems for pre-feasibility and feasibility assessments focused on CDM AR projects: http://www.joanneum.at/encofor/tools/tool_demonstration/prefeasibility.htm and http://www.joanneum.at/encofor/tools/tool_demonstration/feasibility.htm

The VCS Tool for Non-Permanence Risk Analysis can provide a very useful framework for identifying key issues for project performance and long-term viability at an early stage: http://www.v-c-s.org/docs/Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination.pdf. This tool is being updated with the latest status available at:
http://www.v-c-s.org/afl.html and http://www.v-c-s.org/policyannounce.html

Additionality is assessed following a series of logical steps in specific tools under the VCS and CDM:

- Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, available at:
  http://www.v-c-s.org/tool_VT0001.html
- Tool for the Demonstration and Assessment of Additionality in AR Projects, available at:
  http://cdm.unfccc.int/EB/Meetings/021/eb21repan16.pdf

The BioCarbon Fund developed a PIN template for AR projects, available at:
http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=7110.

The UN Industrial Development Organization (UNIDO) provides a comprehensive toolbox for feasibility assessments: Behrens, W. & Hawranek, P.M. 1995: Manual for the Preparation of Industrial Feasibility Studies, Vienna, 1995.

Designing a causal model of a project's social impacts and a driver-agent-analysis for land-use trends can help examine whether the preliminary project activities match what is needed to achieve project objectives. Questions related to financial and legal feasibility are addressed in more depth in chapters and formal methodological requirements in chapters.

1.3 Conduct a Thorough Project Feasibility Assessment

There are many challenges to preparing a feasible carbon project. Carbon prices remain generally low while the international regulatory framework for forest carbon activities is being negotiated, and only a subset of forest carbon projects are truly viable. As well, forest carbon methodologies are written primarily for specific circumstances and may require such exacting accounting and monitoring approaches that they can only be implemented in certain situations. Most importantly, beyond financing and carbon accounting demands, implementing sizeable reforestation activities and tackling deforestation and degradation trends are ambitious objectives in and of themselves.

For these reasons, before embarking on the next steps in project design, it is essential to conduct an initial assessment of project potential, ideally with independent external support. A solid feasibility analysis can add value for project proponents, increasing investor confidence. This is not simply a formal step in the project cycle but rather a key decision point and an opportunity to pause and step back from the initial project idea to take an open-minded and critical look at all of its aspects. Designing a project for carbon finance is usually a lengthy and expensive process that is likely to generate significant stakeholder expectations, whether from communities, government officials, donors or investors. In addition to more visible external costs, engaging key human resources in a lengthy and complex project development process creates significant challenge for any organization. Before continuing down this path it is therefore worth reviewing carefully one's assumptions and possible challenges.

We suggest, where possible, involving an independent person or entity for a (pre-) feasibility assessment, both to bring in additional technical and market expertise and to provide some valuable outside perspective. Many project proponents, seeking finance for rural development or conservation objectives at a specific site, see their project through the lens of their broader objectives, potential and needs, but may minimize or ignore some of the particular requirements, constraints or limitations of forest carbon projects. This can be an important moment for a "reality check" to review whether a project is likely to be viable. Not every project will be feasible, and if this is the case, realizing this sooner rather than later is very valuable.

For community-based projects, feasibility assessment should also involve consultation and review of assumptions and preliminary outcomes with local stakeholders. Although the changeable nature of project specifics can present challenges, a transparent and iterative discussion of project benefits, risks, uncertainties and overall design, can be an important way for building shared understanding of project possibilities and to manage unduly high expectations.

Projects should be conservative and run sensitivity analyses on key assumptions. Initial estimates should always strive to be conservative, and projects that are only marginally viable under initial assumptions are unlikely to survive further scrutiny and development.

Three recurring pitfalls are:

- *Initial overestimation of project scale*: Projects seem to commonly suffer a process of shrinkage from initial conception to final validation and execution. Emissions and sequestration numbers typically need

to be scaled down as baseline estimates are revised, carbon stock measurements improve and discounts are applied for leakage and risk buffers. Perhaps more surprising but nonetheless common is that project areas need to be revised downwards as key stakeholders are consulted, land measurements and surveys are completed, and non-eligible areas are excluded.

- *Optimistic assumptions about carbon finance:* Over-estimations in terms of project size and carbon benefits obviously translate into the risk of over-estimating potential carbon revenues. In addition, the feasibility assessment must consider the preferences and likely demand from forest carbon buyers, which are a very small segment of the overall carbon market. Project proponents commonly focus on the higher end of carbon prices that may exist in different markets (e.g., the price of non-forestry CERs or even EU Emission Allowances) and simply assume their project would fall into this niche, count on uncertain future price increases or base their financial projections on forward purchase of credits at full price - a very uncommon practice. In most cases, carbon credits cannot be counted on as the sole project revenue stream; they must instead be viewed as one of several financial benefits. In addition, projects typically face a finance gap, with significant costs in the start-up phase and carbon credits generated after several years and only with a gradual start in optimal circumstances. Frequently, projects face further delays in generating revenue if the development, validation and verification processes take longer than projected. Additional information is provided in Sections 2.4 and 5.
- *Not defining the project activities clearly:* Any project needs a clear plan of action for successful execution and to attract investors. Poorly-specified activities are especially an obstacle in many REDD projects which implicitly assume that the key constraint for reducing deforestation is simply lack of funding. Although a critical component, carbon finance needs to be translated into a clear strategy for channeling resources to the right stakeholders and the right set of activities to effectively address deforestation pressures. In the case of AR, project proponents frequently underestimate the financial resources and technical capacity needed to realize reforestation at a scale that makes a project viable in terms of sufficient sequestration volumes over the medium term.

Some projects that may struggle with transaction costs and methodological requirements under the VCS or CDM may want to explore other options. For example, a project with agroforestry activities on 500 hectares of small-holder land is unlikely to ever recover current transaction costs under the VCS but it may well be viable under standards such as Plan Vivo. When choosing alternative standards, however, proponents should be aware that the market segment of potential buyers and funders will also shift and, most likely, shrink.

While every project setting will be somewhat unique, there are some questions that will be common to almost any forest carbon project. A comprehensive list of screening questions is included in the Incubator Feasibility Assessment template, which is provided along with a list of other useful tools (see Box 2).

1.4 Re-Assess and Adjust Project Design

The previous steps will allow project proponents to define their project more clearly and to determine if it is in fact likely to be viable, before investing far more effort and resources. A significant number of projects spurred on by the current enthusiasm for carbon finance as a solution for poverty alleviation and forest conservation continue to invest resources in projects that in all likelihood will not meet requirements of carbon markets and/or standards. It is important to realize that not every project that produces net Greenhouse Gas (GHG) benefits is a viable carbon project under the current standards, market and policy conditions.

In other cases – the focus of the remainder of this guidebook - carbon finance can provide a powerful resource. Nevertheless, based on a feasibility review it may be necessary to revise the project concept in an updated PIN – including definition of project activities, partners, boundaries and sites –to reflect necessary adjustments and to better fit applicable standards.

Keeping track of feasibility and re-evaluations: In many cases it may not be possible to confidently conclude on a project's feasibility because important data items are missing (e.g., on applicable baseline data) or because important roadblocks and risks cannot be judged well at this early stage (e.g., obtaining permits, engaging partners for core project activities). It is therefore advisable to identify key risks and uncertainties that may endanger the viability of the project and that may only become apparent at a later stage and to consistently keep track of any new insights and developments throughout the further process. This will help to realize early when a project strategy needs to be modified or when a project turns out to be non-viable.

2. Project Design and Planning

Over the course of preceding steps, project proponents should have developed a clear preliminary design for their project, identified key gaps and made an informed decision to continue to invest in project development based on positive results from feasibility review. They can now move on to the concrete and detailed phases of project planning and design.

The following steps of project planning and design include the technical and procedural elements required to prepare a project document for external validation. In addition, they encompass a broader range of issues relating to project activities, legal matters, finance and stakeholder engagement.

This phase, leading up to securing finance and validation – and achieving *both* of these is required for success – will demand significant resources and time as well as patience and perseverance. Securing adequate finance for the planning and design phase is a challenge that must be addressed early on.

2.1 Define a Target Market or Standard

Based on the project's characteristics, projected scale of carbon benefits, location, and fit with available methodologies, project proponents need to define which standard to use, and in consequence, which market segment they are aiming for. This decision will impact a number of further steps, most importantly regarding formal project design (PDD) and targeting buyers and investors, but similarly regarding conversations with regulatory authorities and interaction with auditors and standard-setting organizations.

This document is primarily focused on the CDM, the VCS, and the CCB Standards as the predominant standards applied to forest and land-use projects in the developing world. The CDM allows projects in developing countries to produce credits for the Kyoto markets and has laid the groundwork for rigorous forestry methodologies, albeit limited to AR projects. The VCS is by far the most preferred carbon accounting standard by buyers in the voluntary market, while the CCB Standards are the most prominent standard for ensuring social and biodiversity co-benefits[7].

Standards development is a fast-evolving space and there are a number of other standards that may meet the needs of a variety of projects and buyers (see Box 3). While these other standards will vary in some specifics, many of the steps described in this guide will continue to apply as good practice across a variety of other standards. Keep in mind that the geographical applicability and eligible project types are limited for some standards. The choice of a standard and target market is a complex one; for this reason it is advised to consult the market guidebooks listed in Box 11, Section 5.1 and to seek specialist advice.

[7] EcoSecurities 2010: 25

Smaller-scale community-based projects that may struggle with VCS or CDM transaction costs but are otherwise solidly designed and generate clear carbon benefits may want to consider the Plan Vivo Standard (see Box 3).

Box 3: Other Standards for International Forest Carbon Projects

American Carbon Registry (ACR) Forest Project Standard
The ACR is an enterprise of Winrock International and publishes standards, methodologies, protocols and tools for project accounting. The ACR's Forest Carbon Project Standard is available for AR, IFM and REDD projects globally. It issues Emission Reduction Tons (ERTs) to projects. http://www.americancarbonregistry.org/

CarbonFix Standard
The Germany-based CarbonFix Standard (CFS) is limited to AR projects. CFS uses its own methodology which is based on IPCC good practice guidelines and aligned to a large extent with the CDM. Projects are issued Voluntary Emission Reduction (VERs) on an ex-ante basis upon validation, which are later verified.
http://www.carbonfix.info/

Climate Action Reserve (CAR)
The CAR program emerged from the California Climate Action Registry (CCAR), a California-based non-profit organization overseeing emissions reporting and offsets in that state. CAR's Forest Protocol covers AR, IFM and REDD. It is currently only applicable to projects in the U.S., though efforts are underway to adopt protocols for all of North America, including Mexico. Projects are issued Climate Reserve Tonnes (CRTs).
http://www.climateactionreserve.org/

ISO 14064
ISO 14064 is a greenhouse gas project accounting standard developed by the International Organization for Standardization (ISO). The standard does not apply restrictions on project types, size, location and crediting period. Unlike standards approving scientific methodologies, ISO 14064 offers only general guidance, with tools defined by the greenhouse gas program or regulation under which the standard is used. See Stockholm Environment Institute, "ISO 14064-2," Carbon Offset Research & Education.
http://www. co2offsetresearch.org/policy/ISO14064.html

Plan Vivo Standards
Plan Vivo accepts a range of land-use projects, including AR, agroforestry, restoration, IFM and REDD. These are developed with small-scale farmers based on a broader "Plan Vivo" livelihood strategy. Unlike other standards, Plan Vivo does not provide methodologies, and each project must instead devise its own Technical Specification adapted to the specific realities of the project, and reviewed by external experts. Projects are issued Plan Vivo Certificates on an ex-ante basis in order to ensure sufficient start-up funds for farmers (though payments are only disbursed gradually). http://www.planvivo.org/

SOCIALCARBON
SOCIALCARBON is a standard designed to demonstrate social and environmental co-benefits of carbon offset projects, as well as to increase active participation of local stakeholders, and is in some ways comparable to CCB. This standard is generally used in conjunction with another approved carbon-accounting standard (VCS, CDM, etc.) and therefore does not set its own project type or methodologies. Similar to the CCB Standards, it does not issue carbon credits. http://www.socialcarbon.org/

In most cases, the choice between VCS and CDM for AR standards may be delayed until a later point in project development, given that CDM methodologies and tools will most likely be applied (although questions of eligible land areas and forest definitions may be decisive earlier on, see Section 3.3). The non-permanence risk assessment and the ex-ante calculation of credit generation (due to different types of credits) will be the main differences in preparing VCS versus CDM PDDs, though the risk assessment is useful to conduct in either case.

2.2 Ensure Effective Community Engagement

Not all forestry projects are community-based, but virtually all will need to incorporate local communities and landowners in some way, as direct project participants, rights holders, stakeholders in forest and land resource use and/or neighbors. These communities may be at very different levels of socio-economic development and lifestyles, poverty and vulnerability and projects may involve or affect communities through different types of activities. Working with communities is far more than a "step" in the development of most projects and will need to be an ongoing process that includes many of the activities over the course of the project development and implementation cycle. Different projects, with very different roles for community stakeholders, will require different levels and types of community engagement, for example, a commercial reforestation project on private lands will be different from a community-managed REDD project. It is recommended to assess the appropriate degree and mechanisms for community involvement early and continuously in the project cycle.

'Free, prior and informed consent' (FPIC) has emerged as a key issue and as a guiding principle for REDD+. FPIC is based on the principle that a community has the right to give or withhold its consent to proposed projects that may affect the lands or resources they customarily own, occupy or otherwise use. The critical importance of this principle is increasingly being recognized due to growing concerns about vulnerable communities potentially losing access to traditional lands or livelihoods through increased forest protection efforts. FPIC is not just a "one-off" exercise carried out at the end of planning project interventions; instead, it defines an entire way of engaging and planning with local stakeholders through a rights-based approach. Ensuring adequate understanding and engagement of stakeholders is important on ethical grounds, but it can also lay the groundwork for project performance and sustainability by incorporating local knowledge and strengthening long-term commitments. These efforts should therefore not be seen as transactions costs but as long-term investments in project success.

For those projects affecting communities' ownership, occupation or use rights, some key elements to bear in mind for effective engagement and FPIC include:

- *Identifying customary land areas and tenure systems* – involving community members in data gathering, using indigenous names and land-use classifications, identifying important religious, cultural or economic sites, identifying all users and rights holders, working with neighboring groups to define and agree boundaries;
- *Engaging with representative organizations* – involving customary institutions recognized by the state and accepted by people, such as local government and ad-hoc institutions established by the community to deal with outsiders;

- *Providing information* about potential impacts, costs and benefits, risks, conflicts, opportunities, obligations and duration as well as legal implications, communicating in local language and ensuring widespread participation;
- *Ensuring consent is freely given* – avoiding any form of coercion, allowing legal representation, allowing all interest groups and representatives to participate;
- *Ensuring consent is prior* – for community-based projects, planning of project together with communities through an iterative process – and not presented as a done deal at the end; the "no-project" option being presented as real alternative;
- *Ensuring there is consent* – allowing time for institutions to consult with and obtain feedback from the wider community, ensuring effective communication of potential implications of proposed intervention; the output being a written agreement.

Ensuring effective community engagement will often require dedicated effort in building capacity to enable participation. For practical reasons, it is often necessary to communicate and negotiate project design and planning through a community institution that can speak on behalf of the wider community and that also can ensure that project activities undertaken on a group basis can be effectively executed. It must be recognized, however, that where local institutions are present, they may not be representative, accountable or transparent. Providing capacity-building support for community organizations should be considered as an investment when determining budgets and as part of the ongoing process leading to the definition of management structures. Furthermore, particular attention should be paid to gender and representation of potentially less vocal groups throughout the process.

Box 4: Some Useful Resources for FPIC and Community Engagement

Forest Peoples Programme. 2008. *Free, Prior and Informed Consent and Oil Palm Plantations: a guide for companies.* A good, practical guide on FPIC within the oil palm industry in Indonesia. Despite its geographical and investment-specific focus, it is a useful starting point for REDD+ projects.
http://www.forestpeoples.org/sites/fpp/files/publication/2009/12/fpicandrspocompaniesguideoct08eng.pdf

The UN-REDD program is also in the process of developing guidance on FPIC that will be incorporated into its Programme Operational Guidance on the Engagement of Indigenous Peoples and other Forest Dependent Communities.
http:// www.un-redd.org/Publications/tabid/587/Default.aspx

2.3 Plan for Project Design

The following series of preparatory decisions and activities will help structure the project design work.

2.3.1 Define Roles and Responsibilities for Project Design and Implementation

Projects typically involve multiple stakeholders in different roles and need to cover a broad array of different skills and areas of expertise including technical aspects, forest management, community development and rural

enterprise development, legal and business acumen. Some entities will be involved mainly in project design, others throughout the project lifetime. Defining roles and responsibilities as early as possible can make many processes more efficient and avoid confusion and conflict later. These arrangements should ideally take the form of formal agreements and Memoranda of Understanding (MoUs).

It is worth reviewing early on whether the project proponents have the capacity to deliver on the suite of actions required for project success. The CCB Standards make explicit reference to management capacity as one of their core evaluation criteria.[8] Designing a project can seem complex, but making it work in practice is even more so and is a much more long-term commitment. Reforestation, conservation or forest management projects represent complex social, technical and operational challenges that not all entities are prepared for. If this is the case, the early conception and assessment stages are the right time to identify realistic limitations, seek external support and establish partnerships where needed. A checklist of potential roles in project development is provided in Box 5.

2.3.2 Agree on Management and Allocation of Carbon Revenues

An important question to agree on is how carbon revenues that are generated from project activities will be allocated and managed. This touches on legal questions of carbon rights (Section 2.6). More importantly, however, carbon revenues – whether made available through upfront investments or ongoing proceeds - will be vital for implementing core project interventions. Stakeholders implementing certain activities will therefore have a legitimate claim on a certain share, even if they are not legal owners of forest carbon, and will need to rely on an understanding of revenue implications for their own decision-making. For this reason, a transparent and solid agreement on managing carbon revenues and other finance streams needs to be reached between all relevant stakeholders at the earliest point possible. This should take the form of formal and legally binding agreements.

The project design and the determination of the overall costs and revenues of the project will be an evolving process. At early planning stages it may be prudent to establish agreements about guiding principles for revenue allocation and benefit sharing, with further details to be developed as project design advances. This may be particularly relevant for community-based projects where the question of equitable intra-community benefit sharing can be complex and requires special attention to aspects of gender equity, potential elite capture and needs of vulnerable and marginalized groups. Establishing fair and transparent mechanisms may also involve building adequate management capacity.

Generally speaking, it is important that monetary and non-monetary incentives are aligned among key project participants in order to create compatible interests for investing effort to advance the project. To determine the best options, it can be valuable to consider different scenarios to prepare for cases where actual resulting benefits are different from what was originally anticipated, including in the case of severe delays in project implementation and registration, additional costs, different carbon prices or other contingencies.

[8] G4. Management capacity and best practices.

Box 5: Roles and Responsibilities in Project Development and Implementation

General

- Overall project lead and coordinator;
- Owner of forest carbon, empowered to enter into agreement for sale or transfer;
- Owner of the land.

Technical

- Provider of existing data regarding land use, carbon stocks, growth rates, drivers and agents of degradation/deforestation;
- Producer of additional data to quantify emissions reductions or removals (e.g., biomass inventories, land-use change mapping, socioeconomic data, property lines);
- Provider of technical support for project design, including social and biodiversity impact assessments;
- Preparer of project documents for validation.

Business and Legal

- Developer of legal agreements;
- Negotiator with potential buyers/investors.
- Broker, intermediary or buyer;
- Provider of funding for project development phase;
- Provider of funding for upfront investment into implementation;
- Administrator of project development funds and carbon revenues;
- Insurance and guarantees.

Stakeholder Relations

- Community liaison;
- Government liaison;
- Reporting (to donors, investors, regulators).

Project Implementation

- Coordinator of forest and land management activities (useful to break this down into detailed components and phases of project execution);
- Executors or service providers for land management;
- Technical assistance for land management.

Monitoring and third-party audit

- Monitoring;
- Validation;
- Verification.

2.3.3 Prepare a Roadmap: Budget and Work Plan

An overall budget, timeline and work plan should now be laid out to develop the project. Costs may easily range from $150,000 to over $300,000 for these pre-implementation stages. Actual costs will vary significantly between projects depending on their scale, complexity and previous planning, experience and available data.

Table 1: Common Forest Carbon Project Cost Categories

Project Design and Implementation	Notes
DESIGN PHASE	
Local staffing / coordination	Human resource requirements are frequently underestimated, particularly if stakeholders grapple with issues for the first time; highly variable.
Design of project activities	Reforestation or forest management plans, elaboration of agricultural extension programs, etc. Costs highly variable and project-specific.
Methodology development	Could range from $30,000 to well over $100,000 (if new methodology required and is best avoided if possible).
Imagery & analysis	For identification of eligible land areas, determination of historical land-use change. Satellite imagery may often be free but it can take several person-months by a specialist to analyze the data.
Ground-truthing / forest inventory	Commonly needed for REDD projects, dependent on scale, heterogeneity.
Carbon baseline and modeling	Specialized spatial projections, costs dependent on scale, methodology.
Social and biodiversity assessment of starting conditions	For CCB certification.
Social and biodiversity reference scenario, monitoring plan	For CCB certification.
Stakeholder consultation, agreeing on benefit sharing	Frequently under-estimated; highly variable
PDD drafting	Integration of above elements.
Legal advice	Due diligence on tenure rights, project approvals, agreements between partners, purchase agreements, etc. Costs can be significant to meet international norms.
IMPLEMENTATION PHASE	
Third-party validation	Contracting of approved validator.
Implementation costs	Depending on activities, such as land acquisition, agricultural extension, land preparation and planting, boundary control and enforcement, equipment and machinery, salaries, community incentive payments, alternative livelihood activities, etc.
Taxes	Carbon-specific and general income tax. Often not considered in initial financial projections, still undefined in many jurisdictions, but potentially significant.
Monitoring	Ongoing monitoring of forest cover, carbon stocks, agents and driver (for REDD projects) and social and biodiversity indicators (for CCB projects)
Third-party verification	Contracting of approved verifier
Registration and issuance fees	Vary by standard, registry and project scale
Other needs	Contingency

In laying out a work and time plan, it is important to recognize uncertainties and define key decision points so that these are taken into account in timelines and in communications with investors and other stakeholders. For example, the following points may lead to unforeseen complications or delays: government approval processes, clarifying rights to carbon, the availability of applicable methodologies (at the time of this writing a key constraint for REDD projects), and determining effective project activities and suitable partners. Ideally, project proponents should identify options for dealing with these contingencies, e.g., non-carbon bridge financing, or switching standards or methodologies.

It is important to emphasize the need to be realistic when establishing timelines for activities and expected revenues, and to build in contingencies in the case of delays. Significant delays in moving to different project stages and in realizing carbon revenues have been a reality for many projects. These can arise, for example, from delays in implementation activities, a lack of understanding regarding studies or documentation needed, or delays in external approval procedures that may be partly outside the control of project proponents. It is crucial to communicate and prepare for these risks with all project participants.

Similarly, the outcomes of stakeholder consultation processes and social impact assessments cannot be taken for granted and may make revisions to project design and timelines necessary. These and other activities also represent milestones on which further steps depend. Developing and maintaining an internal roadmap with key milestones and decision points that need to be reached before investing into major next steps can be a valuable exercise and can help realize early when a project strategy needs to be modified.

2.4 Secure Project Development Finance and Structure Agreements

As described above, project design and technical development can require significant resources. Whereas the initial conceptual and assessment phase can often be completed with limited internal resources by organizations already engaged with forest-related activities, taking projects through the development phase will require significant additional resources.

The more developed the project is, the lower the risks and the higher the value of carbon credits. Offset volumes are only certain after they have been verified and issued but there are reasons why project proponents may choose to enter into finance agreements earlier in the project development process:

- Securing working capital for project startup;
- Accessing valuable technical and business expertise through partnerships;
- Mitigating market price risk given the volatile nature of carbon markets.

Possible alternatives for finance include:

- *Self-financed.* For well-resourced organizations, their own financial and human resources may be invested in project development. Organizations capable of self-financing will have a quicker path to project development and will be able to retain more of the long-term financial project benefits. However, risk-management considerations may lead even those organizations to seek outside financial support or co-investors. In addition, in-kind contributions, in-house expertise and accumulated

institutional knowledge and data will almost always make a significant contribution to project development. In-kind contributions must be carefully assessed because they may imply significant demands on project participants' staff and resources.

- *Donor support.* Much current project development in the community and civil society sectors is at least partially supported by overseas development assistance or private donors. This may be an ideal option from a project developer and investor perspective as it shields them from many project development risks. In many cases, projects that are not viable from a strictly commercial perspective may be feasible with additional "soft" funding. It is not uncommon, however, that many projects initiated with donor assistance languish while project proponents struggle to find funding needed for project completion. The availability of donor support for early stages should not lead project proponents to skip over a thorough feasibility assessment and under-estimate future costs and commitments on internal resources, including staff.
- *Forward finance from investors, buyers and/or commercial project developers:* Investors and buyers may be willing to provide some upfront finance in exchange for rights to future carbon credits or revenues. Commercial project developers will combine this investment with technical expertise to manage key aspects through the design process and beyond to validation and verification. Engaging commercial project developers at early stages – as with all sources of commercial investment – implies trade-offs for project proponents. The sacrifice in terms of future project revenues may be substantial, but the early cash flow and additional stakeholder interest and expertise can spell the difference between success and failure. In addition, navigating through the different steps towards final issuance of credits more quickly and with fewer risks of set-backs can translate into significant additional net income, while a reduced risk profile will increase access to important market segments and enable higher final prices of credits. The share of project revenues claimed by investors will always be related to the level of risk they absorb.

Investment and purchase agreements may be negotiated at any point in the project development process. Some projects put in place investment or forward purchase agreements early on to secure working capital for project design and early implementation. Others proceed through verification with other sources of capital. Further summary guidance on legal issues is provided in Section 2.9 of this document.

2.5 Draft Design of Project Activities and Benefit-Sharing

In early stages of design, project proponents should plan general project activities (Section 1.1). As project design progresses these activities will need to be described in far greater detail, for example, a reforestation plan with protocols, timelines and resources. Detailed project activities and objectives provide the basis to assess carbon benefits and prepare a PDD. For community-based projects this planning exercise must be participatory, bringing in multiple stakeholders and striving to ensure adequate representation and broad involvement. In many cases, this step may usefully be integrated with analyses carried out in the context of social impact assessments (Section 2.7) and baseline projections of deforestation (Section 3.3) which will include a causal model of land-use change and help identify drivers and agents that need to be targeted.

Specific project activities will vary enormously among sites and different kinds of projects (e.g., afforestation, reforestation, agroforestry, natural forest management, and conservation) but it is essential to plan them carefully. Though this may seem obvious, it is striking how many proposed projects – especially REDD projects – fail to lay out a clear strategy for dealing with drivers of land-use change and linking finance to improved outcomes on the ground. Similarly, AR projects frequently tend to underestimate the substantial financial resources and technical capacity that are required to carry out tree planting efforts at a scale that leads to viable carbon projects. Project activities will include forestry interventions such as tree planting, silviculture practices for improved forest management and protection and conservation activities. As well, projects will typically need to go beyond the forest itself to deal with underlying drivers and leakage risks (e.g., through improved crop production, or increased efficiency in fuelwood use).

Design of project activities, especially in community-based projects, is intimately linked to what has come to be known as "benefit sharing." Project activities will generate financial and other costs, risks and benefits for project participants that will vary depending on the nature of the activities and the role of participants in project implementation. Benefit sharing involves how overall carbon revenues may be used to finance and sustain project activities and how they are distributed among different parties with a financial interest in the project (e.g., landowners, investors, project developers, described in Section 2.3) as well as among community participants. This is critical determinant of project viability and sustainability.

A balanced approach to the distribution of payments and other benefits at the community level should seek to offset the opportunity costs incurred by individuals or groups from changed land-use practices and should aim to address the needs of vulnerable and marginalized groups. It should also be designed to lead effectively to improved carbon outcomes. A possible mechanism could be a blend of individual or group payments, supplemented with in-kind, public good investments.

2.6 Legal Due Diligence and Carbon Rights

2.6.1 Carbon and Tenure Rights

Local circumstances and tenure laws can vary considerably for different countries and regions. Rights over forest carbon are still not specifically regulated in most jurisdictions and, in all these cases, must be inferred from existing law. Because forest carbon is closely tied to land and natural resources, rights to credits may be considered part of project participants' property and use rights to land and forest in the project area.[9] Some governments, however, claim that ecosystem services belong to the country's people as a whole, and therefore that any ecosystem services transactions must pass through the government. Where the law does not explicitly specify ownership and transfer rights over forest carbon, a careful examination of existing applicable law will be necessary to determine whether carbon rights can most logically be inferred for the person or group that holds

[9] Or, in the language of the VCS, part of the "property or contractual rights in the land, vegetation, or conservational or management processes that generate GHG emissions reductions and/or removals." Voluntary Carbon Association, Update to the VCS 2007.1, p. 4.

rights in land and forest, to the government, or to some other person or entity. Some insights can be drawn from case studies analyzed by Conservation International (Takacs, 2009, see Box 6).

There are likely to be differences between AR and REDD (or IFM) projects in terms of carbon and tenure rights. Planted trees are usually considered "industrial fruits" with strong rights associated to the entity that has established them, while trees in natural forests are commonly considered "natural fruits" and rights may be more closely linked to the owner of the land or the government. Importantly, large areas of natural forestlands in many developing countries are formally state property. This means that the central government may often have to transfer carbon rights or the right to commercialize ecosystem services to REDD project proponents (under existing legislation) if the latter wish to enter into agreements with buyers.

It is important to note that any claims to carbon rights based on inferences and interpretation of existing laws could quickly be challenged by new legislation, and more specific regulation is to be expected in many countries. Project proponents therefore need to remain vigilant about any evolving legislation or even interpretations of the existing framework. In any case, a formal government endorsement of a project and/or its rights or some other written statement should be very useful for any project even if implemented on private lands.

The VCS further demands documentation "demonstrating the entity's right to all and any GHG emission reductions or removals generated by the project during the project crediting period or verification period." Unfortunately, what type of evidence will satisfy this requirement is not entirely clear[10], and acceptance under the VCS obviously does protect against potential future challenges of carbon rights claims by governments or other entities. Detailed due diligence, including property surveys to confirm the size and boundaries of project areas, is advised.

At the very least, property and use rights of land and/or forests should be clearly defined before projects proceed and clear evidence will be required by any carbon standard. Apart from potential challenges to legal carbon rights, project participants who have insufficient rights in the project area cannot guarantee that underlying project activities will continue as promised, resulting in risks to carbon credit generation. Carbon standards require compliance with applicable national and local laws as a pre-condition for validation and verification, meaning that project participants must be able to lawfully perform project activities. Moreover, most standards also require forest carbon project participants to give evidence that they have "control over the project area"[11] so project participants must have at least:

- Use rights sufficient to perform the project activities (such as planting trees), and
- The right to exclude or prohibit uses incompatible with project activities (e.g., agricultural encroachment).

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[10] Types of evidence that are acceptable under the VCS can be grouped in (i) a right established by law or regulation; (ii) a right stemming from the ownership of the process that generates the emission reductions or removals; or (iii) a contractual right to emission reductions or removals (rights assigned, e.g., by the project owner to the investor).

[11] See, e.g., VCS AFOLU guidance. At the very latest, this needs to be demonstrated during the first verification event but should ideally be clarified earlier.

Box 6: Resources for Legal Aspects of Project Development

The Katoomba-CARE Online PES Contract Toolkit houses a growing collection of transactional resources for use by communities, project developers and lawyers interested in contracting for carbon and other ecosystem services. This includes template contracts, contract drafting and design guidance, and topical publications and links. http://www.katoombagroup.org/regions/international/legal_contracts.php

Takacs, D. (ed.) 2009. Forest Carbon: Law + Property Rights. Conservation International: Arlington, VA., available at:
http://www.conservation.org/Documents/CI_Climate_Forest-Carbon_Law-Property-Rights_Takacs_Nov09.pdf

The World Bank provides a *Doing Business Guide* for many countries and is a good place to start when assessing, e.g., the availability and feasibility of property or title registration in the host country: World Bank. 2010. *Doing Business 2010: Reforming through Difficult Times*. Palgrave Macmillan: New York; available at:
http://www.doingbusiness.org/documents/fullreport/2010/DB10-full-report.pdf.

2.6.2 Review Local Regulatory Requirements

Review of applicable legislation and regulation is a formal requirement of the CCB Standards, and the VCS and project planning, for compliance over the course of project development and implementation, as well as necessary approvals to be obtained (and when) and government agencies to be consulted. Binding laws and regulations will include land-use, forestry, environmental and, potentially, labor laws and regulations, as well as any specific requirements established for carbon projects. Depending on types of project financing and revenues, legal due diligence also needs to include laws covering business conduct, taxation and (foreign) investment regulations. See Box 6 for additional guidance.

Environmental impact assessments (EIAs) may be a requirement for any AR or forest management activity in many countries. Mitigation measures for potential negative environmental impacts may be required, for example in AR projects employing non-native species, species with high water demand, and planting techniques that disturb soils significantly. Communication with regulatory authorities and legal compliance should be seen as an important ongoing part of the project development process, and this is further elaborated in Section 2.9.

2.7 Social and Biodiversity Impact Assessment

Projects aiming for CCB certification will require detailed social and biodiversity impact assessments as well as meeting local regulatory requirements for Environmental Impact Assessments. These should be built into the project design process as early as possible to support the development of effective strategies for project implementation and long-term sustainability. Assessments ensure social and environmental benefits, and if well structured, can also provide the following less obvious benefits:

- Improved overall project design, in particular regarding an effective understanding of land-use change pressures and motivations, as well as a reduction of non-permanence risks;
- Improved market position and pricing, with many buyers expressing strong preference for CCB certified projects;
- Early identification and mitigation of potential negative impacts, as a valuable starting-point for an adaptive management process;
- Basis for designing effective incentives to local stakeholders, including benefit sharing mechanisms.

To satisfy the CCB Standards and provide a useful planning and management tool, assessments should include:

- Description of the pre-project social and biodiversity starting conditions at the project site (and potential reference areas or control sites);
- Description of the likely reference scenario of projected social and biodiversity conditions in the absence of the project;
- Projection of with-project social and biodiversity conditions, including appropriate causal models;
- Identification of potential negative impacts and definition of mitigation strategies ;
- Identification of appropriate and cost-effective indicators and measurement methods;
- Monitoring plan of actual net positive and negative project impacts, potentially including control sites.

The Social Impact Assessment Manual (multiple authors, see Box 7) proposes developing a "causal model" (involving a "theory of change") as a credible and cost-effective assessment approach for forest carbon projects. This has wider benefits for projects because developing a logical, causal argument about project strategies, activities and impacts will help design a project that will deliver carbon benefits more effectively, as well as ensuring that social and environmental impacts are identified.

A practical and succinct approach for monitoring biodiversity impacts is provided by BirdLife International's guidebook (see Box 7), which is applicable to many project settings, although not prepared specifically with forest carbon projects in mind.

Box 7: Additional Guidance for Social and Biodiversity Impact Assessment

Forest Trends, Climate Community and Biodiversity Alliance, Rainforest Alliance and Fauna and Flora International. 2010. *Manual for Social Impact Assessment of Land-Based Carbon Projects. Core Guidance for Project Proponents* (Version 1.0), Washington D.C. Available in English and Spanish at:
http://www.forest-trends.org/publications.php

BirdLife International. 2006. *Monitoring Important Bird Areas: A Global Framework. Version 1.2*. BirdLife International: Cambridge, UK.
http://www.birdlife.org/regional/americas/apm_documents/Background%20paper%2011.2_IBA%20Monitoring%20Framework.pdf

2.8 Assess Non-Permanence Risks and Develop Mitigation Strategies

All forest carbon projects face multiple potential risks that may undermine their performance (i.e., achieving carbon benefits) or the permanence of emission reduction and removals. Permanence (or non-permanence) is perceived as a key issue for forest carbon projects since any carbon removed or emissions avoided, could potentially be re-released into the atmosphere through future clearing, burning or dieback. This marks a fundamental difference between forest carbon projects, especially AR projects, and activities that achieve emissions reductions by reducing fossil fuels consumption.

Identifying risks early is a crucial aspect of project development and needs to be reflected in the design of project activities and specific risk mitigation strategies. Although a dedicated risk assessment is a formal requirement only under the VCS, this is a highly recommended exercise for all, to ensure project performance and to anticipate potential challenges, irrespective of the standard or project type.

The VCS specifically mandates an independent assessment of risks, to be conducted by two separate accredited auditors. This is used to determine a percentage of a project's carbon credits to be retained in a non-permanence risk buffer and is not available for trading. This pooled buffer is meant to ensure against project failures or future reversals of carbon benefits, and thereby underscores the integrity of issued credits. Risk discounts can be as high as 60% and are based on apparent risks and a project's capacity to manage these risks. In severe cases, projects can fail the risk assessment and, consequently, validation. See Box 2 for the VCS assessment tool and its current update.

The presence of risks (e.g., construction of roads, population growth, fire risks) does not in itself lead to a high buffer discount. Instead, project proponents can lower this percentage by demonstrating that threats have been clearly identified and that effective risk mitigation strategies, monitoring systems and response measures are in place. Where information about particular risks is lacking, this can be an important warning sign. A project's buffer credits may be released over time based on ongoing project performance and risk assessments, conducted at every verification event. In the case of the CDM, this type of risk assessment is not formally required since permanence risk for AR projects is dealt with through the issuance of temporary CERs.

Box 8: Summary of Potential Non-Permanence Risk Factors*

Financial and economic
- Probability of land opportunity costs increases;
- Availability of a well-structured and credible long-term financial strategy;
- Adequate expected level of financial returns to all relevant stakeholders.

Social and political
- Risk of unclear land or resource tenure and potential for dispute (e.g., encroachment, conflicting land claims, illegal logging);
- Risk of political instability (e.g., sudden changes in legal framework);
- Risk of social instability (e.g., wars).

Location and natural disturbance
- Probability of (natural) disturbance (e.g., fire, pests, cyclones);
- Existence of precious natural resources (e.g., oil, minerals) within the project area;
- Likelihood of new infrastructure or road constructions within or close to the project area;
- Incidence of crop failure in surrounding lands;
- High population density and population growth around the project area.

Stakeholder participation and liability
Level of agreement, commitment and clarity among stakeholders regarding:
- Land tenure;
- Clear understanding by project proponents and stakeholders on the processes, steps, and expected project outcomes.

** Adapted from VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination.*

2.9 Maintain Ongoing Liaison with Regulators

More than a "step" in the project development process, communicating with government agencies and other stakeholders should be an ongoing effort, and this responsibility should be clearly designated among project participants. In most countries, regulatory frameworks for forest carbon projects are still evolving, and this creates a certain level of risk that can be mitigated to some extent by maintaining good government relationships. Even where formal procedures and regulations are relatively clear, maintaining personal contact to inform and receive input from relevant government agencies, especially the Designated National Authority (DNA), is very important to avoid delays in review and approval processes.

This is at present even more critical for REDD/REDD+ projects, with currently-evolving national strategies and frameworks in many countries. It is indispensable to ensure that projects conform to new rules and procedures as they take shape. In addition, individual projects can help inform policy with reality-based, practical experience and by providing insights to government agencies about their strategies to lower deforestation and address technical, social and financial challenges. Ideally projects can help create good national regulations and may want to invest some effort into building government capacity through dialogue and information sharing. At

the same time, expectations need to be carefully managed, particularly regarding carbon revenues, especially in the context of weak governance and institutional frameworks.

In addition to liaising with host-country authorities, project proponents should closely follow developments and updates from carbon standard-setting bodies (e.g., the UNFCCC or the VCS Association). Rules and requirements are constantly evolving and this can impact projects - positively or negatively – at any stage of their design and implementation, for example regarding changes in methodologies, documentation requirements, deadlines etc. (see Box 1). Depending on the project's stage of development, proponents may also wish to maintain regular contact with the validator or verifier to get feedback on any planned or potential changes.

3. Developing a Project Design Document

A Project Design Document (PDD) is the key source of information and analysis that summarizes project characteristics, quantifies carbon benefits, lays out a monitoring plan, and thereby provides the basis for independent project validation and verification of its emission reductions or removals. The same document is called Project Document (PD) under the VCS. Following common parlance, this guidebook uses PDD as the general term.

3.1 Structure PDD Team

The development of a PDD can be a daunting challenge for first-time project developers. Methodologies available under the CDM and VCS are complex, and as also draw on supplementary "tools" for specific needs (land eligibility, additionality, leakage etc.) which are not directly integrated into the methodologies themselves. In most cases it will be very useful to have specialized external input towards the development of the PDD, and there are a growing number of consultants and commercial project developers who have this expertise.

While external support can be invaluable, it is important for project proponents to remain closely involved and have an understanding of the PDD's content and data sources and, crucially, the monitoring plan. Project proponents will need to manage the project in accordance with the PDD and monitoring plan. At the time of validation and verification, proponents will also need to demonstrate a good understanding of both documents to third-party auditors. Completely outsourcing these responsibilities, particularly to a short-term contractor, will imply risks for long-term project success and can lead to lengthy delays during validation and verification. A good balance must be struck between development of internal capacity that will remain with the project management team over the project's lifetime and outside expertise.

3.2 Choose a Methodology

Under the VCS and the CDM, project developers must use an approved methodology[12] [13]. The long time lags in developing and approving these fundamental tools have been a critical bottleneck for forest carbon projects. Methodologies are continuously evolving and a robust set of options exists for AR projects[14]. For most types of REDD and IFM projects, draft methodologies exist under the VCS, and progress is expected throughout 2011[15].

Methodologies provide the core framework for the quantification of carbon benefits and include instructions for the establishment of a without-project baseline, measurement and monitoring changes of carbon stocks, and the assessment of leakage and project emissions. Methodologies will vary in their suitability for different project settings based on their specific applicability criteria, and more than one methodology may be applicable to a given project. The choice of methodology is not merely technical, but one with potential implications for monitoring requirements (impacting costs), eligible carbon pools (impacting the overall volume of creditable carbon benefits) and others. Given the complexity and ongoing changes in this area, the choice of a methodology is an area where project proponents are strongly urged to seek expert advice. A supporting resource for AR projects is the TARAM tool (see Box 9).

Box 9: Tools for Assisting with AR Methodology Choice

- The BioCarbon Fund together with CATIE has developed the Tool for Afforestation and Reforestation Approved Methodologies (TARAM) for selecting methodologies. http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=49187
- Chenost, C., Y.-M. Gardette, J. Demenois, N. Grondard, M.Perrier and M. Wemaëre. 2010. Bringing Carbon Projects to the Market. ONF International. Provides a useful overview comparison of different AR methodologies in Annex 1 (p. 130-135).

Significant gaps remain regarding approved methodologies for certain project types and circumstances, for example:

- Soil carbon sequestration or maintenance;
- Avoided degradation, especially where practices are illegal (and therefore even harder to measure);
- Enrichment planting and some other improved forest management practices;
- Some agroforestry systems (that may not meet accepted forest definitions);
- Reforestation projects causing complicated forms of leakage;
- Carbon stock maintenance (without a demonstrable deforestation or degradation threat).

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[12] In the case of the CDM this means approved by the Executive Board, and for the VCS having passed through a double validation process by two accredited validators.

[13] The Climate Action Reserve (CAR) instead uses “Protocols”, while under Plan Vivo every project needs to develop specific “Technical Specifications”.

[14] See http://cdm.unfccc.int/methodologies/index.html for approved and proposed CDM AR methodologies.

[15] Check http://v-c-s.org/vcsmethodologies.html for approved VCS methodologies, in addition to CDM methodologies. Scope 14 refers to Agriculture Forestry and Other Land Use.

The lack of an existing methodology does not preclude project development, and developing new methodologies is an important starting point to expanding the array of land-use based mitigation options. The VCS is also putting in place a compensation system to encourage the development of new methodologies in certain cases. The development and validation of a new methodology will, however, add very considerable costs and time to project development (most likely well over a year). There may also be strong reasons (technical challenges, uncertain or limited carbon benefits) why no one has yet developed a validated methodology for a specific setting.

3.3 Conduct PDD Analyses

This guide cannot provide comprehensive and in-depth instructions for the steps and analyses required by carbon project methodologies. In the following, we provide a condensed overview of the key elements that are common to all methodologies. See Section 1.3 for further guidance on some aspects and Section 2.8 for the non-permanence risk assessment. It is of utmost importance to establish and store credible and verifiable documentation during each step of the process and for all claims made in the PDD that impact the quantification of carbon benefits (see Box 14).

3.3.1 Spatial Boundaries

Project proponents need to identify the forest or land areas that will form the basis for project activities, monitoring and verification. This can include discrete parcels of land and should encompass all the areas that may be significant emissions sources or sinks due to project activities, and for which the monitoring effort is economical. In addition, REDD methodologies may require the definition and delimitation of baseline reference areas and a leakage belt. All of these areas should be clearly delimited by remote-sensing and/or ground-based GPS, and information stored using GIS applications.

It is important to ensure that all project areas described in the PDD are in fact under the project proponent's control and that this can be demonstrated. Project boundaries will be fixed at validation and cannot be changed thereafter. Only Programmes of Activities (PoAs - CDM) or Grouped Projects (VCS) allow for adding areas after validation.

3.3.2 Land Eligibility

Land areas under the CDM or VCS must meet certain eligibility criteria. For AR projects, criteria focus on demonstrating that project lands were not forested at project start and at a given historical cutoff date (1990 under the CDM and 10 years prior to project start under VCS). The latter requirement has been established to prevent perverse incentives to deforest and later claim carbon credits for reforestation. Land cover status will need to be supported by documentary evidence at the time of validation including, e.g., satellite imagery, aerial photographs, or local testimony. In addition, the VCS excludes converting natural non-forest habitats (e.g., grasslands, peat swamps) for reforestation projects.

The CDM has created a forest definition that includes minimum thresholds for area (from 0.05 to 1 ha), tree height (from 2 to 5 meters at maturity) and crown cover (from 10-30% at minimum). Within these ranges, threshold parameters must be defined by each host country[16]. If no forest definition has been adopted, then no AR CDM project can be implemented in that country. Projects using VCS have more flexibility, and they can use this same host-country definition, or adopt the FAO definition of forest or any other internationally accepted definition.

Conversely, forests protected in REDD projects must also meet accepted forest definitions. Beyond formal criteria, it is important to ensure that the chosen definition fits well with remote sensing imagery that is available for historical analyses and forthcoming monitoring efforts.

3.3.3 Additionality

Carbon project proponents need to demonstrate that they undertake activities because of the expectation to generate carbon credits and finance. Not every project that creates net GHG benefits will be additional in the sense of a carbon project, especially in cases where organizations involved in the project can be expected to pursue similar activities in any case. Both the CDM and the VCS have developed dedicated tools to guide project proponents through a logical sequence of analytical steps to demonstrate additionality (see Box 2). Key considerations concern barriers to implementing project activities or insufficient financial viability of the project in the absence of carbon finance.

3.3.4 Starting Conditions, Baseline and With-Project Scenarios

The emission reductions or removals achieved by any forestry project can only be quantified by contrasting project outcomes with a counter-factual baseline scenario. To determine the project's net impact, it is indispensible to accurately capture conditions at project start (also called "time-0 measurements"). From this starting point, quantified and evidence-based scenarios need to be developed to predict what would likely happen in the future, and how the project will modify that outcome. Carbon standards, such as the CDM and VCS, focus on accounting carbon stocks and emissions in the project area under these different scenarios, while the CCB Standards require assessing analogous sites or aspects for determining net community and biodiversity impacts; these are summarized in the points below:

- Initial carbon stocks in the project area, and potentially any reference and leakage belt areas, need to be assessed following inventory procedures laid out in IPCC Good Practice Guidance and/or the specific requirements of standards and methodologies. These techniques are relatively well-established.
- The VCS AFOLU guidance provides a comprehensive overview to establish a baseline scenario. Detailed guidance for specific project settings is contained in CDM and VCS methodologies.

[16] Parameters for forest definition adopted by some individual countries can be found at http://cdm.unfccc.int/DNA/allCountriesARInfos.html

- For estimating project impacts on carbon, as well as social and biodiversity aspects, project proponents must compile information on land use agents and drivers and develop credible causal hypotheses about how the project will modify the business-as-usual scenario. These must be carefully backed up by documented evidence for underlying assumptions and/or verifiable expert judgment.

3.3.5 Quantification of Emission Reductions or Removals

Estimates of future carbon benefits must be projected and quantified in the PDD. The exact volume of carbon benefits that will ultimately be translated into carbon credits will depend on actual project performance and monitoring results, as reviewed and verified by an independent auditor (see Section 8 on verification).

Since many project developers seek to secure finance or forward sales agreements based on figures in the PDD, it is important to make every effort to ensure that assumptions underlying these estimates are as solid, transparent and credible as possible. This should include consideration of likely sub-optimal project performance, data uncertainties and discounts that may be required to account for leakage and non-permanence risks. See Sections 1.2 and 1.3 for further guidance on useful data sources and tools. In addition, credible projections of carbon benefits may be crucial to underpin additionality claims. These projections form the basis of registration fees levied under the CDM (see Section 6.4) and should remain conservative for this reason.

3.3.6 Leakage

Leakage risks are inherent to most forest carbon projects as different actors compete for scarce land resources. Careful consideration of leakage risks is a requirement in all carbon methodologies, and can be valuable to improve the design of project activities and to assess social impacts. Leakage assessment procedures are relatively well-established for AR projects;[17] however, guidance is still evolving and partially incomplete for some other project types. Leakage can prove a major challenge to projects and can also restrict the choice of available methodologies (i.e., where these are not applicable because they do not include approaches to quantify and monitor certain types of leakage).

Leakage discounts can often be reduced or even avoided – a great benefit – by addressing risks in the project design, choice of activities and careful site selection. For example, understanding the actors and causal chains associated with land use may help address underlying deforestation causes rather than just combating apparent drivers in the project area itself. Appropriate mitigation activities may include agricultural intensification on non-project lands, creating alternative sources for fuelwood and timber or reduce inefficient uses, create alternative employment opportunities and conduct integral zoning and development plans that preclude activity shifting. Leakage that cannot be effectively avoided through project design will need to be

[17] See http://cdm.unfccc.int/methodologies/ARmethodologies/approved_ar.html for specific leakage assessment tools for displacement of grazing, agriculture or fuelwood collection. Interviews and participatory rural appraisal (PRA) are key accepted approaches for AR CDM projects.

quantified and discounted from overall project benefits, through monitoring or the application of default discount factors, in the case of timber market leakage under the VCS.

3.4 Prepare the PDD

Once all the analyses and planning exercises described up to this point have been carried out, compiling required information in a PDD is a relatively straightforward process. All supporting documentation should be assembled and accessible for validation.

The CDM has an approved mandatory template for PDDs, both for full size and small-scale projects[18]. An official annotated version also exists that contains useful guidance for elaborating specific sections.[19] The VCS provides a Project Description (PD) Template[20]. For projects seeking to combine VCS with CCB certification, a combined Project Design Document may be presented if the same auditor carries out the assessment.

Following some general guidelines can help in ensuring a smoother preparation and validation process:

- Be clear and concise. Do not elaborate the various topics more than necessary, and carefully analyze the type and scope of the required studies. PDDs should emphasize key information about project design and emissions reductions calculations and remain focused on essential information that can be monitored and verified over the project lifetime.
- Cite (make reference to) external documents and background studies containing information that is not essential for achieving validation, rather than including that information in the document itself. Avoid overloading the document with information, e.g., on co-benefits or ecological characteristics, that is not required for VCS or CDM validation. Similarly, avoid including information that cannot be backed up with supporting evidence.
- Define clear rules for naming PDD versions and supporting documents, and share these rules with all team members drafting the documents.
- Choose the appropriate verb tense and use it in all wording. Often, planned activities are presented as accomplished actions.
- Review all documents for consistency in arguments, data assumptions, and dates.
- Maintain complete, organized "documented evidence" for key data and assumptions (e.g., agents and drivers of deforestation, bibliographical support for allometric models), as well as a central repository for collecting all supporting material (including scanned copies of printed documentation). Define fixed and mandatory rules for naming, organizing, sharing, storing and backing up files for the entire PDD

[18] http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html

[19] http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html

[20] http://www.v-c-s.org/policydocs.html

writing team, including outside consultants. Apply agreed metadata standards[21] in compiling GIS data and remote sensing imagery.

Reviewing examples of successfully validated PDDs can provide a useful indication of generally accepted scope and style. These are publicly available on the CDM, VCS and CCB websites.

Box 10: Examples of Successfully Validated Forest Carbon Projects

- VCS: https://vcsprojectdatabase1.apx.com/myModule/rpt/myrpt.asp?r=111; all related publicly available documents are posted on http://www.vcsprojectdatabase.org/resources/AccessReports.asp.
- CDM: http://cdm.unfccc.int/Projects/projsearch.html (search by "registered" afforestation and reforestation projects).
- CCB: http://www.climate-standards.org/projects/index.html

4. Review Project Activities and Develop Project Implementation Strategy

4.1 Re-Assess Feasibility and Adjust Project Activities

Project design is an iterative process based on feedback from technical analyses of carbon benefits, evaluation of risks, legal considerations, social and environmental impact assessments, as well as results of stakeholder consultations and liaison with regulators. It is quite likely that at the time when final calculations are completed in the PDD, certain assumptions that were used in the initial feasibility assessment will have changed. Therefore, it is worthwhile to pause again and re-assess overall project viability in light of any new information, to make adjustments to project design, and even to consider with an open mind whether to advance with the project or not. The various analyses on agents and drivers of land-use change, leakage and permanence risks, and social impacts in particular will have yielded a wealth of information that can help to adjust project activities and strategies for stakeholder engagements.

[21] The international metadata standard for geographic information (ISO 19115) and its XML scheme application (ISO 19139) are widely recognized. The US Federal Geographic Data Committee (FGDC) is currently developing the North American Profile of ISO 19115. Common GIS packages generally support both, ISO and FGDC.

4.2 Budgeting and Financial Projections

Based on a more definitive description of project activities and projections of carbon benefits from the PDD, the project proponents should now have the elements in hand to adjust financial projections and budgets. These should cover the final stages in project development, as well as long-term costs of project implementation, monitoring and verification. Some typical cost items are listed in Table 1 under Section 2.3.

Revenues from carbon may be generated once there are verified emissions reductions, which will usually only occur after several years of implementing project activities, especially in the case of AR projects. Virtually all projects will therefore need to develop financing structures to cover the gap between the start of project implementation and the issuance and sale of carbon credits. Some approaches are discussed in Sections 2.4 and 5.

As indicated earlier, carbon revenues alone usually will not be sufficient to cover all project costs. Financial projections should therefore include other revenue streams (e.g., timber sales) as well as costs of raising additional or bridge capital. Beyond the more basic tools used to assess project feasibility (see Section 1.3), a financial model should be developed at this stage to reflect the project's unique cost categories, revenue streams, financing arrangements, and organizational structure; these will be essential data and analyses for potential investors.

4.3 Defining Management Structure for Implementation

Project proponents and partners need to clearly define roles, responsibilities and management structure for project implementation, including which activities will be carried out by different implementing entities (see Box 5). Project implementation and financial management may require the creation of new entities, in the form of partnerships, corporations, non-governmental organizations or fiduciary trusts. Given the variety of possible project activities and circumstances, financial requirements, objectives and local regulations, it is recommended to engage legal counsel to develop and review options.

For community-based projects, planning for effective ongoing management will often entail investments in strengthening governance and management capacity to ensure transparency and effectiveness, including:

- *Organizational development*: Helping set goals and strategic directions; improving management and communication, developing leadership skills;
- *Improving governance and accountability of leadership:* Increasing opportunities for transparent information sharing between leadership and members, raising awareness of members of the roles and functions of their executive committees;
- *Ensuring representation of interest groups in decision making*: ensuring that different groups, including marginalized ones, have representation at management committee levels;
- *Providing training on financial management and improving record keeping*;
- *Creating mechanisms and opportunities for financial records to be subjected to public scrutiny*.

5. Finalizing Financing and Investment Arrangements

Securing investment for project implementation may occur at any point in the process of project development, so its placement in this "step-by-step" framework is arbitrary to some degree. In principle, agreements for finance or sale may be established at the earliest idea stage, during the PDD drafting process, after validation, or after verification and credit issuance. Different arrangements may be agreed upon with different buyers or investors at different stages, and can apply to different tranches of the overall carbon credit volume generated in a specific period. These different options will impact the risk (and price) discounts applied to carbon revenues and the level of up-front finance and expertise that can be brought into project development, as discussed in Section 2.4.

5.1 Commercializing Forest Carbon

Defining the most advantageous financing arrangement and finding the right partner can be a daunting and challenging exercise. There is usually a great distance between the places where projects are implemented and the centers of finance and offset demand. In addition, the various types of sales and investment arrangements all have advantages that may become more or less applicable as projects advance or priorities of stakeholders change. Not least, the array of players can be hard to evaluate with new companies and players emerging seemingly on a daily basis, some reputable, competent and honest, and others potentially less so.

It is important to understand that finance or revenues may come from several possible kinds of entities:

- *Buyers* acquire offsets to meet their regulatory or voluntary commitments. They may provide upfront finance, guarantee a future price, commit to purchasing a certain volume and/or purchase verified and issued credits. Pricing may be more favorable with final buyers, but these may be challenging to identify and this can create significant marketing costs. Intermediary buyers (traders and aggregators) can fulfill similar functions and will have access to a larger array of final – including large and usually more risk averse – buyers, although they may offer lower prices;
- *Investors* have an interest in realizing returns from financing provided to the project through a share of credits, or profits when credits are generated and sold. In return for assuming more of the project risk, an investor will likely want some control over project activities. Some buyers may become partial investors into project activities or by assuming external transaction costs.
- *Brokers* do not actually buy the project's carbon credits but rather find buyers and match them with sellers (projects), often according to previously agreed conditions. They typically receive a percentage of the transaction value as fee for their services.

Each type of entity can play a valuable role for different projects or at different stages. Different commercialization models will determine the timing of carbon revenues, prices, costs of marketing and the likelihood of finding certain types of buyers. Further guidance on commercialization strategies and developing the carbon "product" can be found in the resources highlighted in Box 11.

Box 11: Useful Resources for Commercialization and Finance

State of the Voluntary Carbon Markets and *State of the Forest Carbon Market* – These annual market reports from Ecosystem Marketplace and Bloomberg New Carbon Finance provide great background information on both voluntary and compliance carbon markets:
www.ecosystemmarketplace.com and www.forestcarbonportal.com

The Forest Carbon Offsetting Report (EcoSecurities) – Provides more targeted market information from a survey of forest carbon buyers.
http://www.forestcarbonportal.com/resource/forest-carbon-offsetting-report-2010

Bringing Forest Carbon Projects to the Market (English, Spanish, and French) – This guidebook focuses almost entirely on business and financial aspects of forest carbon project development, with five case studies.
http://www.unep.fr/energy/activities/forest_carbon/pdf/Guidebook%20English%20Final%2019-5-2010%20high%20res.pdf

Guidebook to financing CDM Projects – Though written for CDM project developers, this guidebook has very thorough sections on risk and financing options that apply to projects aimed at voluntary markets as well as CDM.
http://www.cd4cdm.org/Publications/FinanceCDMprojectsGuidebook.pdf

The Sustainable Forest Finance Toolkit – a resource for financial institutions considering forest carbon investments, including a list of due diligence questions financial institutions are likely to ask about forest carbon projects (PricewaterhouseCoopers and World Council for Sustainable Development).
http://www.pwc.co.uk/pdf/forest_finance_toolkit.pdf

5.2 Establishing Agreements for Finance

Negotiating and drafting carbon transaction agreements is likely a theme with which project proponents have less experience with other aspects of project development. Legal advice should be sought to properly analyze the particular circumstances and needs of the project and to attain clarity on central questions like risk, liability, and cost implications of a particular agreement. Sellers may want their own legal counsel present during negotiation with buyers and investors.

It is important to keep in mind that buyers' lawyers have a fiduciary obligation to get the best possible deal for their clients – the buyers – which may not conform to the sellers' interests. Contracting a legal advisor can save project proponents time and money over the long run while reducing commercial risks that may be hard to understand.

The most widely used type of agreement for commercializing carbon credits is a **purchase agreement**, also known as an emissions reduction purchase agreement (ERPA). This deals, in essence, with the sale of verified or future emissions reductions.

A forward purchase agreement deals with issues such as:

- timing and structure of payments,
- allocation of risk and delivery liabilities,
- allocation of project development transaction costs, and
- provisions dealing with default and remedies.

Other provisions in a purchase agreement typically concern contract duration, delivery of carbon credits, representations and warranties, costs and taxes, reporting and monitoring, validation and verification, communication with third parties, confidentiality, termination, notices, amendments, governing law, survival, definitions, and other provisions. These provisions do not tend to be particularly unique or difficult in the forest carbon context, compared to the four topics listed above.

Most clauses in a purchase or other type of commercialization agreement are negotiable. Apart from seeking professional advice, sellers can gain insights by considering some of the resources listed in Box 12 below.

Box 12: Useful Guidance for Purchase and Investment Agreements

CERSPA Initiative. http://www.cerspa.com.

Climate Action Reserve. 2010. *Project Implementation Agreement*. Climate Action Reserve: Los Angeles. http://www.climateactionreserve.org/wp-content/uploads/2009/03/PIA1.pdf.

Hawkins, S. *et al*. 2010. *Contracting for Conservation, Sustainable Management, & Enhancement of Forest Carbon*. Forest Trends: Washington, DC.

Katoomba Group Online PES Contract Toolkit: http://www.katoombagroup.org/legal_contracts.

A selection of template ERPAs developed for use under the CDM are available at: http://www.katoombagroup.org/regions/international/legal_contracts_cdm.php.

6. Approvals, Validation and Registration

Project proponents must ensure that all required documentation, permits, approvals and agreements are firmly in place as the project moves beyond the preceding design and development steps. In addition to documentation mentioned below for potential formal host-country approval and for the validation process, this includes all local or national permits that may be needed and which are not necessarily linked to the carbon component of the project (e.g., taxes, operational permits, approved EIAs – see also Section 2.6. Furthermore, any internal formal agreements and contractual arrangements (e.g., on financial management, revenue distribution, transfer of carbon rights, implementation roles and responsibilities) must be finalized.

6.1 Host Country Approval

Ongoing engagement with host country regulatory authorities is an important project development activity (section 2.9). Good government relations and awareness of regulatory developments will be helpful for every carbon project.

CDM projects also require a formal Letter of Approval (LoA) from the Designated National Authority in order to be registered and generate carbon credits. This LoA needs to state that the project complies with host country definitions of sustainable development criteria. The process and requirements for securing this LoA vary country-by-country and should be identified as early as possible in order to avoid lengthy delays in generating carbon revenues. See Baker McKenzie's CDM Rulebook (in Box 1) for detailed guidance.

Neither the VCS nor the CCB Standards require a formal government approval. A firm signal of government endorsement, however, can be critically important for many pre-compliance buyers or investors in the voluntary market as it reduces the risk of any later regulatory conflicts or delays in obtaining approvals in a legal environment that is rapidly evolving.

6.2 Stakeholder Consultation

Local stakeholder input is usually critical to the ongoing success of forest-based carbon projects and should be undertaken from early stages of project conception and throughout the process of defining project activities and assessing feasibility, i.e., Steps 1.2, 1.3, 1.4, 2.2, and 2.5. It is also a requirement of key standards, although they differ in their formal requirements:

- Formal stakeholder consultation and public comment is required under the CDM. Prior to validation the proponents must invite local stakeholder comments and the project must be presented "in a manner which allows the local stakeholders to understand the project activity" and providing them with a "reasonable time" for comments[22]. There is limited guidance provided by the CDM Executive Board on local stakeholder consultation, however some host countries require certain minimum standards to be met. In general, international best practice should be followed in the absence of any other specific guidelines.
- Stakeholder consultation is "encouraged", but not required, under the VCS.
- Stakeholder consultation is a key CCB requirement and forms part of several criteria including participation in project design and goals, communication during the public comment period (see Section 6.3) and review of the monitoring plan.

The CCB Standards also contain good practice for projects merely seeking VCS or CDM certification. For example, they indicate that consultations should employ socially and culturally appropriate methods and be

[22] EB 8 Annex 3, paragraph 2(b).

gender and inter-generationally inclusive. Stakeholders should be able to raise concerns about project design and state desired outcomes, as well as providing input during implementation.[23]

In addition, public comment – through posting of project documents on the internet – is a required step during the CDM and CCB validation phase (see below).

6.3 Validation

Validation is the process whereby an independent accredited auditor reviews the project documentation and design in order to certify that it meets the criteria and rules of the respective standard and applicable methodology. Validation makes a project eligible to generate carbon credits and is necessary to be formally accepted and registered under the respective standard. Validation will typically comprise a period of desk review, public comment[24], site visits, preparation of a draft report, requests for additional information (Clarification Requests) or adjustments to project design or analyses (Corrective Action Requests), before a final report is issued by the auditor. This report will be made publicly available on the CDM or VCS Registry website.

Similarly, the CCB validation audit will result in a draft report including indications of any data gaps or failing criteria that are not met. The project proponent then has up to six months to address and remedy these issues before the auditor will prepare a final report, which will be made publicly available prior to certification.[25]

Validation is conducted by an auditor accredited under the chosen standard for the specific project activity scope (e.g., AR under CDM, AFOLU under VCS). It is the responsibility of the project proponent to identify, contract and pay the validator. There has frequently been a bottleneck for project development due to a relative shortage of accredited validators, particularly those with forestry experience. Therefore, it is recommended to begin planning for validation by identifying and contracting auditors at least 3 months in advance of the planned validation start date.

Under the CDM, the final decision on whether to register the project (see below) will rest with the CDM Executive Board. The CDM Rulebook provides probably the most systematic information regarding the process of validation, verification and issuance under that standard.

Common pitfalls and tips to avoid problems during validation are contained in Box 14. Validation and verification are a complex and sensitive process, and it may be a valuable exercise for project proponents to do a test run prior to the formal audit. This can avoid clarification and correction requests and thereby save time and effort later and lowers the risk of failing this step.

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[23] CCB Standards: 17

[24] CDM PDDs must be made publicly available for a 45-day public comment period as part of the validation process (5/CMP 1. paragraph 15.c.). The VCS has no formal requirement for public comment. However, project documents will be publicly posted at the time of registration.

[25] CCB standards also involve a public comment period during which the Project Design Document (or equivalent) will be posted online for 30 days.

Box 13: Finding and Choosing a Validator or Verifier

There are a growing number of accredited entities available for validation and verification under different carbon standards. Under the VCS validation and verification may be conducted by the same body, while for large-scale CDM projects these must be conducted by separate entities. It is advisable for project proponents to request and compare offers from several different potential auditors. Some key points to take into consideration are:

- *Experience and expertise of the proposed audit team*. Ensure the proposed team has previous experience in the actual project types and methodologies.
- *Scope of proposed work*. Check that the proposal covers in detail all the activities to be carried out by the auditors and the level of assurance of the validation.
- *Proposed timeline*. Ensure the auditor proposal includes a well-defined timeline for each activity and expected time for completing the validation report.
- *Pricing*. Prices may vary considerably from one auditor to another, depending on their quality, experience, availability and local presence. Price should, however, not be the only factor to consider for selecting the right entity.
- *Local/regional presence.* Confirm if the auditor company maintains a presence in the country or region where the project is located. Often, the communication with auditors is more efficient, if this is the case.

CDM: A list of accredited auditors, known in the CDM as Designated Operational Entities (DOEs), can be found at http://cdm.unfccc.int/DOE/list/index.html. Note that not all DOEs are accredited for the AR sector.

VCS: Validators and verifiers accredited under certain other schemes, such as the CDM, can be used in the VCS. As for the CDM not all validators/verifiers are accredited for the AR sector. A list of validators and verifiers for different project scopes can be found at:
https://vcsprojectdatabase1.apx.com/myModule/rpt/myrpt.asp?r=208

CCB: Approved auditors for application of the CCB Standards can be found through:
http://www.climate-standards.org/standards/using.html

6.3.1 Timing of Validation and Risk Assessment

Under both the VCS and the CDM validation can take place before project implementation actually begins, although this is not mandatory. Validation, in principle, may be postponed until after the start project activities[26]. This makes forestry projects an exception to the general rules for the CDM[27]. Under the VCS, validation and verification events may even be combined and conducted by the same third-party auditor, providing for costs savings.

[26] The starting date of the project under the CDM is defined as the earliest point at which any implementation or 'real action' on the project (such as signing of contracts, committing funds) takes place.

[27] EB 21, paragraph 64.

Delaying validation until after project start allows project activities to begin carrying out project activities and to gather information for adjustments to project design, the monitoring plan and other aspects contained in the PDD before such aspects are fixed. The project design and monitoring plan are fixed in the PDD. Although some changes are possible after registration, under the CDM this entails a lengthy approval process. It is therefore advisable to be very certain about the project design and monitoring plan before validation begins.

On the other hand, delaying validation also means that eligibility criteria and methodology requirements that the project needs to meet may change, and this can creating significant risks. Similarly, carbon revenues from ongoing activities may be endangered if GHG reductions cannot be demonstrated because the monitoring plan is not accepted by the validator. If project activities are begun prior to validation it is extremely important to document thoroughly why the expectation of carbon revenues is essential to project investment and implementation in order to be able to comply with additionality criteria.

Apart from these aspects, successful validation may serve as an important signal to investors and other stakeholders that the project is credible and carries reduced risks, given that its eligibility to earn carbon credits has been confirmed. Finally, it may be prudent to schedule validation early on, considering that this has been a significant bottleneck and has often taken CDM projects over one year.

Validation under CDM or VCS may usefully be combined with CCB validation.

Under the VCS, a double-review process is necessary to determine the non-permanence risk buffer discount as well as the market leakage discount (where applicable). The first risk assessment must be carried out at project validation (which can be delayed until first verification) and will provide valuable feedback for improving project design. In addition, whenever a project's risk assessment is revised downward during later verification events, this must pass the double-approval process.

Box 14: Preparing for and Managing Validation and Verification*

- Support all assumptions, arguments, data and parameter selections with documented and verifiable evidence.
- Avoid unnecessarily repeating things in the PDD. This makes your PDD shorter and reduces the risk of introducing internal contradictions. However note that the CDM requirements for completing the PDD form require a certain amount of repetition.
- Double-check the applicability conditions of the chosen methodology. For AR projects, more than one methodology may be applicable, and it usually makes sense to choose the "easiest" option requiring the least monitoring parameters.
- Document clearly in your PDD how you have followed each step of the methodology (and/or tools). If steps are not applicable, explain why, and if you have merged a number of steps in one calculation/paragraph, say so. Likewise, for every equation in your Excel spreadsheets, label it with the number or step of the methodology it represents.
- Ensure that the project meets all the methodology requirements and eligibility rules before embarking on a validation. In the VCS, deviations from a methodology can be accepted by the validator, if it can be proven that they do not undermine the conservativeness of the approach, but under the CDM, any deviation, however minor, must be approved by the Executive Board (and there may be a cost involved of submitting these requests via a DOE).
- Conduct a quality check (performed by a different person that prepared the PDD) to review the correct application of the methodology, evidence supporting additionality argument and emission reduction calculations, and make sure these are consistent throughout the document. A checklist can help to carry out this quality check.
- Provide any emission reduction calculations in a clearly presented and traceable spreadsheet. Ask a peer not familiar with the project to check calculations. Mistakes due to incorrect formulas, illogical flows of data and erroneous units are common.
- VCS specific: Seek confirmation that non-permanence risk and market leakage assessments have been done correctly.
- AR specific: Double-check land eligibility and precise documentation of project boundaries. Historical remote-sensing imagery may be difficult to align with the applicable (or host-country) forest definition. In addition, all project areas shall be subject to reforestation, documented by a management plan. Boundaries need to be carefully delineated with GPS and starting conditions (including biomass measurements) documented before project implementation.
- Confirm that the monitoring plan accurately reflects the monitoring systems and processes designed and applied in practice in the project, in addition to following the methodology exactly. Often, changes during the project design are not reflected in the final PDD. Note that many parameters may be fixed at validation and cannot change thereafter.
- Standard Operating Procedures (SOPs) must have been defined for the major monitoring activities. Sample plots must have been placed following an unbiased approach and must be sufficient to meet required levels of accuracy and precision.
- A full data trail must be clearly established and transparent. The verification bodies must be able to follow the data through the operational, business and accounting system - over project lifetimes of two or more decades and multiple staff changes. The more robust and transparent the data management system, the less time the auditing body will need to review data, reducing costs.

**Special thanks to Adam Gibbon and Jeffrey Hayward (Rainforest Alliance) Bernardo Lazo (EcoSecurities), Sebastian Hetsch (Tüv-Süd) and Jonathan Avis (ERM) for their inputs and practical guidance on this section.*

6.4 Registration

Following successful validation, registration is the point at which the project is formally recognized as being eligible to generate credits under the relevant carbon standard. This is therefore an important milestone which generates significant visibility and credibility for any project. However, validation and registration do not yet result in the issuance of credits, nor do they demonstrate the viability and effectiveness of a project. This only occurs once the project has begun to generate actual carbon benefits, and once these have been *verified* and *issued* (see below).

Under the CDM, achieving project registration can present a significant hurdle and has frequently led to considerable project delays. The CDM Executive Board can refuse to register a project even once it has been validated by an accredited auditor, or it may issue review requests that can take considerable time to resolve. Registration can be requested only once the final validation report is issued by the auditor and submitted to the CDM Executive Board and Host-country Approval has been provided. Large-scale projects must pay a one-time registration fee calculated based on the expected average annual net GHG removals from the project over its crediting period[28] (see Baker McKenzie's CDM Rulebook, referenced in Box 1, for further details).

In contrast, registration represents less of a hurdle and is more streamlined under the VCS. Registration is only formally required at the time where project proponents request issuance of credits based on verification results. It consists of a submission of all the required documentation by the project proponent and a completeness check conducted by the approved VCS Registry. However, earlier registration can provide valuable visibility and certainty to the project. Full information on the process is available in the VCS Program Normative Document: Project Registration and VCU issuance process[29]. Note that process guidance is undergoing changes that will come into effect in 2011 (see Box 1). In brief:

- The project proponent must open an account in one of the approved VCS registries (currently these are APX Inc., Caisse de Dépôts, and Markit).[30] This may occur even prior to validation but at the latest for project registration and carbon credit issuance.
- The Project proponent submits to VCS registry administrator the project documentation, including among other things, the PDD, the validation report and validation statement, Proof of Right and Project Proponent Registration Representation[31].
- The VCS registry administrator conducts a completeness check on the submitted documentation. If all documents are complete, the project is listed as registered on the VCS database[32] and available for public view.

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[28] Registration fees are currently set at USD 0.10 per expected average annual net GHG removals by sinks for the first 15,000 tCO_2e, and USD 0.20 per tCO_2e for any amount in excess of 15,000 tCO_2e. No registration fees are assessed for CDM A/R projects with GHG removals over the crediting period below 15,000 tCO_2e (EB 36, Annex 21, paragraph 3).

[29] http://www.v-c-s.org/policydocs.html

[30] http://www.v-c-s.org/projects.html

[31] http://www.v-c-s.org/policydocs.html

[32] http://www.vcsprojectdatabase.org/

The VCS registries charge fees for creating a registry account (roughly similar to VCS issuance fees) but may allow for special fees for charitable organizations or small projects.

7. Implementation and Monitoring

7.1 Implementation

Implementation of project activities – planting trees, avoiding deforestation, improving forest management – may begin at any point prior to validation (and registration), so its placement at this point in the "step-by-step" framework is somewhat arbitrary. However, significant investment and activity on the ground may typically await validation to reduce risks and uncertainty (see Section 6.3.1).

The details for project implementation will be unique to each project and span an enormous range of local contexts and project types and scales. It is important to bear in mind that implementation is the phase that will require the vast majority of project effort, resources and commitment - and this over many years. Therefore, we emphasize again that it is essential to invest time and effort into carefully designing, planning and reviewing the underlying project activities at every stage in project development.

Implementation must follow exactly what has been laid out in the PDD, and verification will include a review of how the project has followed original design specifications.

7.2 Monitoring

Monitoring is one of the most critical steps in actually realizing carbon value from the project. Without complete and documented monitoring results, there is little verifiable evidence that the project is generating carbon benefits. Poor quality monitoring plans - or poor implementation of monitoring on the ground- can therefore cause significant loss of carbon credit revenue. Monitoring of project activities will follow the monitoring plan contained in the PDD, as well as additional social and biodiversity impact monitoring in the case of CCB-certified projects. Once the project has been validated, project participants are obliged to strictly implement all steps and measures contained in the monitoring plan. This is a pre-condition for successful verification and issuance of credits. Monitoring is conducted by project proponents or outside contractors and will remain an ongoing activity throughout the project cycle.

Monitoring data, calculations and results need to be thoroughly documented and presented to third-party auditors during the verification process (see Box 14). Deviations from the monitoring plan that has been validated as part of the PDD may be permissible in narrowly defined circumstances, but this requires formal approval which is complicated to obtain, particularly under the CDM. Because of the very limited experience with verifications of forestry projects under the CDM and VCS, project proponents are advised to be very conservative in their approach and to not count on any flexibility.

Monitoring is required on an ongoing basis, although formally monitoring results only need to be compiled into a monitoring report prior to each intended verification event. However it can be very useful to compile monitored data more frequently, and in fact the frequency of monitoring of each parameter or data item is normally specified in the methodology and in the monitoring plan laid out in the PDD. Regular reassessment of the implementation of the monitoring plan on the ground can provide valuable feedback on project performance and help identify problems early on. In addition, having a reasonably good idea of carbon benefits that have been generated up to a certain point is important when deciding when to invest resources into a costly external verification.

Apart from this, certain project risks and disturbance events may need more frequent monitoring efforts, and any unforeseen carbon stock losses may need to be assessed as soon as possible after the event.

Accurate, transparent and verifiable data, well thought-through monitoring systems, quality assurance processes and an efficient overall management approach are all crucial elements to achieving carbon credits issuance. Not following the monitoring plan contained in the validated PDD or not accurately and transparently collecting and storing data is a frequent hurdle during verification and can jeopardize the issuance of carbon credits (see Box 14). Under the CDM, deviations from the approved monitoring plan are only allowed if these do not reduce the level of accuracy and completeness of the monitoring, and deviations from the monitoring requirements as set out in the methodology are no longer allowed once the project is registered. So at the time of validation the project developers must have a very clear and detailed understanding of exactly how monitoring will be done, and must be very sure that the monitoring plan is completely feasible and able to be implemented on the ground, with all the challenges that this can entail.

8. Verification and Issuance

Verification is the step preceding actual issuance of carbon credits. During verification, an external auditor reviews and certifies the volume of emissions reductions or removals that the project has actually achieved – and monitored. This audit is based on monitoring results which have been collected by the project proponent based on the activities and monitoring plan approved in the PDD.

Under both VCS and CDM, verification involves the following basic steps:

- *Submission of a monitoring report to the third-party auditor*. The project developer prepares a monitoring report summarizing the calculation of emission reductions based on the monitored data during the period for which it is intended to claim carbon credits (i.e., the monitoring period).
- *Site visit by auditor*. After an initial desk review by the auditor, a site visit is conducted. During this site visit the auditor checks that the data records, monitoring systems and equipment, training and organization is following the monitoring plan described in the PDD.

- *Draft verification report*. After the site visit the auditor will prepare a draft verification report with their findings, requesting to provide further clarification or correction to the issues identified during the desk review and site visit. The project proponent needs to provide satisfactory responses to the auditor until all the issues raised are cleared.
- *Final verification report and issuance of verification statement*. Once all clarification and correction requests raised by the auditor have been addressed and clarified, the auditor will issue the final verification report. The verification report will indicate the volume of carbon credits generated during the corresponding monitoring period. At this stage, the project will be ready to request issuance of the carbon credits to the corresponding issuance body.

It must be stressed that there is very limited precedent and experience with verification and issuance of forest carbon credits under both the CDM and VCS. No AR credits have yet been issued under the CDM, and only one project has been verified and issued credits under the VCS. How, for example, deviations from the PDD and monitoring plan may be treated is therefore still somewhat unclear.

Timing of the first verification event is an important decision for project proponents. Each verification event can be costly (~ USD 20,000 - USD 50,000) and will involve additional monitoring effort. However early verification can help achieve early revenues, and it can increase prices compared to forward sales of future credits. Ongoing monitoring (even if only involving a reduced set of key indicators) can help determine trigger points where the volume of offsets generated is likely to justify verification. In addition, a first verification round can serve as an important test for the efficiency and credibility of a project's monitoring system. Methodologies may also be quite specific as to how frequently some or all parameters in the PDD need to be monitored.

Validation and verification can be undertaken by the same accredited entity for VCS but must be conducted by different auditors under the CDM, except for the case of small-scale projects. Verification and issuance are somewhat different in nature and form under VCS and CDM.

- *Under the CDM,* first verification can be undertaken at any time, with subsequent verifications every 5 years. The verifier reviews emissions reductions and formally communicates to the CDM Executive Board that the project has resulted in a given volume of emissions removals during a defined period of time. The Executive Board then instructs the CDM Registry administrator to issue the CERs, contingent on payment of an issuance fee. This issuance fee is based on the volume of CERs and is deducted from registration fees paid previously.[33]
- *Under VCS* the request for issuance is made by the project proponent to an approved VCS Program registry, where they must have opened an account (see Section 6.3). Upon successful verification, the verifier will issue a verification report and verification statement (a legal document certifying that the

[33] Currently set at USD 0.10 for the first 15,000 tCO_2e, and USD 0.20 for volumes in excess of 15,000 tCO_2e (EB 36, Annex 21, paragraph 2).

project has resulted in emissions reductions or removals under VCS rules).[34] The project proponent then presents a request for registration and issuance including the verification statement and other project documentation to VCS registry administrator. The VCS Registry Administrator will review documentation and then issue VCUs into the account of the Project Proponent. Please note potential updates to this procedure taking effect in 2011.

Similar to registration, issuance is a more substantial hurdle under the CDM than the VCS. The CDM Executive Board quite frequently issues review requests, which take time to resolve, and it may reduce the actually issued volume from what has been documented in the verification report. Although the VCS Association is increasingly insisting on its right for oversight of the VCS Registry system, issuance requests are much more of a formality under this standard once all the required documentation has been assembled.

For the Voluntary Carbon Standard, the double-approval process for determining the non-permanence risk buffer discount must be completed prior to issuance. As previously mentioned, the first of these risk assessments may be conducted in conjunction with validation, and in this case only the second risk assessment – a desk review - will then be conducted as part of the verification process. If a project's VCS non-permanence risk assessment rating is lowered during any subsequent verification events, then this must again pass the double-approval process with a second verifier.

The VCS stipulates no mandatory minimum or maximum interval for verifications. However, the buffer pool creates an incentive for renewed verification because this can lead to the release of a part of the credits held back in the buffer pool. If subsequent verification demonstrates that risks have been reduced through successful project implementation, the risk buffer discount may be reduced. If the assessed risk level remains constant, 15% of buffer reserve credits (including newly verified credits) are released every 5-years, upon verification. Conversely, not seeking renewed verification within a maximum of 5 years leads to automatic cancellation of 50% of the project's buffer reserve credits.

The VCS Association charges a registration levy for every VCU issued in a VCS Registry[35]. In addition, the companies operating the registries also charge their own fees for opening a registry account, issuing and transferring VCUs. These fees may vary and should be consulted directly with the VCS registries (see Section 6.4).

Under the CCB, verification must be completed at least every 5 years.

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[34] Validation and verification (see below) reports and statements, may be combined, under the VCS, in cases where validation and verification are conducted in a single event.

[35] Currently €0.04 per VCU.

APPENDIX 1: Summaries of Forthcoming Thematic Chapters for Full Guidebook

Introduction

The step-by-step guidance presented in this document will, in an updated format, be at the heart of the complete project development guidebook, due to be released in the first half of 2011. Project proponents and participants will vary in their previous experience and expertise, and they will require more in-depth guidance on different aspects of project development. In order to give the kind of comprehensive guidance that is difficult to fit into a step-by-step format, the full version of the guidebook will therefore include thematic chapters. These provide readers with a more thorough discussion and guidance on the core aspects of forest carbon project design and development. Individual chapters focus on

- REDD technical project design,
- AR technical project design,
- Carbon stock measurement and monitoring,
- Engaging with communities,
- Legal aspects of project development and commercialization,
- Financial aspects of project development and commercialization,
- Assessing social impacts and assuring co-benefits, and
- Assessing biodiversity impacts and assuring co-benefits.

These chapters follow a coherent framework by providing *technical* guidance, e.g., regarding requirements of standards and methodologies, but also *practical* guidance based on lessons learnt from existing project development efforts, as well as *strategic* guidance, which is probably the dimension most lacking in current publications. While creating a useful stand-alone guidance, this guidebook seeks to avoid duplicating existing resources. Therefore, key tools, reports, and manuals that deal with specific issues and are publicly available will be referred to for each theme.

Some of the aspects discussed by the various chapters occur at relatively clearly defined points in the project development cycle and can be directly linked to specific "steps", e.g., carbon inventories or baseline analyses. Others, however, require a more continuous engagement throughout the design and implementation phases, e.g., legal issues and community engagement. Each chapter therefore includes guidance about the most efficient way to integrate these efforts into project assessment, design and development. This includes ways of creating synergies for defining effective project activities, reducing costs by combining studies with other ongoing assessments or carrying out different sub-steps before and after project financing has been secured. Similarly, recommendations will be provided for when to bring in specialized outside expertise or to build up internal capacity in the core project team.

Throughout the publication the focus is on the VCS and CDM as preferred carbon accounting standards, together with guidance on achieving CCB co-certification. However, some less well-known carbon standards that may provide useful alternatives for particular project circumstances are briefly discussed in several places. The project types that are considered fall within the REDD, AR, and IFM categories, and examples are drawn from specific sub-types, such as avoided unplanned mosaic deforestation.

The ensemble of these thematic chapters, the core step-by-step guidance section, and a toolbox of key external resources should provide project proponents with the tools that are necessary for designing economically viable forest carbon projects that ensure long-term social and environmental sustainability and for maneuvering the road towards generating carbon market revenues.

1. REDD Technical Project Design

Author: Joerg Seifert-Granzin (Forest Trends)

Projects reducing deforestation and forest degradation are possibly the most exciting but also one of the most complex of all carbon project types. As the world looks to REDD+ to become a key tool in fighting climate change, voluntary markets and regulatory developments are providing an increasingly dynamic and multi-layered setting for project proponents. How can project proponents navigate through the evolving framework of stand-alone, sub-national, and nested project settings? What methodological and political engagement strategies can ensure that existing and emerging market opportunities can be accessed while avoiding incompatibilities with potential future government-led schemes?

This chapter explores the methodological requirements and guidance that are emerging from voluntary markets and UNFCCC negotiations and provides recommendations for heeding to both. It then outlines possible types of activities in these different settings and how eligible land areas and forests are defined. In a series of steps, the chapter discusses how to determine project start dates, geographical boundaries, and project strata. A central part of the guidance revolves around a thorough analysis of drivers and agents of land-use change and the appropriate definition of project interventions. The establishment of baselines and modeling of spatially explicit reference scenarios probably represents the most daunting technical aspect of REDD project development for many, along with defining the most appropriate monitoring approach given rapidly evolving technological solutions. Finally, the chapter assists project proponents in assessing non-permanence and leakage risks in a manner that both satisfies methodological requirements and feeds back into enhanced project design.

2. AR Technical Project Design

Authors: Alvaro Vallejo (Carbon Decisions), Johannes Ebeling, Catalina Romero

Planting trees to sequester carbon dioxide is what has established the concept of carbon offsets in the mind of the public. Afforestation and reforestation projects have concentrated more minds on resolving methodological questions than almost any other sector. There is now a broad set of tools to draw on; yet this remains a

challenging project sector that has faced an uphill struggle to becoming truly established in mainstream carbon markets. How can projects best build on the broad foundation of technical and market-related experiences that have been gathered? How can project proponents avoid getting lost in the maze of standards, methodologies and associated tools that have been created in the process?

The chapter starts out by exploring the landscape of standards that have evolved for reforestation projects and the flexibility they may provide. It then provides a structured overview over the core methodological aspects of project development, starting with the definition of project boundaries, and followed by the establishment of without-project baselines, the assessment and management of non-permanence and leakage risks, and the monitoring of carbon benefits and project emissions. Considerable attention is dedicated to helping project proponents understand how different carbon standards determine eligible project activities, eligible project lands, project start dates and crediting periods, and what permanence assurance mechanisms need to be complied with. Finally, the chapter provides guidance on how to choose between and apply appropriate methodologies and methodological tools for quantifying carbon benefits.

3. Carbon Stock Measurement and Monitoring

Authors: David Diaz (Forest Trends), Matt Delaney (Delaney Forestry Services)

Any approach to demonstrating climatic benefits of a forest carbon project fundamentally relies upon estimating the amount of carbon actually stored in trees. Forest managers and scientists have measured timber volumes and tree biomass for a very long time, so this aspect of carbon project development builds on relatively well-established approaches. Even if this aspect of project development may be more straightforward than others, interpreting the array of approved methodologies and following prescribed approaches is not always easy. Carbon stocks do not only need to be established at project start, but the accounting approach adopted by project proponents also needs to be able to track the impacts of management interventions and unforeseen disturbances over time, in an externally verifiable way. There may also be a need to look beyond what has become the mainstream toolbox of carbon accounting techniques in order to define the most cost-effective, practical and reliable in different project settings.

This chapter begins by discussing the underlying goals and principles of carbon accounting approaches laid down in international good-practice guidance and specific methodologies. It then introduces the goals and scope of inventory efforts in a given project setting in order to design and plan an appropriate approach while following approved AR, REDD, and IFM methodologies. Building on existing manuals, additional guidance is given on stratifying forest and land areas, meeting accuracy and precision goalposts, choosing among plot layouts, sampling design and frequency and translating field measurements into carbon volumes. The chapter then outlines steps for establishing sound quality control and assurance systems and data management. Finally, the various aspects of monitoring carbon stock changes are explored, including the tracking of carbon stock increases as well as biomass removals and disturbances.

4. Engaging with Communities

Authors: Tom Blomley (Acacia Natural Resource Consultants), Michael Richards (Forest Trends), Beto Borges (Forest Trends)

Communities are crucial stakeholders in almost any carbon forestry setting, whether as stewards of remaining forests, as agents of underlying deforestation trends, taking part in tree planting efforts, or otherwise involved in or affected by project activities. Business-oriented forestry ventures and community-based projects alike need to understand well the dynamics involving communities on or around project lands, and they need to know how to engage with communities in effective, transparent and equitable ways. Doing so will not only ensure good local relationships but also greatly contribute to a strengthened project design and long-term success in creating carbon benefits.

This chapter lays out a variety of fundamental concepts of community engagement by starting with a discussion of what is meant by participatory planning and by free, prior and informed consent and what these imply for project development. Much attention is given to helping project proponents evaluate issues of tenure and access to resources and understand their importance not only for the distribution of project costs and benefits but also for determining appropriate project management structures and recognizing potential areas of conflict. The chapter then explores how to strengthen community institutions, develop alternative livelihood strategies and give sufficient attention aspects of gender. Finally, it discusses how participation can be achieved in ways that are meaningful and improve the project design, while building the necessary capacity for communities to engage.

5. Legal Aspects of Project Development and Commercialization

Authors: Slayde Hawkins (Forest Trends)

Carbon credits are intangible goods whose value is created and whose transferability is determined by a regulatory framework, whether this consists of formal laws and regulations or non-governmental rules. Forest land tenure and use rights are subject to a different legal framework in every country, as are underlying forest management or conservation activities, international financial transactions, corporate revenues and, increasingly, carbon rights. Revenues generated by a project need to be transparently managed between different stakeholders based on legal arrangements. Finally, commercial agreements to transact carbon credits need to balance different interests, costs and risks. An in-depth look at legal issues early on is therefore indispensible for any successful carbon project.

This chapter begins by exploring regulatory issues related to the sensitive questions of land tenure and carbon rights, as well as a range of aspects concerning host-country government approvals, permits, licenses and tax regimes. It then discusses fundamental legal aspects of project governance and financial management related both to the carbon dimension and underlying activities of project efforts. Following this, the chapter delves into the complex area of structuring and negotiating a carbon sales agreement. In an accessible way, it outlines the fundamental aspects of different types of commercialization agreements, including carbon prices and timing of

payments, the allocation of risks and carbon credit delivery liabilities, transaction costs, and arrangements regarding default and remedies. Guidance is provided on how to recognize issues and determine which legal options provide the best fit for the requirements of a given project in terms of revenues, costs and risk allocation.

6. Financial Aspects of Project Development and Commercialization

Authors: Phil Covell (Forest Trends)

Carbon benefits need to be quantified in order to ensure that forest projects make a real and measurable contribution to fighting climate change. To a large degree, however, carbon accounting approaches have become as complex and rigorous as they are because carbon is traded on markets, and financing is linked to the exact volume sequestered or preserved in trees. Long before prices and payment modalities for carbon credits can be negotiated, project proponents need to evaluate financial aspects of the carbon venture they have in mind. What possible strategies exist to finance project development and the underlying activities that will generate carbon benefits? How can carbon markets be accessed at the best possible conditions to match the needs of a particular project? And how can project proponents determine the right partners and structures to do so?

In a first step, this chapter maps out the rapidly evolving environment of market-based and other forms of carbon finance which forest project proponents need to understand to develop a suitable business strategy. How can the production of forest carbon be financed? This is evaluated by exploring aspects of implementation and opportunity costs related to the underlying project, carbon project transaction costs, taxes and other aspects. The chapter then guides readers on how to carry out a financial analysis of their potential project - including evaluating risks related to project activities themselves, to the host country and carbon markets - and how to evaluate appropriate funding sources. What is the best commercialization strategy for a project's carbon credits? To determine this, different types of carbon buyers and their motivations are analyzed and strategies for engaging with them are outlined. Project proponents are guided on how to turn their carbon into a product with specific financial characteristics and what this means for risk, pricing, and product placement. Finally, the potential role of a commercial project developer in helping projects navigate this route is discussed.

7. Assessing Social Impacts and Assuring Co-Benefits

Authors: Michael Richards (Forest Trends)

Agriculture, forestry and other land uses are always linked to livelihoods and economic interests and changing land-use trends will therefore necessarily impact these. This link is particularly strong when project interventions aim to prevent forest conversions for small-scale agriculture, but changes to land and forest access, employment opportunities, agricultural techniques or other aspects are common to virtually all forest carbon projects. In fact, changing economic motivations of local stakeholders is at the very heart of many project interventions. So understanding social impacts is indispensible for project proponents, is an ethical responsibility in terms of avoiding potential negative welfare or equity impacts on local stakeholders, and it can

also be extremely valuable for designing more effective project activities, avoiding leakage, and addressing non-permanence risks. Demonstrating social benefits is also increasingly seen as a market requirement for forest carbon and can lead to a price premium if certified.

The chapter is based on a social impact assessment manual for forest projects developed by Forest Trends, CCBA, Rainforest Alliance and Fauna & Flora International. It starts out by asking what is meant by social impacts and then discusses different types of social costs and benefits and if and how net impacts of a project can be determined and assessed. Using the Community Climate and Biodiversity (CCB) Standards as a guiding framework, project proponents are taken through a serious of steps of identifying social starting conditions and stakeholders, developing a without-project reference scenario, establishing attribution and a project scenario using a causal framework, identifying and mitigating negative social impacts, defining appropriate indicators and measurement approaches and developing a community monitoring plan. Throughout, a focus is on finding approaches that are credible and transparent yet also cost-effective and practical in different project settings.

8. Assessing Biodiversity Impacts and Assuring Co-Benefits

Authors: John Pilgrim (The Biodiversity Consultancy), Jonathan Ekstrom (The Biodiversity Consultancy)

Realizing biodiversity and conservation benefits is a key objective for many project proponents drawn to carbon forestry. At the same time, some of the most persistent criticisms leveled at forestry offsets relate to alleged negative environmental impacts, particularly in the context of large-scale plantations. Along with the social dimension, biodiversity impacts are a core dimension that distinguishes forestry offsets from other sectors and can make them either more risky or more attractive in the eyes of buyers and investors. How can environmentally responsible projects provide proof of their benefits and reap substantial market benefits? How can a realistic business-as-usual scenario be established in order to determine net project impacts?

The chapter begins by asking what biodiversity impact assessment means and how this can differ for various project types. Following the framework of the Climate Community and Biodiversity Standards, key issues are then highlighted in establishing attribution of project impacts, developing a reference scenario, and evaluating and mitigating leakage of negative biodiversity impacts. The chapter goes on to discuss assessing biodiversity starting conditions and evaluating net project impacts, incorporating principles of the High Conservation Value Framework, and evaluating and mitigating risks of negative biodiversity impacts and choosing monitoring indicators and measurement techniques that strike an appropriate balance between ease of measurement and representativeness of reality. Finally, guidance is provided on analyzing data, eliminating sources of error and allocating resources efficiently.

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