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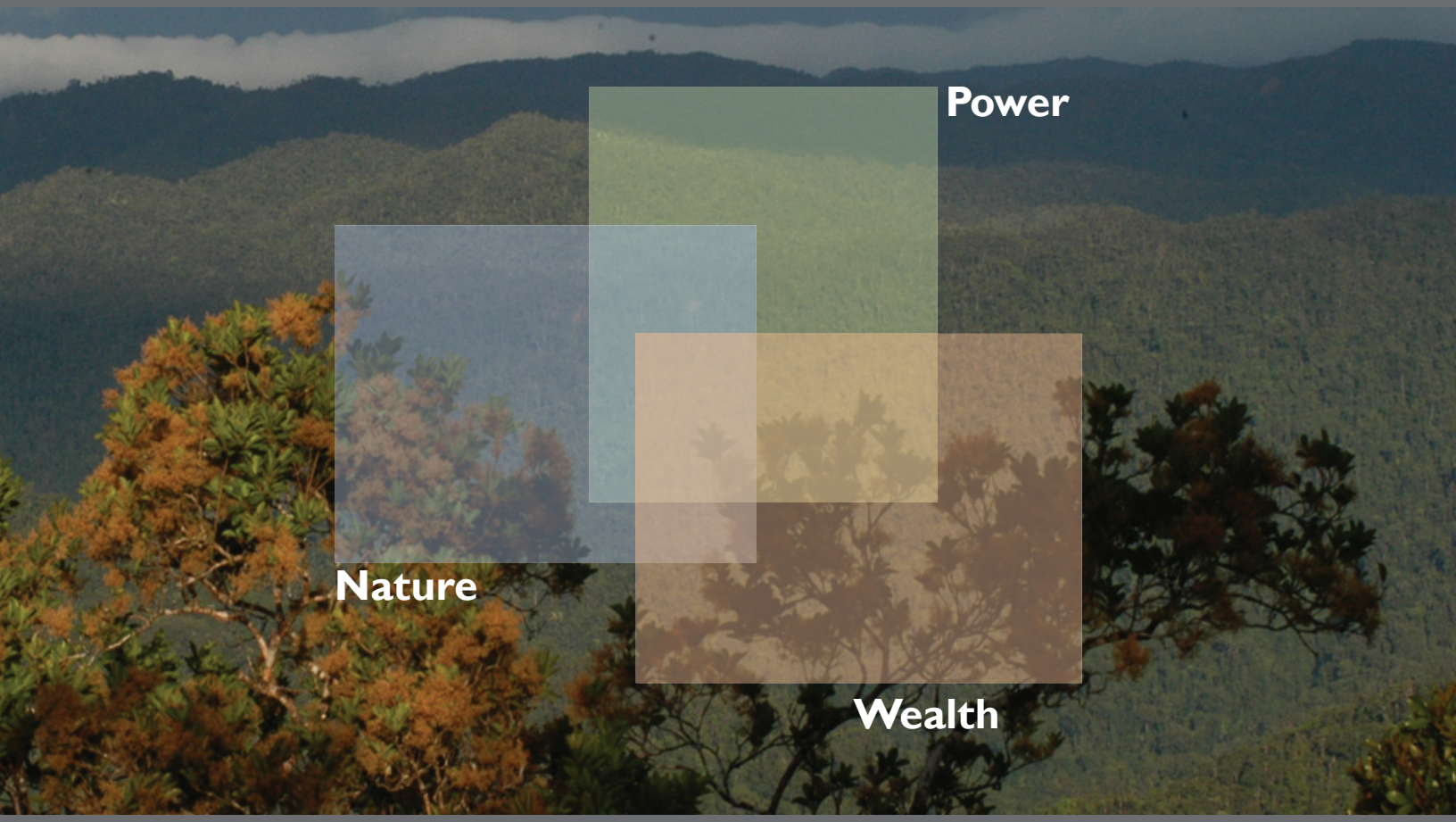

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WCS REDD Project Development Guide

This document draws upon information presented at a REDD workshop hosted by the TransLinks program of the Wildlife Conservation Society in Lima, Peru, September 10-12, 2008. Workshop presenters: Tim Pearson, Lucio Pedroni, Linda Krueger, Ray Victurine, Tom Clements, Tom Evans, Christopher Holmes, Ricardo Muza, Rob Wallace and David Wilkie

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REDD Project Development Guide

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Acronyms

AFOLU:	Agriculture, Forestry and Other Land Uses
CCBA:	Climate, Community and Biodiversity Alliance
CO_2e:	Carbon Dioxide Equivalent
DBH:	Diameter at Breast Height
GHG:	Greenhouse Gas
LULUCF:	Land Use, Land Use Change and Forestry
PDD:	Project Design Document
PIN:	Project Idea Note
REDD:	Reducing Emissions from Deforestation and Degradation
UNFCCC:	United Nations Framework Convention on Climate Change
VCS:	Voluntary Carbon Standard
VCU:	Voluntary Carbon Unit
VER:	Verified Emissions Reductions

1.0 Introduction

What is Reducing Emissions from Deforestation and Degradation (REDD)?

Reducing Emissions from Deforestation and Degradation (REDD) is a policy that has been proposed for inclusion in the post-2012 international climate policy agreement. If accepted, signatories to a post-Kyoto international climate policy agreement could then receive incentives for verifiable reductions in deforestation and/or forest degradation. The exact nature of these incentives will be contingent on the outcome of ongoing United Nations Framework Convention on Climate Change (UNFCCC) negotiations, with a basic agreement expected by the Copenhagen Conference of the Parties in December 2009. Currently, it is expected that the incentives will include a mixture of the purchase of emissions reductions units by international funds (generated by a global carbon tax, for example), using emissions reductions units to meet national targets, and the trading of offset credits with other countries/entities striving to meet their agreed upon emissions reduction targets. Under the latter mechanism, emissions reduction units would be bought and sold in regulated carbon market(s). Currently, emissions reduction units generated from avoided deforestation and/or degradation are only sold as offsets on the voluntary carbon market.

REDD pilot projects are being developed around the world to demonstrate how REDD might work on the ground in preparation for the implementation of this policy and the buying/selling of these emission reduction units on the regulated market. This document provides guidance on key questions to ask when assessing the feasibility of developing a REDD project and key steps for developing a successful REDD project. Although REDD refers to deforestation *and* degradation, the projects and training workshop from which this guidance document has drawn have focused primarily on deforestation; thus, that will be the focus of this manual, but many of the guiding principles may also hold true for a project that is addressing forest degradation.

WCS REDD projects have adopted two primary sets of standards for developing projects:

The Voluntary Carbon Standard (VCS), http://www.v-c-s.org/

The VCS program provides a robust, new global standard and program for approval of credible voluntary offsets.

VCS offsets must be real (have happened), additional (beyond business-as-usual activities), measurable, permanent (not temporarily displace emissions), independently verified and unique (not used more than once to offset emissions).

Climate Community and Biodiversity (CCB) standards developed by the Climate, Community and Biodiversity Alliance, http://www.climate-standards.org/index.html

The Climate, Community and Biodiversity Project Design Standards (CCB Standards) evaluate land-based carbon mitigation projects in the early stages of development. The CCB Standards foster the integration of best-practice and multiple-benefit approaches into project design and evolution. The Standards:

- Identify projects that simultaneously address climate change, support local communities and conserve biodiversity.
- Promote excellence and innovation in project design.
- Mitigate risk for investors and increase funding opportunities for project developers.

It should be noted that CCB certification is not valid on it's own for certifying emissions reductions; rather, it adds value to VCS certified projects through biodiversity and community benefits.

The approach to developing a pilot project that is presented in this document represents a particular way to develop REDD initiatives that has been informed by WCS experiences in establishing sub-national REDD pilot projects. WCS initiatives have been designed in accordance with the Voluntary Carbon Standard (VCS) and the Climate, Community and Biodiversity Alliance (CCBA) certification requirements. These WCS projects have been designed to reduce emissions from deforestation, as well as to support biodiversity conservation and benefit local communities through funding currently available from the voluntary carbon market. However, REDD policy negotiations are progressing towards a final framework to be decided upon in December 2009. Thus, it is possible that the final decision on a REDD mechanism and the way in which it would function in the post-2012 climate agreement could vary, in structure and funding mechanisms, from the way current pilot projects are being designed. Nevertheless, the development of REDD pilot projects now provides an opportunity to demonstrate how REDD projects might work in the future and leverage currently available and possibly future funding streams to support climate change mitigation, wildlife conservation and community development.

Although many forest conservation activities are not developed as REDD projects, it may be helpful to begin considering a REDD project as a possibility now. For example, under current voluntary carbon standards, carbon credits can be claimed for activities that result in emissions reductions that occurred up to two years prior to the official verification of credits. As a result, it would be possible to design a project with forest conservation as a goal using donor funds now, successfully implement it over the next two years, and then verify the emissions reductions achieved by the end of the second year. In order to do this, activities implemented must be designed with the explicit aim of reducing emissions from deforestation and/or forest degradation and must generate emissions reductions that are additional to any reductions that would have occurred without the project. Audit companies will want to verify that this was an initial goal of the project by checking project strategy documents, reports and other supporting materials. If, therefore, you think that you may want to design a REDD project in the future, it is worthwhile building REDD into your long-term forest conservation strategy now, in order to later claim emissions reductions generated from avoided deforestation and/or degradation at a later date.

Please note that this document is informed by WCS experience in developing REDD pilot projects and is based upon best available knowledge on the forest carbon market as it is relevant to WCS at the time of writing. Also, please note that where possible, estimated costs for different steps in developing a REDD project have been included. These are only estimates of costs based on previous experiences and are likely to vary depending on the unique circumstances of individual projects and may change as negotiations progress. Although this guidance document has been drawn largely from a WCS-hosted workshop and WCS's experiences, it is intended that the information included within this manual may be useful to a wide range of groups working on REDD.

2.0 Pre-conditions for a REDD Project

There are several key criteria that must be included within all REDD projects:

- The project must result in a decrease in carbon dioxide (CO_2) emissions resulting from deforestation and/or degradation that are *additional* to any reduction in emissions that would have occurred without the project. Thus, the project activities funded by carbon financing must reduce deforestation and/or forest degradation below the level that would have occurred without the project.
- The project activities should not result in substantial amounts of *leakage*. Leakage refers to a displacement of activities that cause deforestation and/or degradation in the project site to another site and, thus, a decrease in the net CO_2 emissions reductions achieved by your project.
- It must be possible to reduce CO_2 emissions from deforestation and/or degradation at your site through project activities. You must be able to verify the link between reduced forest cover change and your project activities.

The following sections outline important issues to consider at the national and local scale, when developing a REDD project that meet these criteria.

2.1 National Context

One of the first suite of questions to ask before moving forward with a REDD project relates to leveraging national support for the project. The details of how national targets and sub-national (i.e. those generated from projects) emissions reductions will interface are still being discussed within REDD policy negotiations. However, current discussions point to development of national-level REDD approaches as a way to address leakage, with sub-national activities established within national REDD frameworks. Regardless of future decisions on this issue, garnering national support for the project will be critical for ensuring its long-term success and reducing risk for potential buyers of emission reductions. Before proceeding in developing a project, it is important to consider potential national policy constraints and opportunities.

If you answer "no" to any of the questions below, it may be important to consider if and how these issues can be managed:

	Yes/No
Are national policies formulated on REDD? Is the country supportive of REDD projects? It is important to understand the national level position on climate change policies before developing a project. It is possible to review the government position(s) on REDD at Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) meetings, national strategy documents produced by the World Bank Forest Carbon Partnership Fund and/or the United Nations REDD initiative, if a country is a member of these programs.	
Is the country politically stable? Investors will want to ensure that their "investment" is secure, so if there is political instability it will be important to demonstrate that your project will be viable despite the political climate.	
Is the government transparent and responsible with public finances? If not, can REDD revenues be managed in a decentralized manner so that they can be directed to the site and used to achieve project goals? See Figure 1 for a model of how funds can be distributed across levels of governance and among stakeholders to ensure that fair and equitable incentives for decreasing deforestation reach the relevant parties.	
Are there clear owners and managers of the forest in your country? Are these the same? Are the owners and/or managers of the forests identical to the owners and/or managers of the carbon? In many countries, large areas of forest belong to the state and are administered by national or regional governments. In any case, all REDD projects must be coordinated carefully with appropriate government institutions.	
Does the country have contract laws that legally uphold signed contracts?	
Is the government pursuing land use policies that will support forest carbon projects (i.e. upholding land tenure and resource rights)?	
Is the government supportive of environmental financing for conservation and development (i.e. are there other functioning Payments for Ecosystem service schemes such as payments for water, eco-tourism, biodiversity offsets, and/or conservation easements operating within your country and supported nationally)?	

2.2 Site Level Criteria

If it seems that project development would have government support at a national level, there are certain site level criteria that are important to consider. A few guiding questions for consideration at a project site are included below.

	Yes/No
Do you have a good relationship with the local community? Do you have a good relationship with local government?	
Is the majority of the area of interest forested?	
Has there been recent deforestation in that area? Is it likely that deforestation will increase in the future?	
Are the drivers and agents of deforestation identifiable? Are the agents of deforestation local? If you can't identify the agents of forest cover change and/or people are coming to the site from other places, it may be extremely difficult to reduce deforestation and to control for leakage and may require more complex, expensive analyses of deforestation.	
Is the forest an old growth forest? Are the average diameter at breast height of the stems greater than 10cm (i.e. is there likely to be a high carbon content)? Is the forest area large enough to generate sizeable emissions reductions in relation to potential start up costs (i.e. transaction costs go down with increasing size of the forest)?	
Does the site contain flora and faunal species of conservation interest?	
Is the forest managed by the state, individuals or communities? If communities, are they organized (or could they be organized) to undertake forest management activities?	
Are there national and local resource and forest tenure rules? Is it clear who would/could be "paid" to not cut forests?	
Are local people interested in the project idea? Are people willing to change their livelihood activities if necessary to reduce deforestation/degradation? Are there viable alternative economic activities in the region that would support local livelihoods? Can support for developing or enhancing alternative economic activities be generated by the project in relation to your budget, partners and capacity?	
If you think you should move forward, do you have access to seed funding for initial REDD start up costs?	

3.0. Preliminary Project Design

If you feel comfortable that your project would be supported by the local community and government and would be climatically beneficial, socially acceptable and ecologically valuable, then the next step would be to develop a preliminary project design to assess the feasibility of your project. General steps in the process are:

- **Determine project location**
- **Identify goals of project**
  - The goals must include reducing deforestation and related emissions below a historical level or below a predicted future level. These reductions must be additional to any decreases in deforestation and/or degradation that would occur in the absence of the project and should account for leakage.
- **Get government approval.** Obtain approval or "letter of no objection" to start a feasibility study from the host country government.
- **Develop a concept idea.** A concept idea note, also commonly referred to as a Project Idea Note (PIN), can be used to get initial feedback from a third party on the feasibility of the project and/or to solicit pre-project funding. At this stage, it is purely the exchange of an idea and there are no legal obligations to proceed further. An example of a PIN can be found on the World Bank Carbon Finance Unit website, which can be used as a template and/or provide guidance on useful information to include when creating a concept idea note (see http://wbcarbonfinance.org/docs/New_PIN_Template_for_LULUCF_Projects_10-2007.doc). Information requirements will vary depending on the person/organization to which the concept idea is submitted for review/funding. General information that may be useful to include in a concept idea includes:
  - Type of project (for example, REDD) and size of the project;
  - Project location and the surrounding leakage belt within which leakage will be monitored;
  - Identify activities that would be needed to reduce deforestation and/or degradation at the site without causing leakage or displacement elsewhere;
  - Conformity with National REDD framework detailing how the project will link with the government's REDD program;
  - Anticipated total amount of Greenhouse Gas (GHG) emissions reductions that could be generated from a project when compared to the "business-as-usual" scenario (this can be an informed estimate and will be quantified more precisely in the official "baseline" study that will be presented in the Project Design Document);
  - The estimated GHG crediting life time (between 20 and 100 years for Agriculture, Forestry and Other Land Use [AFOLU] projects certified under the VCS);
  - From the estimated emissions reductions, calculate the US$/ton CO_2eq[1] that will be generated from the project. This calculation should exclude approximately 30% of the total emissions reductions that are estimated to be generated from the project; these should be set aside as a buffer for risk management;
  - A financial model of the project, including anticipated revenues (from carbon credits) and costs for proposed activities. Indicate which parties are expected to provide the project's financing;
  - Identify the project's socio-economic or biodiversity benefits.

At this point, after completing a concept idea, if it does not appear that sufficient revenue will be generated in relation to the costs estimated in the following steps of this manual, it is advised to carefully consider if it is reasonable to proceed with the project at this stage.

1 Carbon dioxide and other greenhouse gas emissions are measured – and traded – in "tons of carbon dioxide equivalent." One metric ton of carbon converts to 3.6 tons CO_2e.

3.1. Pre-Project Financing

Initial funding will be needed for quantifying carbon stock of the forest; analyzing deforestation rates and drivers of deforestation; generating a baseline of emissions resulting from deforestation at the site; developing and implementing the project activities to reduce deforestation and degradation; having the project validated; and getting verification of the emissions reductions generated from the project (details of these processes and costs will be described in later sections). The amount of funding you will need to develop a project will depend on the stage of project development at which you enter this process. For example, if you have already conducted a deforestation analysis with satellite imagery, you may not need as much funding as a project where no such data and/or analyses exist. If this is the case and you do not have in-house capacity to measure emissions and deforestation, you may require funding to hire a third-party to conduct these analyses. The rest of the document, sections 4-9, will outline information needs for developing a project to the stage where you are ready to market and sell emissions reduction units. However, first, it might be useful to consider what your options and needs are for seed funding so that the next steps in this process can be pursued.

Seed funding might come from a variety of multi-lateral, bi-lateral, foundation and private sector sources. Each presents a variety of opportunities and challenges, as well as, rapidly shifting interests and foci.

4.0. Project Development Estimated Costs: $40,000 to $100,000

The following points outline critical technical components for developing a project and additional information can be found in Appendix 1. These requirements may be fulfilled internally by the project developer, depending on in-house capacity, or outsourced. While there are several ways to develop and certify a REDD project, WCS has chosen to follow VCS standards for quantifying emissions reductions and CCB standards for designing the project. The VCS certification indicates to buyers that emissions reductions are credible and the CCB certification demonstrates that projects also benefit biodiversity and communities and, thereby, represent projects with lower risks in the long-term.

- **Identifying the project area, reference region and leakage belt.** See the glossary for definitions of these terms.
- **Analysis of emissions reductions that could be generated from project activities.** This analysis requires 1) estimation of forest carbon stocks; 2) quantification of changes in forest carbon stock as a result of deforestation and/or degradation; 3) analysis of the drivers of deforestation and/or degradation; 4) calculation of the reference emissions level, or baseline, under the no-project scenario; 5) estimation of CO_2 emissions that would be reduced by project activities, which must include emissions that might result from leakage (displacement of pre-project activities to another site; see Appendix 1 for more information). Although no methodology for assessing emissions reductions from avoided deforestation and/or degradation has officially been approved by VCS at the time of this writing, it is recommended to use the Intergovernmental Panel for Climate Change (IPCC) Good Practice Guidance on Land-Use, Land-Use Change and Forestry and the VCS standards for guidance on which methodologies are acceptable for these analyses[2].

2 **Key references:**
• Brown, S., M. Hall, K. Andrasko, F. Ruiz, W. Marzoli, G. Guerrero, O. Masera, A. Dushku, B. De Jong, and J. Cornell, 2007. Baselines for land-use change in the tropics: application to avoided deforestation projects. Mitigation and Adaptation Strategies for Climate Change, 12:1001-1026.
• Brown, S. F. Achard, R. De Fries, G. Grassi, N. Harris, M. Herold, D. Molicone, D. Pandey, T. Pearson, and

These analyses can be done in-house if your staff has extensive forestry and remote sensing expertise, but if you do not have the capacity to do this internally, this process can be contracted to a third party. **Estimated Costs:** US$40,000-100,000 (this will vary depending on your in-house capabilities; availability of data on carbon stocks and satellite imagery on historical deforestation; and the need for assistance by a third-party organization)

- **Calculation of revenue that might be generated from emissions reductions.** From the analysis of emissions reductions that will be generated by project activities, you can then calculate how much money will be generated from the sale of emissions reductions. Currently, the potential revenues have to be estimated from the price of CO_2e on the voluntary market[3]. Under the VCS, a proportion of the carbon credits generated are placed into a general risk management buffer pool to guard against the risk of project failure and impermanence. For preliminary calculations, it is reasonable to calculate that approximately 30% of the emissions reduction units would be set aside in a buffer leaving 70% of the credits that can be sold as revenue. These revenue estimates will be critical information for determining the feasibility of moving forward with the project - whether you will generate enough money to fund all or a desired percentage of project activities to reduce deforestation. These revenue estimations will also be important for negotiations with the host government.
- **Work with agents of deforestation to identify project activities and incentives that are sufficient to reduce forest cover loss.** It is critical to deeply understand the drivers and agents of deforestation to determine if it will be possible to reduce deforestation by supporting people to adopt activities that do not result in forest loss. If you cannot identify the agents of deforestation and/or if they are from outside of the area, it could be difficult to control deforestation and/or prevent leakage if deforestation is curbed at your project site. If it is possible to identify agents of deforestation, it is important to work with relevant stakeholders to identify activities or incentives that would encourage/allow people not to deforest and quantify how much financial or technical support would be needed to implement those project activities. Can these costs be covered by expected revenues from the sale of proposed emissions reductions (expected revenues versus expected costs)? When designing these activities it is important to review and consider the CCB standards. It will also be important to compare revenues that might be generated from carbon funds to potential revenues that could be generated from other land uses.
- **Deforestation Monitoring Plan.** After a baseline of deforestation and emissions has been established, you will have to develop a forest cover monitoring plan including frequency of monitoring needed with respect to the drivers of deforestation and costs of monitoring. As a general principle, the temporal boundaries for the monitoring period should be more frequent than the interval of the first crediting period, but does not need to occur more frequently than annually. The frequency of forest cover monitoring will largely depend on the drivers of forest cover change and the unique context of the site. This plan would also need to include monitoring of leakage. If the project intends to apply for CCB certification, it will also be necessary to develop baselines and design monitoring protocols for assessing the biodiversity and social impacts of the project. These costs can be significant, so it is important to consider these at an early stage of project development. The Katoomba Group (http://www.katoombagroup.org) is currently developing guidelines for cost-effective social impact assessment in line with CCB standards.

D. Shoch, 2008. Reducing Greenhouse Gas Emissions from Deforestation and Degradation in Developing Countries: a Sourcebook of Methods and Procedures for Monitoring, Measuring and Reporting. Winrock International.

• Pearson T., S. Walker and S. Brown. 2006. Sourcebook for Land Use, Land Use Change and Forestry Projects. BioCarbon Fund (World Bank) and Winrock International, Washington D.C. 64 pp

3 Currently a low price of $3-5 per ton is useful for preliminary calculations, as of March 2009.

- **Design project management structure:** It is important to carefully assess the project team and developers' capacity for managing a business, results-driven project over many years. Key questions to ask are:
    - Who will lead the project development?
    - Who will manage the project?
    - How many staff do you need?
    - Do leaders and developers have sufficient skill sets (for example, business management, results reporting, and/or technical skills, etc.) for managing the project over multiple years?
    - What are the costs of the proposed management structure?
- **Clarify roles and expectations with project partners and all stakeholders as early as possible.** Since forest carbon projects often require that different groups and people work together and/or collaborate, it is a good idea to clearly state roles and provisions regarding sharing of responsibilities, benefits and/or information in a written Memorandum of Understanding or equivalent document at an early stage of project development.

All of this information can then be incorporated into a project design document (PDD). If written properly, one PDD can be used for both VCS and CCB certification applications (see Section 6 for more information on the PDD).

5.0. Negotiation of Agreement and Mechanisms to Disburse Revenue Estimated costs: US$10,000->200,000

- **Design Incentive Structures.** It will be important to identify how funds generated from emissions reductions sales will be distributed to ensure that incentives and/or activities reach the relevant people and, thus, result in decreased emissions from deforestation. This will require addressing details such as how funds generated from the sale of emissions reductions will be managed and the proportion of funds that will be distributed across national and local government, local communities, forest managers, and third parties for management, monitoring, marketing and selling emissions.
- **Prepare for negotiations with host government:**
    - Understand their stance on climate change, rural development and conservation;
    - Be prepared to present the project design, based on the steps presented in Section 4, including an example of how a fund distribution scheme might work (see Figure 1).
- **Establish a plan to market and sell emissions reductions units.**
- **Obtain a letter of approval from the host government to move forward with the project.**
- **Establish the institutional structures to disburse revenue.**

6.0. Validation
Estimated costs: up to US$70,000

- **Write PDD.** The Project Design Document (PDD, also called a Project Description document on the VCS website) is a project-specific document which will be reviewed by a third party validator to determine whether the project (i) has been approved by all of the parties involved in the project, (ii) would result in reductions of greenhouse gas emissions that are additional to what would have been achieved without the project and (iii) has an appropriate Baseline and Monitoring Plan. The PDD is prepared by the project sponsor and can be developed from the information gathered from the steps described in Section 4. The same PDD can be used for both VCS and CCB certification if prepared appropriately. The VCS and CCBA websites have posted example PDDs from projects that have been successfully validated along with auditor reports on the projects. Common PDD templates that may be useful guides can be found on the UNFFCC website (http://cdm.unfccc.int/Reference/Documents/cdm_ar_pdd/English/CDM_AR_PDD.doc) and on the VCS website (http://www.v-c-s.org/policydocs.html, the VCS Project Description Template). As long as the PDD contains all of the relevant information as required by VCS and/or CCBA, it is not required that project developers use a specific type of template. Note that for CCB certification, additional biodiversity and social criteria must be added to the PDD templates mentioned above (these criteria can be found on the CCBA website). **Estimated costs:** approximately US$20,000 if you need external assistance to help with the development and writing of the PDD.

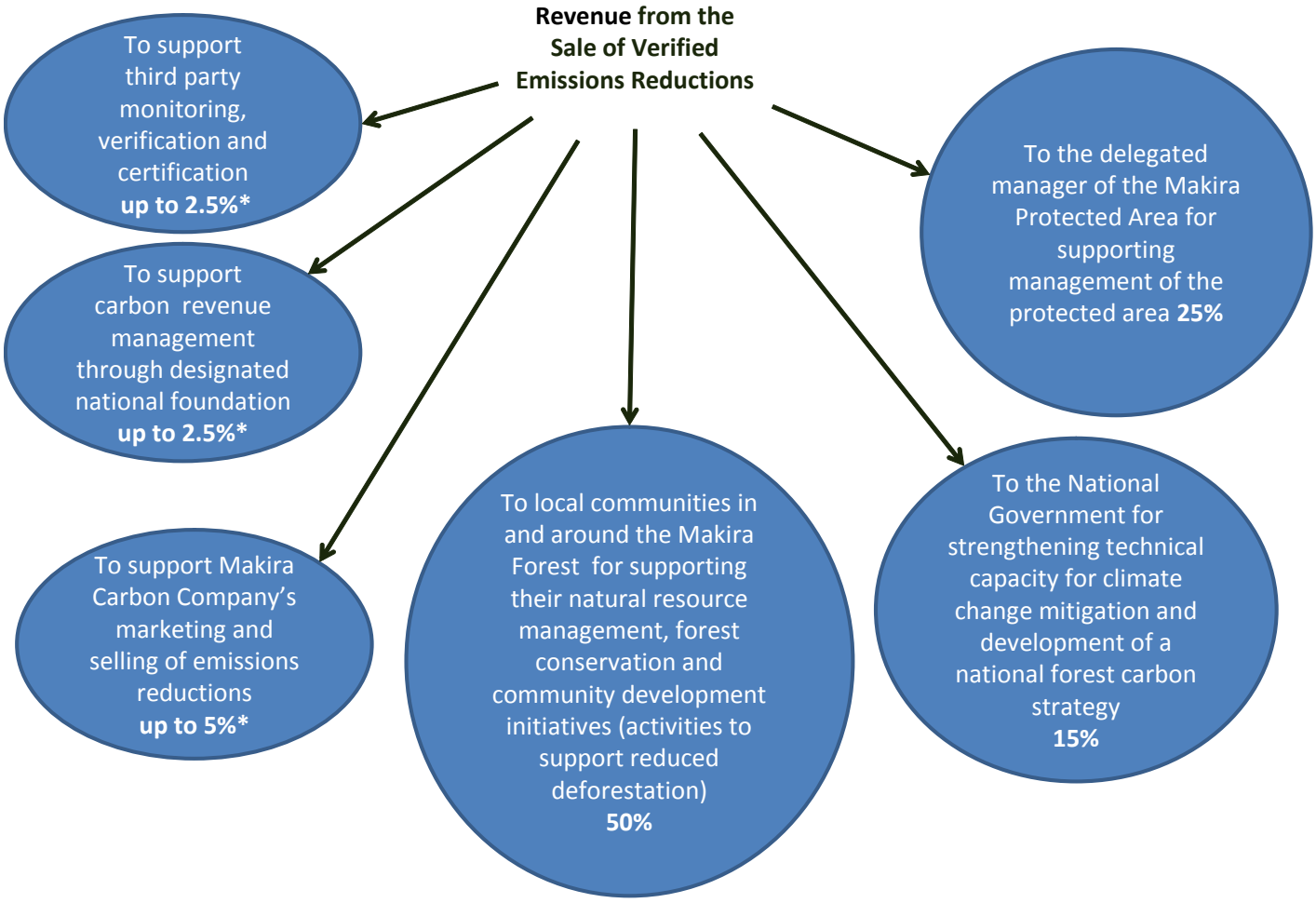

Figure 1. Schematic diagram detailing the revenue distribution model for the Makira Forest Protected Area project in Madagascar. * indicates that any proportion of funds not expended for these purposes will be allocated to communities for supporting their natural resource management, forest conservation and community development initiatives and/or protected area management.

- **Engage third party to validate the project:** Project developers must submit a PDD to a third party auditor to review the project for VCS and/or CCB validation. Institutions that are accredited as auditors to validate projects according to the VCS and CCB standards are available on the VCS and CCBA websites.

- **Validation.** A third party validator reviews the PDD to assess that GHG emissions reductions are additional to the baseline, the monitoring plan is sufficient, and that the emissions reductions have a high chance of being certified by the Voluntary Carbon Standard (VCS) and/or CCB. Strictly speaking, certification is optional, but it is advised in most cases, because it adds additional credibility to the project. **Estimated Costs:** Approximately US$40,000-50,000, paid by the project developer to the auditor.

7.0 Implementing Activities to Achieve Emissions Reductions
Estimated costs: variable

Implementing activities to reduce deforestation could be quite variable in cost and could take up to 2 years or much longer depending on the drivers of forest cover change, the activities needed to reduce deforestation, and the nature of local land tenure laws. You can skip this step and move to step 8 if you can demonstrate to auditors that activities have been undertaken already over the past 1-2 years that have resulted in emissions reductions that are additional to that which would have occurred without the project. This can be demonstrated to the auditor by providing a historical project strategy, a funding application to setup a REDD project, and/or a Government agreement to gazette land for forest conservation contingent on REDD money, for example.

Examples of project activities that may result in decreased deforestation:

- Creation of a protected area to conserve forests
- Working with communities to identify and adopt sustainable land use practices and/or income generating activities that that don't result in deforestation (i.e. eco-tourism, eco-agricultural products)
- Planting of community wood lots for fuel wood and construction materials to decrease pressure on forests for these needs

In countries where land tenure law is not clear or amenable to reducing deforestation and/or degradation, implementation of REDD project activities may require working with the government on legislative changes, working alongside communities to define land rights within the project area and developing appropriate, transparent and politically acceptable distribution mechanisms for revenues.

8.0 Verification
Estimated costs: up to US$80,000

Verification of projects occurs after emissions reductions have been generated. For VCS projects, verification will occur by a third party auditor at a frequency that is in accordance with the monitoring plan (which must be validated, as described in Section 6). A project that has been validated as meeting the CCB Standards will be awarded a statement of compliance that is valid for 5 years. After 5 years, to maintain CCB Certification, the project must be reviewed by an auditor to verify that the project has been implemented in accordance with its original design, or that any variance from this would not impact the CCB validation previously awarded to the project.

- **Monitoring of emissions reductions.** At least one year after the project has been initiated, you can begin to verify the emissions reductions achieved by project activities. Firstly, this will require monitoring to demonstrate that reductions in deforestation have indeed occurred. This monitoring should eventually link into national-level monitoring, reporting and verification systems as these evolve. The cost of monitoring will depend on your in-house capacity and the extent to which you need to contract consultants. **Estimated costs:** Approximately $25,000-50,000.
- **Verification.** An Independent Third Party Verifier must be contracted to verify that the project has achieved verifiable and certifiable emissions reductions credits. Verifiers that are approved for VCS must be contracted to complete the verification. **Estimated Costs:** $30,000.
- **Registration.** Once projects have been validated, a project developer can request that the project be registered under the VCS. However, Voluntary Carbon Units (VCUs) can only be issued after verification has occurred. After verification, the VCS registry administrator will check all project documents to ensure due process has been followed and will then issue VCUs into the account of the project developer. The Voluntary Carbon Standard Association charges a US$ 0.05 registration levy for every VCU issued in a VCS Registry. In addition, each VCS registry charges its own fees for opening registry accounts. Information on prices is available directly from each of the VCS registries, which are listed on the VCS website.

9.0. Marketing and Selling Emissions Reductions
Estimated costs: variable

In any discussion of the marketing and selling of REDD credits, caution is recommended against creating undue revenue expectations. The market for forest-based VERs (verified emissions reductions) has experienced a drop in prices similar to other asset classes during the recent financial crisis. The near- to medium-term future of the market for VERs is not easy to forecast. Until demand increases, the prices that projects can expect are likely to remain low and potentially volatile. While there is some discussion about the creation of funds to support REDD-type projects, in combination with or replacing market mechanisms, this too is uncertain.

Estimated Costs: Brokerage fees start from around 2.5-3% to >15% of total VER sales, depending on whether the broker is simply finding a buyer or incurs other costs, either legal, verification costs, or investment costs.

10.0 Glossary of Key Terms

Additionality: Reduction in emissions by sources or enhancement of removals by sinks that is additional to reductions that would occur in the absence of a project activity.

Baseline: The baseline (or reference) is the level of emissions against which change is measured, as a result of project activity. To get credit for emissions reductions, a project must lower emissions below the established baseline.

Biomass: Biological material that is living or recently dead which contains carbon. Carbon constitutes approximately 50% of the weight of woody biomass, i.e. trees.

Carbon Dioxide Equivalent (CO_2e): CO_2 equivalent refers to the equivalent amount of CO_2 emissions stored in the forest derived from measurements of biomass and carbon content. CO_2e is derived by multiplying the tons of carbon/hectare by 3.67.

Leakage: Leakage refers to an increase in emissions outside of the project boundary due to a displacement of deforestation pressures from the project boundary to another site.

Leakage Belt: The geographical area surrounding or adjacent to the project area in which displacement of pre-project activities from inside to outside the project area are likely to occur.

Project Area: The area where project activities will be undertaken.

Reference Region: The reference region includes the project area and is defined by the project proponent using transparent criteria. It must contain land cover classes and deforestation agents and drivers similar to those found in the project area under the baseline and project scenarios. This region should represent the spatial area from which deforestation and degradation agents, drivers and patterns of Land Use-Land Cover change data is obtained, projected into the future and monitored. The reference region includes the project area and is defined by the project proponent using transparent criteria. It must contain land use and land cover change classes, deforestation agents and drivers similar to those found in the project area under the baseline and project scenarios.

Verified Emission Reduction Unit (VER): A unit of greenhouse gas emission reduction that has been verified by an independent auditor, but has not yet undergone the procedures for verification, certification and issuance as a certified emissions reduction under the Kyoto Protocol. Thus, these are only sold on the voluntary market.

11.0 Select and Useful Links

If organizations are mentioned for the first time a brief explanation of their utility is given. Other organizations have been discussed throughout the text.

Community Conservation and Biodiversity Alliance
http://www.climate-standards.org/

Ecosystem Market Place- For up-to-date information on the status of carbon markets, reports, and papers on various aspects of REDD, and a primer on how to establish a payments for ecosystem services program.
http://www.ecosystemmarketplace.com/
The Ecosystem Market Place has also recently established a Forest Carbon Portal (http://www.forestcarbon-portal.com) that provides up-to-date information on the forest carbon market.

Forest Trends- Repository of information on payments for ecosystem services including REDD.
http://www.forest-trends.org

IPCC, Intergovernmental Panel on Climate Change- This site provides good practice guidance on methodologies for estimating emissions from Land Use, Land Use-Change and Forestry.
http://www.ipcc.ch/ipccreports/methodology-reports.htm

TransLinks program of WCS- This site provides case studies on forest carbon projects and other payment for ecosystem service (PES) projects, PES tool development, resources for monitoring project activities related to livelihoods, and forest carbon workshop proceedings.
http://www.translinks.org

UNFCCC, United Nations Framework Convention on Climate Change
http://unfccc.int/2860.php

UN REDD Programme
http://www.un-redd.org

Voluntary Carbon Standard
http://www.v-c-s.org/

WinRock International- Leaders in developing methodologies and conducting assessments of forest carbon stocks, analyses of deforestation and quantifying emissions associated with developing forest carbon projects.
http://www.winrock.org/

World Bank Forest Carbon Parnership
http://wbcarbonfinance.org/Router.cfm?Page=Home&ItemID=24675

Appendix 1: Brief Description of Technical Components to Quantifying Emissions Reductions

This section provides more detailed information on critical steps involved in establishing a REDD project. Some of these steps, such as estimating baselines of emissions from carbon stocks and deforestation, can be contracted to other partners. Where this is possible, it is indicated. This information has been compiled from presentations given at a TransLinks hosted workshop in Lima, Peru in September, 2008. Presentations used to inform this document were created by Lucio Pedroni of CATIE, Tim Pearson of WinRock, Ray Victurine of WCS, Linda Krueger of WCS, Rob Wallace of WCS, Christopher Holmes of WCS, Tom Clements of WCS, Tom Evans of WCS and Ricardo Muza of WCS. For individual presentations please visit www.translinks.org.

Define Project Area

- Forest Cover: The project area must contain forest that conforms to accepted definitions of forest.
- The common definition of forest as used by the UNFCCC is:
  - A minimum of tree crown cover between 10 and 30% over a minimum area of 0.5-1.0 ha
  - Minimum tree height at maturity *in situ* between 2 and 5 meters

  These are threshold ranges. Each party to the UNFCCC will make its own decision regarding the definition of forest within the ranges specified here. These definitions are available on the UNFCCC website.
- Types of forests that are eligible under the VCS:
  - Mature forests
  - Secondary forests (For VCS purposes, secondary forests are forests that have been cleared and have recovered naturally or artificially, that are at least 10 years old and meet, or have the potential to meet, the lower bound of the forest threshold parameters at maturity)
  - Degraded forests
  - Wetland forests
- Spatial boundaries
  - Suggestions for delineating the project boundary:
    - Maximize the area for carbon credits and exclude areas that have little to no carbon benefit
    - Select sites that are easy and efficient to monitor and verify using a geographical position system (GPS)
    - Exclude areas where baseline carbon stocks (and leakage) are more difficult to estimate than the potential carbon benefit warrants
  - Define a Leakage Belt: area where additional emissions from deforestation could occur due to a displacement of activities from the project site to another site, the leakage belt. Thus, deforestation should also be monitored in the leakage belt.
  - Identify Forest Region: All area that is actually "forest land" at the start of the project activity
  - Select a Reference Region: Domain from which information on deforestation and degradation agents, drivers and rates is extracted and projected. This area should be representative of the threats to forest cover that you plan to abate through project activities (includes project area and leakage area)
- Temporal boundaries
  - Historical reference period (past 10-15 years)
  - Project term (duration of the project activity, i.e. 20-100 years)
  - Monitoring period (> 1 year < 1 crediting period)

Analysis of baseline emissions and emissions that will be reduced within project boundaries through project activities. This analysis can be contracted to a third party.

- Identification of land-use and land-cover classes in project area
- Estimation of baseline carbon stocks and how they might change under a "business as usual" (without project) modeling scenario. Carbon pools that should be quantified:
    a. Above ground biomass
    b. Below ground biomass
    c. Dead wood
    d. Trees harvested for wood products
    e. Soil carbon
    f. Litter layer
  - o Must be able to model how each pool changes with/without deforestation
  - o It is best practice to conservatively estimate changes in emissions to minimize errors
  - o Biomass in this context can be derived from measurements of stem diameter, diameter at breast height (dbh) for living above ground biomass, and algorithms developed for each pool from local or regional studies
  - o Once biomass has been quantified for different pools in a plot representative of different land cover classes(i.e. degraded forest, mature forest, secondary forest, etc.), values are summed , extrapolated to tons biomass per hectare using an appropriate expansion factor based on the area of each plot and converted to tons carbon per hectare (carbon = biomass * 0.5).
- **Methods for modeling deforestation rates at the project site:**
  - o Types of deforestation projections
    a. Business as usual
    b. Historical
  - o Ideally, use satellite imagery or aerial photographs from at least three points in time over at least a five year period to assess past rates of deforestation
  - o Never project out more than 10 years, due to the increasing uncertainty of longer term predictions
- **Methods for estimating locations of deforestation:**
  - o Analysis of the drivers of deforestation
    a. Is deforestation *planned* (designated or legally sanctioned to happen in the future) or *unplanned* (indirect impact of socio-economic forces and/or population growth)?
      i. If deforestation is **planned deforestation**, you must be able to provide multiple incontrovertible forms of evidence that deforestation would happen in the absence of your project activities. This evidence must show that planned deforestation is:
        1. Approved
        2. Imminent
      ii. **Unplanned deforestation** may be demonstrated using historical patterns of deforestation in relation to socio-economic pressures.
  - o What is the landscape configuration in relation to deforestation?
    a. **Frontier:** Deforestation fronts are moving towards areas with little human activity and intact forests (deforestation agents are external to the system)
    b. **Mosaic:** Humans and activities are scattered across the landscape (deforestation agents are embedded within the system)
  - o Based on an understanding of the drivers of deforestation and the landscape configuration in relation to these drivers, *where* would deforestation most likely occur in the future? How can you support these claims? (for example, is there an expected expansion of roads where deforestation has occurred previously, distance from growing population centers that use high amounts of fuelwood from forests in project areas, etc.)?

- What project activities would reduce deforestation? Can these realistically be achieved through project activities, available funds and partners?
- Understanding and proving the causes of deforestation and demonstrating that project activities will result in **additional** GHG emissions reductions below the baseline level of GHG emissions without project activities is critical for getting validated and verified.
- Determine projected levels of deforestation due to project activities. What will the deforestation rate be with your project? How can you support these claims (models, etc.). Then, multiply the deforestation rate times the estimated carbon stock of the area to get the actual GHG emissions resulting from your project.

For example, the following equation could be used to calculate carbon emissions reductions generated from time x to time y: Total carbon emissions avoidance = Σ(year=x to year=y) [(with-project hectares deforested – without-project hectares deforested) * per hectare carbon emissions from deforestation].

Note: Tons of carbon/hectare can be converted to tons of CO_2e by multiplying by a conversion factor of 3.67.

- Leakage is the displacement of baseline activities that result in emissions reductions outside of the project boundaries. This must be accounted for in a PDD.
  - Types of activities that lead to leakage:
    - Type 1: Activities implemented by pre-project communities and individuals (pre-project residents)
      a. Most likely if deforestation in area is classified as Mosaic Deforestation:
         i. A GHG emission baseline must also be established for the land surrounding the project area where pre-project activities could be displaced (**leakage belt**).
         ii. If deforestation in the leakage belt is higher than the baseline rate of deforestation in the project area ***and*** attributable to activity displacement, this is counted as leakage.
    - Type 2: Activities implemented by deforestation agents that would encroach into the project area from outside (most likely if deforestation in project area is classified as frontier deforestation)
      a. Several approaches exist for estimating this type of leakage:
         i. Time Discount Approach
         ii. Leakage Liability Transfer Approach: The liability for leakage is transferred from the REDD project activity to a broader REDD program (e.g. a state- or nation- wide REDD program).
             1. To demonstrate that leakage liability has been transferred, the following evidence must be provided:
                - A broader/national REDD program exists.
                - The duration of the broader/national REDD program is not less than the crediting period of the REDD project activity.
                - Any deforestation outside the boundary of the project activity will be detected by the monitoring plan of the broader/national REDD program and is included in its GHG accounting.
         iii. Buffer of credits
             1. A percentage of the credits issued for the emissions reductions is earmarked for leakage risk.
             2. The percentage to be earmarked is determined based on an objective assessment of the risk of leakage due to displacement of immigrant baseline activities.
             3. Earmarked credits are saved in a credit account that is not under the control of the project participants and are not available for trade. Earmarked credits can be transferred to a broader REDD program entity, as per option 2, once such a program is established.

Calculation of Net GHG emissions reductions

- These must be *additional* to the greenhouse gas emissions reductions that would have occurred without the project activities

a. Net GHG emission reductions = Baseline emissions - Actual emissions - Leakage emissions

i. Baseline GHG emissions = amount of emissions that would occur without the project

ii. Actual GHG emissions = emissions that occur with project activities (should be lower than the baseline if it is a successful project)

iii. Leakage emissions = additional emissions that occur because of the project activity (i.e. displacing deforestation pressures and thus causing GHG emissions elsewhere)

Monitoring plan

a. It is necessary to develop a detailed monitoring plan to be validated including how monitoring will be done, who will do it, and how frequently.

b. There is a trade-off between the desired precision level of carbon-stock estimates and cost. In general, the costs will increase with:

i. Greater spatial variability of the carbon stocks;

ii. The number of pools that need to be monitored;

iii. Precision level that is targeted;

iv. Frequency of monitoring;

v. Complexity of monitoring methods.

c. Number of plots measured predetermined to ensure both accuracy and precision

i. Stratification of the project lands into a number of relatively homogeneous units can reduce the number of plots needed. Need to sample a subset of carbon pools in each land area within each plot. Stratification may be based on factors that influence carbon stocks such as:

1. Land use
2. Slope
3. Drainage, e.g. flooded, dry
4. Elevation
5. Proximity to villages, towns
6. Age of vegetation, e.g. 'cohort'
7. Species composition, stand mode

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