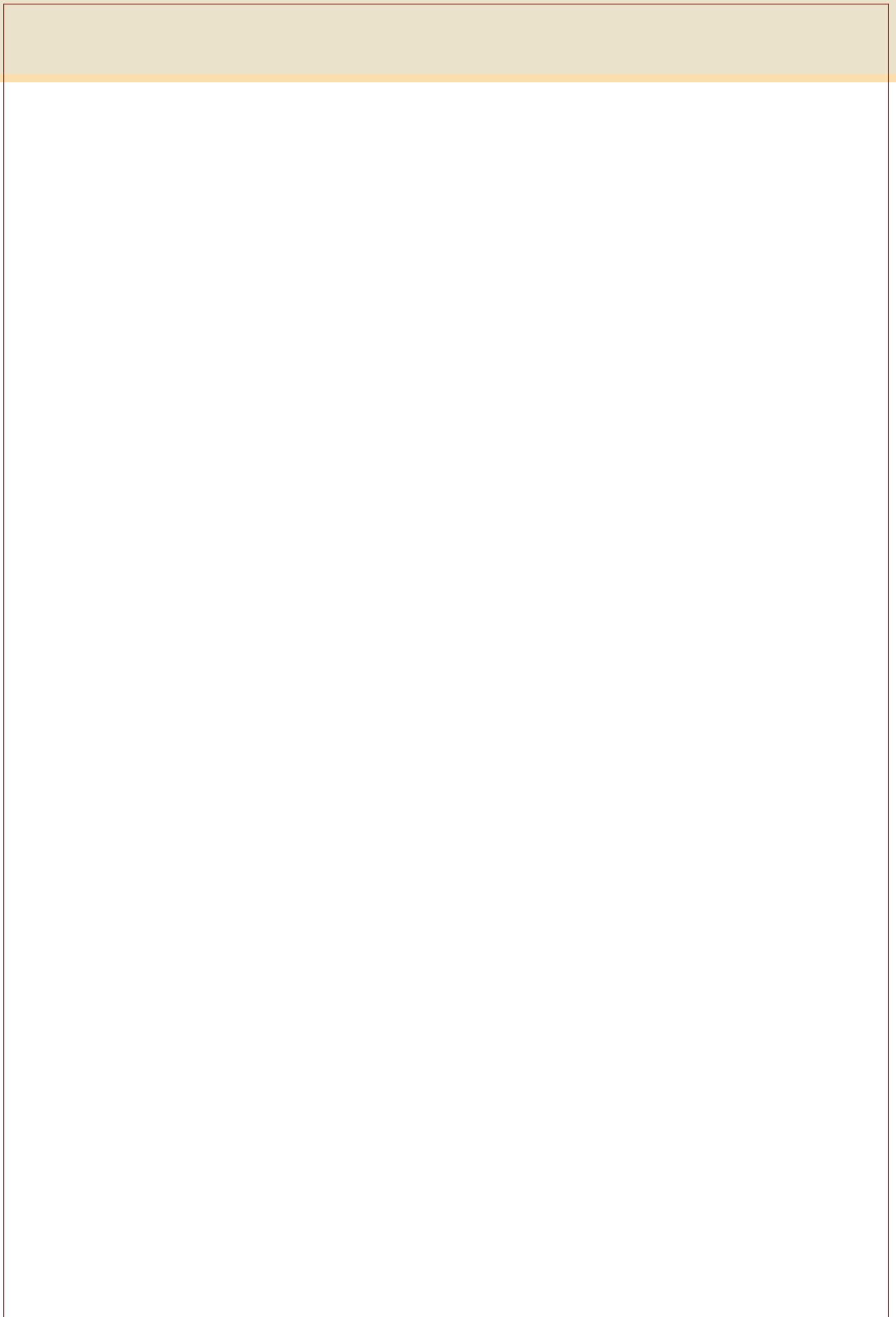


The Eastern Nile Subsidiary Action Program Watershed Management Project

Financing Sources and Mechanisms for Watershed Management in Sudan, Egypt and Ethiopia

Final Report

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December 18, 2005



Summary

Introduction

As an initial step towards developing a regional, integrated, multipurpose program, the Eastern Nile Subsidiary Action Program (ENSAP) is launching a first phase of projects that confirm tangible win/win gains and demonstrate joint action for the Eastern Nile countries. The Watershed Management Project is one of the seven projects identified. To show early results from cooperation up to two *fast track* watershed management projects will be developed in each of the Eastern Nile countries. This report reviews options for financing Watershed Management projects in Egypt, Sudan and Ethiopia, the Eastern Nile countries, with principal emphasis on two areas: Carbon Financing and Payment for Ecological Services.

This draft report does not specify project preparation procedures as called for in the consultancy TOR. These can be added once Watershed Management Project identification has proceeded to the point where specific financing targets (e.g., carbon funds) can be identified for a financing application.

Carbon Financing

In 1997 the Kyoto Protocol of the UNFCCC introduced flexible trade mechanisms to help achieve the greenhouse gas emission reduction goals. There are three flexible mechanisms: Emission Trading, Joint Implementation and Clean Development Mechanism (CDM). The focus in this report lies on the CDM since it is the one flexible mechanism that finds Egypt, Sudan and Ethiopia eligible geographically. The purpose of the CDM is to assist developing countries to achieve sustainable development and to assist industrialized countries to achieve compliance with their quantified emission limitation. This report outlines and explains the CDM standards, institutions and the CDM basic application procedure. Furthermore it explores the possibilities and constraints of carbon funding as a possible financing mechanism for watershed management projects.

Carbon financing comes from carbon funds. The carbon funds play the role of the agent, purchasing carbon credits on behalf of clients (governments and large corporations) to help them offset their own emissions.

The main findings from investigating the eligibility of watershed management project activities for carbon financing are as follows:

1. Among the activities typically included in a watershed management project, terracing, agro-forestry, A/R, grazing regulations and area protection may be eligible for carbon funding; however, they would have to satisfy stringent conditions as described in this report.

Potential Watershed Management activities from ToR

Terracing, agro-forestry, afforestation/reforestation, promoting good agrarian practices, grazing regulations, area protection, water harvesting, gully plugging, indirect or directly addressing biodiversity protection in the catchment areas

Activities generally interesting to Carbon Funds

hydro-power, wind-power, solar-power, methane capture, biomass waste burning, agricultural waste burning, geothermal power, afforestation/reforestation

2. The most frequently quoted eligible activities for carbon financing are biomass and hydropower.

3. Carbon funds are reluctant to fund “sink projects” where carbon is sequestered through LULUCF¹ activities, including A/R projects.

4. Because carbon funds pay for carbon credits at the end of the project cycle, the funding is suitable to cover recurring costs rather than incremental costs.

After further investigation, it seemed that there were three relevant activities worth considering for at watershed management project aiming for carbon financing: A/R, Biomass and Hydropower.

Payment for Environmental Services

Payments for Environmental Services (PES) are being tested in a variety of countries. Payments for Watershed Services are a subset of PES. Other areas of environmental service are: conserving biodiversity, carbon sequestration and preservation of scenic beauty. Typically in a Payment for Watershed Services scheme, a user fee would be paid by downstream entities to upstream entities for ecological services performed in the upper watershed.

The services can consist of everything from up-rooting invasive plants and vegetation thereby enhancing water flow, to planting degraded mountain slopes to mitigate erosion and siltation downstream. PES offers the prospect of alleviating poverty and reducing land/water degradation at the same time. The main mechanism by which PES may contribute to mitigating poverty is the payment or remuneration to poor landowners. Typical PES schemes rely on institutions to function well, for example legal, governmental and financial institutions. However, there are examples that show that PES is adaptable and that it can function under other than typical conditions. The key is to adapt the structure of the scheme to the site and its specific conditions.

¹Land Use, Land Use Change, Forestry

Conclusions

Carbon Financing

- Carbon funds are mainly interested in project activities involving renewable energy (water, wind, sun, geothermal, clean biomass) and new environment friendly technology.
- Carbon funds work as agents and buy credits on behalf of their clients.
- The BioCarbon Fund and the Finnish JI/CDM Pilot Programme are expressly interested in A/R CDM projects (although the BioCarbon Fund is currently oversubscribed).
- Under the CDM both A/R and Biomass projects have been subject to limitations.
i) Projects involving carbon sequestration in the form of sinks through LULUCF have several limitations on the projects as well as on the credits generated by such projects. ii) The CDM Executive board recently decided to exclude from small-scale CDM, projects that replace non-renewable biomass.
- All carbon projects involving CDM are subject to the rules and procedures stipulated by the UNFCCC and its Protocols.
- The funds processes of application are similar to each other, but they are not exact copies. Studying the World Bank Project Cycle for carbon funds gives a good idea of what to expect in general.

Payment for Environmental Services

- To implement a PES scheme in the Eastern Nile Countries should be possible provided that the scheme is well thought through and well adapted to the site.
- PES schemes can have poverty alleviating effects, but not automatically. The scheme has to be structured in a way that takes poverty into account.
- If there is an absence of strong official institutions, it may be an option to start implementing PES schemes at a local level through NGOs.
- It is important to give the scheme legitimacy in the eyes of the community. It helps sustainability and compliance.

Glossary

Afforestation	Planting trees on land that has not been covered with forest historically
CDM	Clean Development Mechanism is one of the flexible mechanisms under the Kyoto Protocol for trading with carbon credits
CER	Certified Emission Reduction is a carbon credit generated by a CDM carbon project.
CFB	Carbon Finance Business. The World Bank Groups carbon fund activities including their own carbon funds as well as the carbon funds they manage for other organizations.
Crediting Period	The length of time that a project is estimated to produce carbon credits. Under the CDM the crediting period can be 3 x 7 years, with a renewed baseline for each 7-year period or it can be 1 x 10 years.
COP	Conference of the Parties
DNA	The Designated National Authority for the CDM is the focal point for CDM matters in a country. There is a list of DNAs at http://cdm.unfccc.int/DNA
GEF	Global Environment Facility
LULUCF	Land Use, Land Use Change and Forestry,
ODA	Official Development Assistance
DOE (OE)	Designated Operational Entity is accredited by the CDM Executive Board. See list of accredited DOEs at http://cdm.unfccc.int/DOE
PDD	Project Design Document
PES	Payment for Ecological or Environmental Services. The phrasing of this concept is not yet cemented and both are in use.
PIN	Project Idea Note, a presentation of a project idea to the Carbon Finance Business at the World Bank Group
Reforestation	Planting trees on land that was cleared before 1990.
UNFCCC	United Nations Framework Convention on Climate Change.

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Readers Guide

The body of the text deals with the main issues, discussions and structures while in depth, detailed information can be found either in hard copy in the Annexes or as internet references. Hopefully, after reading this report, the reader will not have any trouble following discussions or reasoning when going further into detail in Carbon Financing or Payment for Environmental Services on their own.

There are two Chapter Annexes; after chapter 2 Carbon Financing and after chapter 4 Payment for Environmental Services. They contain two case studies each. Although the two case studies chosen for Carbon Financing have not been thoroughly documented yet, given their recent nature, it is the opinion of this report that they still constitute some of the most relevant cases so far.

The studies chosen for PES are the Virilla case and the Pimampiro case. The Virilla has an interesting, elaborate structure and the Pimampiro gives an idea of the possibilities and problems of a PES in a poor setting where illiteracy is common. The case studies give context and detail to the issues and they make up an important complement to the text.

The General Annex includes an annotated bibliography, recommended web-sites for further information, a detailed description of carbon funds and carbon finance case studies. These are included i) to compensate for the lacking documentation of the case studies in the Chapter Annex and ii) because they deal with small-scale hydropower, an area that is relevant to the ENSAP.

1. Introduction

As an initial step towards developing a regional, integrated, multipurpose program, the Eastern Nile Subsidiary Action Program (ENSAP) is launching a first phase of projects that confirm tangible win/win gains and demonstrate joint action for the Eastern Nile countries. The Watershed Management Project is one of the seven projects identified.

The overall objective of the Watershed Management Project is to establish a sustainable framework for the management of selected watersheds in order to improve the living conditions of the people, enhance agricultural productivity, protect the environment, reduce sediment transport and siltation of infrastructure in the long-term, and prepare for sustainable development oriented investments.

To show early results from cooperation, up to two *fast track* watershed management projects will be developed in each of the Eastern Nile countries. National level fast track projects will differ between countries and sites, but will typically involve terracing, agro-forestry, reforestation/afforestation, promoting good agrarian practices, grazing regulations, area protection, water harvesting, gully plugging, and/or indirect or directly addressing biodiversity protection in the catchment areas.

1.1 Objective

The objective of this study is to support the development, funding and implementation of watershed management projects in the Eastern Nile region. This assignment is mainly geared towards identifying non-traditional sources to provide incremental financing to support the regional and global benefits created by watershed management interventions, particularly in respect of the ENSAP fast track watershed investment projects.

The specific aim of this study is to explore possible sources and mechanisms of funding (other than GEF) for Watershed Management projects in the Eastern Nile region. In accordance with the ToR and the study Inception Report, particular attention has been given to Carbon Funds and Payment for Ecosystem Services Mechanisms. Despite broader inquiries, this desk study did not identify any other promising, non-traditional financing sources.

2. Carbon Financing

2.1 *The Climate Change Convention and the Kyoto Protocol*²

In 1992 the UN Framework Convention on Climate Change (UNFCCC) was adopted. In 1997 the Kyoto Protocol of the UNFCCC took one further step. The Kyoto Protocol included two key elements: (i) the legal binding of the signing countries to fulfill their commitment to decreasing the emission of greenhouse gases and (ii) the flexible mechanisms designed to decrease the costs of mitigating emissions.

In 2001 the seventh Conference of Parties (COP7) in Marrakesh agreed on the rules and structure surrounding the flexible mechanisms.

Greenhouse Gases regulated in the Kyoto Protocol are:

Carbondioxide CO₂, Methane CH₄, Nitrous oxide N₂O, Hydrofluorocarbons HFCs, Perfluorocarbons PFCs and Sulphur hexafluoride SF₆.

2.2 *The mechanisms under the Kyoto Protocol*

The Kyoto Protocol has put a cap (a limit) on the amount of greenhouse gases (GHG) that industrialized countries and countries with economies in transition are allowed to emit. There is no cap to be observed by developing countries. The cap is non-flexible and a part of the reduction of GHG emissions has to take place within the industrial countries' national boundaries.

However, there is one part of the protocol that is flexible³. In view of the fact that the greenhouse effect is global and that no matter in what country GHG is emitted, it affects everyone regardless of national boundaries. So the Kyoto Protocol reasons that as long as the emitted volume of GHG is decreasing, it doesn't matter where the decrease is implemented.

These mechanisms allow industrialized countries to invest in GHG-decreasing projects where the reduction can be achieved at an attractive cost level, e.g., in developing countries. Industrialized countries can purchase carbon credits from those projects and so achieve their emission goals. The idea is to create a win-win situation where developed countries can reach the targets set by the Kyoto Protocol at minimum cost; while the benefits for the developing countries are that their development will be cleaner and less costly through the selling of carbon credits.

²Climate Change Secretariat, UNFCCC. *A Guide to the Climate Change Convention and its Kyoto Protocol*. 2002. Bonn.

³Conservation Finance Alliance, UNEP, GEF. *Conservation Finance Guide*. http://www.conservationfinance.org/Tools_and_Training.htm

The concept of carbon credits includes several different types of credits, with different origin and with slightly different make up.

*Emission Trading*⁴: Developed countries buy and sell carbon credits amongst themselves. The carbon credits are then called Assigned Amount Units (AAU).

*Joint Implementation*⁵: Developed countries buy carbon credits from projects in transitional economies. The carbon credits are called Emission Reduction Units (ERU).

*Clean Development Mechanism*⁶: Developed countries buy carbon credits from sustainable projects in developing countries. The carbon credits are called Certified Emission Reduction Units (CER)

*Emission Trading Joint Implementation*⁷: Forestry projects under these two mechanisms offer specific carbon credits called Removal Units (RMU)

1 Carbon Credit = 1 ton of carbon dioxide equivalent (CO₂-eqv)

Carbon dioxide equivalent is a concept that can be applied to any one of the Greenhouse gases regulated in the Kyoto Protocol, not just carbon dioxide.

Source: Conservation Finance Alliance, UNEP, GEF. *Conservation Finance Guide*. Preliminary version.

2.3 The Clean Development Mechanism – CDM

“The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and...to assist Parties included in Annex I in achieving compliance with their quantified emission limitation...”⁸ Non-Annex I is generally the developing world. The CDM is currently the sole mechanism that is geographically applicable to Egypt, Sudan and Ethiopia. In order to participate in the CDM, the interested nation must have ratified (or intend to ratify) the Kyoto Protocol. The host country also plays an important role in the attracting and implementation of CDM projects through the Designated National Authorities. See 2.3.1.

⁴ Conservation Finance Alliance, UNEP, GEF. *Conservation Finance Guide*. Preliminary version. http://www.conserva-tionfinance.org/Tools_and_Training.htm

⁵ Conservation Finance Alliance, UNEP, GEF. Op cit

⁶ Conservation Finance Alliance, UNEP, GEF. Op cit.

⁷ Conservation Finance Alliance, UNEP, GEF. Op cit.

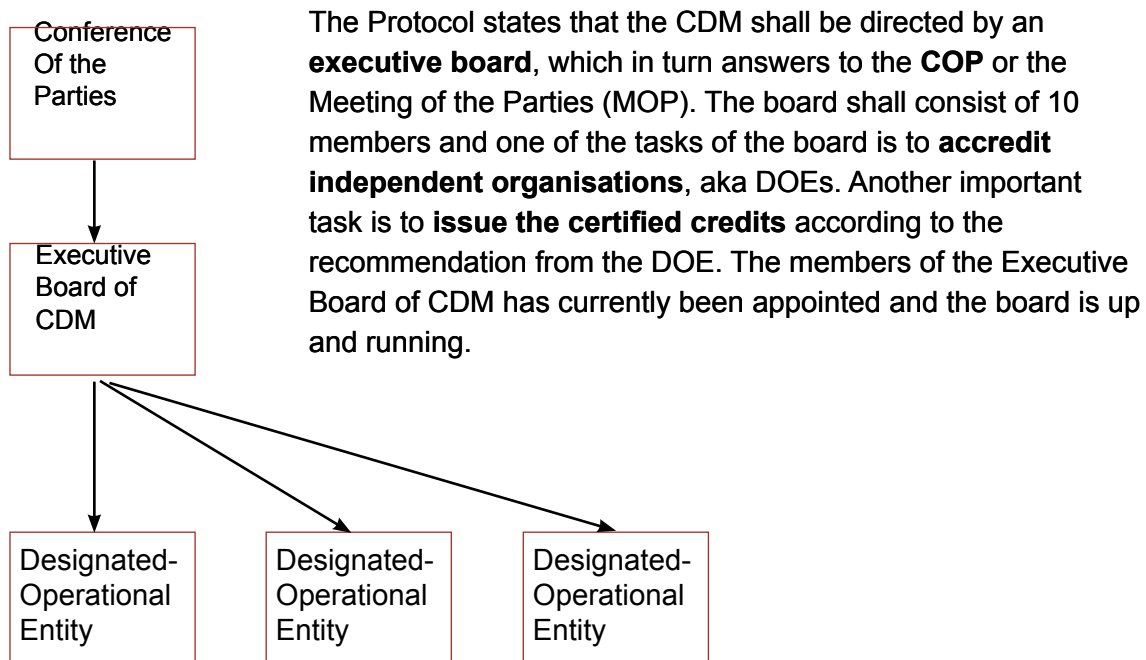
⁸ Kyoto Protocol to the United Nations Framework Convention on Climate Change. Article 12, §2

2.3.1 The institutions⁹

The institutions involved in a CDM project are stipulated by the Kyoto Protocol as: the Executive Board of CDM and the Designated Operational Entities (DOEs). These are directly involved in all CDM projects that generate CERs. Indirectly involved are: Conference of the Parties (COP) and often also the Designated National Authority (DNA).

Figure 01 below describes the institutions necessary to comply with the Kyoto Protocol's requirements. Regardless of fund, World Bank, national or private, the procedure outlined by the CDM has to be followed if CERs are to be issued in the end and the institutions described have to be contacted in due order.

Figure 01 *The Executive Board of CDM*



The Designated Operational Entities

A list of already appointed DOEs can be studied at the UNFCCC homepage¹⁰. They are mainly international organizations. DOEs validate the Project Design Document (PDD), a crucial document in the procedure, and they recommend to the executive board of CDM whether or not to certify the credits generated by a project.

The Designated National Authority

⁹ CDMWatch. *The Clean Development Mechanism (CDM) Toolkit, A resource for stakeholders, activists and NGOs.* November 2003. <http://www.cdmwatch.org>

¹⁰ <http://cdm.unfccc.int/DOE/list>

The Designated National Authority (DNA) is the hub of CDM matters in a country¹¹. It is often a ministry or other executive governmental unit, but it can also be out-sourced to an external entity, it can be integrated in the Foreign Direct Investment office or divided for example between a governmental unit and an external unit¹². The DNA administers the implementation of CDM and **approves projects**, checks on the validity of baselines, the credibility of the project developers, monitors proposals e t c. It answers and reports to the CDM Executive Board (see Figure 01). There is a list of all DNAs that have been established so far at <http://cdm.unfccc.int/DNA>. There are currently no DNAs listed for Ethiopia or Sudan.

2.3.2 The procedure and the documentation

Different funds use different procedures leading up to the Project Design Document (PDD). The World Bank group has a process that starts with a Project Idea Note (PIN). The Austrian Programme uses Expression of Interest, a more elaborate application than the PIN. Because the procedures leading up to the PDD is not specifically outlined in the Kyoto Protocol but rather have been constructed by each fund individually, they will not be described in detail here. Suffice it to say that they all request a Baseline Study and a Monitoring Plan from the project proponent before the PDD is validated.

After taking in public comment concerning the PDD and depending on the outcome of the public comments, the DOE decides if it will **validate the PDD** or not. If a project is validated, the operational entity will forward its recommendation to the Executive Board of CDM for **registration**.

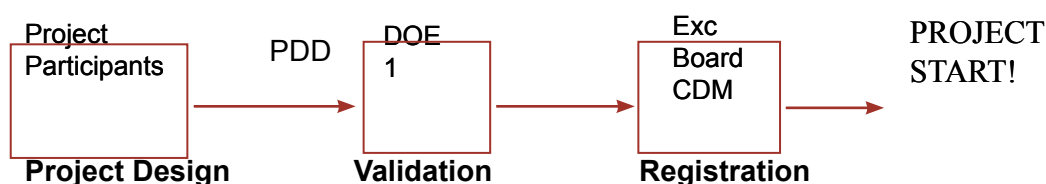
The **second phase** of the procedure starts when the project has been registered and the project participants can start **monitoring** the project. They will prepare a report based on the monitoring activities and submit it to another DOE for **certification**. If everything is in order, this second operational entity will then certify the CERs as legitimate and recommend the executive board to **issue** the CERs to the project participants. The executive board can refuse to issue CERs if deemed necessary, for example if Additionality is not considered proven properly.

Preparation for implementation of a CDM Project – First Phase

¹¹ CDMWatch. *The Clean Development Mechanism (CDM) Toolkit, A resource for stakeholders, activists and NGOs*. November 2003. <http://www.cdmwatch.org>

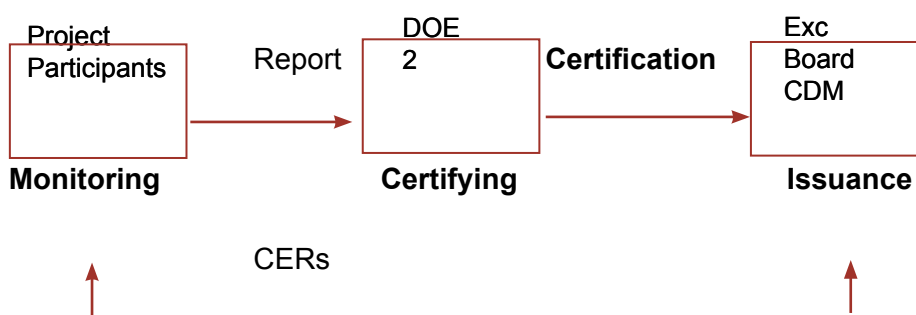
¹² Mugenyi, Enock. *Capacity Development Workplan for the Clean Development Mechanism in Uganda, Roles and Composition of the Designated National Authority*. Uganda Management Institute. www.cd4cdm.org/.../Uganda/First%20National%20Workshop/Designated%20National%20Authority.ppt

Figure 02



Monitoring and Issuing of CERs during a Project – Second Phase

Figure 03



In the general Annex, two case descriptions¹³ have been included to illustrate at the same time two relevant cases and the documentation needed in the two phases. There are internet references to for example PDD, Monitoring Plan, ER Calculations and Baseline Study. They are not included here in hardcopy for reasons of size, some of the documents are more than 50 pages. Also available in the Annex is the World Bank Project Cycle where the process and the documents necessary also are explained in detail.

2.4 Stipulated standards according to the Kyoto Protocol¹⁴

The Kyoto Protocol has set standards for CDM projects that have to be fulfilled for a project to be able to apply for carbon financing and to be issued with legitimate CERs.

Additionality

The fact that the carbon sequestration or carbon replacement would not have happened without the Project. **This is one of the most important aspects to prove.**

Quantification

To be able to tell how much carbon is offset by a project, there has to be an assessment of the present situation. What is the current situation without the Project? What will probably happen if the Project is not implemented? This is called **developing a baseline** and it is used as a standard against which change is measurable.

Permanence

¹³ Honduras La Esperanza Hydropower, Uganda West Nile Electrification

¹⁴ Conservation Finance Alliance, UNEP, GEF. *Conservation Finance Guide*. Preliminary version. http://www.conserva-tionfinance.org/Tools_and_Training.htm

Projects must be long-term (7 years or longer). The crediting period can be 3 x 7 years with a renewed baseline for each 7-year period or it could be 1 x 10 years.

Leakage

Leakage in this case means that the project has to be able to demonstrate that the sequestering or displacing activities are not simply displacing the carbon emissions geographically or otherwise. For example: One part of an area is being reforested by a project and the inhabitants of the area have agreed to stop their practice of slash-and-burn. However, they continue their practice in another area thus nullifying the progress made in the project location.

Monitoring and Verification

To ensure the legitimacy of the project and the credits generated, it is necessary to develop monitoring plans. Verification is also a part of the process to keep the credits legitimate.

2.5 Project preparation and implementation

The six components listed under 2.4 will have to be included in a CDM project preparation and implementation. The two main features to prepare in the beginning are the Baseline Study and the Monitoring Plan, both of which are necessary for completing the Project Design Document (see 2.3.2). The Baseline Study and the Monitoring Plan have to be derived from methodologies that are approved by the CDM executive Board. If a project wants to use a new methodology to develop baseline and/or monitoring plan that methodology has to be approved by the Executive Board's Methodologies Panel first.

The information and technical skills needed to prepare two such documents vary with the project activity. But to give an idea an extract from the Conservation Finance Guide¹⁵ has been included in the general Annex. It is a checklist for implementation of a forestry conservation project geared towards carbon financing. It gives an overview of what to expect. For further break down of the overview into operational details, this report recommends further reading by way of the internet link provided.

¹⁵ Conservation Finance Alliance, UNEP, GEF. *Conservation Finance Guide*. Preliminary version. http://www.conserva-tionfinance.org/Tools_and_Training.htm

*Baseline Study*¹⁶

In order for a project to be approved, evidence should be given that the project is additional to baseline. First a baseline study defines the "without project" scenario as the baseline, then it explains how the credits are "additional" to what would have happened anyway without the project. Next it quantifies the number and timing of credits created by the project.

A baseline study should answer the following questions:

1. Why would the project not happen on its own?
2. What could happen in the absence of the project?
3. Which are the sources of the emission reductions?
4. What is the total volume of emission reductions?

Monitoring Plan

The Monitoring Plan (MP) defines how project operation will be monitored, how achieved ERs are calculated and how the ERs will be independently verified on a periodic basis throughout the project operational phase. Once the project starts to generate emission reductions, the project entity monitors the project in accordance with the MP. The MP should provide a methodology and a tool for measuring and calculating the emission reductions generated by the project.

2.6 Watershed management and Carbon Financing

With regards to Watershed Management there are two main ways to offset GHGs (i) sequestration of GHGs (ii) replacing or displacing existing GHG emissions. Sequestration means the binding of mainly carbon dioxide in biomass (forests, grasslands, shrubs etc). Replacing an existing source of emissions can for example be replacing a power plant fuelled by coal with a hydropower plant or a plant that is using renewable fuels like for instance wood waste or a fuel crop. Eligibility is determined, among other things, by the degree to which a watershed management activity sequesters or replaces/displaces.

Eligible activities

When surveying the written information concerning eligible activities for Carbon Finance projects it became apparent that the most obvious point in common between typical watershed management activities and those activities eligible for carbon financing is afforestation/reforestation. See Figure 04. For that reason the two case studies chosen for this chapter (See Chapter Annex) are about A/R. The projects are not yet fully developed, so the documentation is sparse, but the set-up and the

¹⁶ Facts and definitions of Baseline studies are from the World Bank homepage and from the CDM Watch Toolkit.

structures are interesting from the point of view of Watershed Management-Carbon Finance.

Figure 04

Potential Watershed Management activities from ToR	Activities generally interesting to Carbon Funds
<ol style="list-style-type: none"> 1. terracing 2. agro-forestry, 3. afforestation/reforestation 4. promoting good agrarian practices 5. grazing regulations 6. area protection 7. water harvesting 8. gully plugging 9. indirect or directly addressing biodiversity protection in the catchment areas 	<ol style="list-style-type: none"> 1. hydro-power 2. wind-power 3. solar-power 4. methane capture 5. biomass waste burning 6. agricultural waste burning 7. geothermal power 8. afforestation/reforestation

The most obvious point in common between these two frameworks is afforestation/reforestation activities.

Discussions with the World Bank's Carbon Finance team also suggest that terracing, agro-forestry, A/R, grazing regulations and area protection could all potentially be eligible for carbon funding, even though this will not be easy to establish due to the stringent conditions listed above¹⁷.

When looking at activities that have been funded by carbon funds so far, three main leads seem most useful to pursue: A/R or forestry in general, biomass and hydropower. Biomass implies the burning of biomass for power-generating purposes. In the carbon funds' eligibility criteria it counts as a renewable source of energy together with water, wind and solar energy. It may be possible to include, for example, a fuel wood plantation in a watershed management project. Biogas extraction may also be a component in a watershed management project depending on how it is structured. This kind of project activity has been funded before by the CDCF¹⁸ in Nepal. Hydropower is eligible for carbon financing in small to medium-scale, meaning the power output could range between 2 MW/year and more than 15 MW/year¹⁹. Links to examples of projects involving the three activities are available in the General Annex²⁰.

¹⁷ Heister, Johannes. Team leader, Quality Assurance and Regulatory Policy, Carbon Finance Business, World Bank, personal communications.

¹⁸ Community Development Carbon Fund, World Bank, Carbon Finance Business.

¹⁹ There is available some environmentally low-impact and relatively low-tech technology for traditional hydro power involving demming.

²⁰ List of Web Sites for Application Documents, Application Guides

Biomass generated power can for example come from the burning of:

- Agricultural residue, like rice husks or bagasse (sugar-cane residue)
- Wood waste like woodchip or other
- Residue from food processing
- Fuel crops for example eucalyptus
- Methane from a biodigester

Source: http://www.powerscorecard.org/tech_detail.cfm?resource_id=1

General features of the Carbon Market

All carbon funds want to buy valid, certified carbon credits at a good price. There are individual preferences regarding project make up or size. They work as agents with a specific commission to fulfill for their clients. They buy carbon credits on behalf of governments, or large corporations, **almost always from projects that already have their initial financing organized**. As a rule, payment is made when the legal title to the carbon credit is transferred, which is at the very end of the procedure. This makes carbon financing probably best suited to cover recurring and maintenance costs, rather than initial investment costs²¹.

Some funds may consider the possibility of paying a part of the money upfront, this will almost always reflect negatively on the price paid per unit of carbon, however. Furthermore, several funds have facilities to help the project proponent financially with the application process for example the baseline study and other activities that may require consultants.

Upfront Payment

Since price per unit varies between USD 3 and € 6.5, carbon financing may be only a complementary source of financing of incremental costs. A small-scale project may generate as little as 30 000 CO₂-eqv per year. If it is an afforestation/reforestation project, the price will probably be in the lower end of the scale. In addition, an up-front payment would most likely lower the price further.

Carbon Funds are a product of the flexible mechanisms of the Kyoto Protocol and of the UN Climate Change Convention to which it is attached. Besides the convention there are three main categories of actors.

1. Large corporations with high levels of GHG emissions²². For example: BP Amoco, AEP, Texaco, Shell, Ford, Tokyo Power.
2. Governments taking unilateral action²³.

²¹ Heister, Johannes. Team leader, Quality Assurance and Regulatory Policy, Carbon Finance Business, World Bank.

²² Conservation Finance Alliance, UNEP, GEF. *Conservation Finance Guide*. Preliminary version. http://www.conserva-tionfinance.org/Tools_and_Training.htm

²³ Conservation Finance Alliance, UNEP, GEF. Op cit

3. A handful of national governments that have started their own national carbon funds and the European Union has its own trading scheme: European Union Emissions Trading Scheme.

Most of the nationally based governmental carbon funds function under the CDM as well as the JI mechanisms and they are mainly interested in renewable energy in a wide sense of the concept. Several national carbon funds (Danish, Italian, Spanish, Dutch) are managed by the World Bank. The carbon funds launched by the World Bank (Prototype Carbon Fund, Community Development Carbon Fund, BioCarbon Fund) have provided models for many funds established later. The World Bank funds also have additional the aim of alleviating poverty and supporting sustainable development in developing countries. Privately owned and managed carbon funds exist. They function as any private company and they provide the link between carbon projects and carbon credit buyers. They are commissioned by governments as well as by private corporations.

Limitations on CDM activities

When looking into the eligibility criteria of different carbon funds it becomes apparent that there is a reluctance to enter into so called sink projects where carbon is sequestered through LULUCF²⁴ activities, including A/R projects, in spite of the fact that the Marrakesh Accords allows for A/R projects in non-Annex I countries and LULUCF projects in Annex I countries²⁵. (However, there are Carbon Funds that recognize LULUCF as eligible activities for carbon financing. They are described in more detail in the general Annex of this report²⁶.)

In Marrakesh the COP agreed to put limits on carbon sequestration projects under JI and CDM:

- The allowed LULUCF activities under CDM during the first commitment period 2008-2012 are A/R only.
- Annex I-countries may only offset the equivalent of 1% of the levels of 1990 of the emission reduction through CDM-projects during the first commitment period.
- According to article 3.3 in the Kyoto Protocol **the area intended for afforestation or reforestation**, in order to be eligible for carbon financing, **must have been cleared prior to 1990**.

This of course makes access to carbon financing through LULUCF activities harder in comparison to other eligible carbon financing activities. The reluctance among the majority of funds, is probably due to several coinciding circumstances. For example the methodology surrounding A/R is not widely considered as approved²⁷; the difficulty to establish a baseline for the projects, to monitor them, the possible low survival

²⁴ Land Use, Land Use Change, Forestry

²⁵ Conservation Finance Alliance, UNEP, GEF. Op cit

²⁶ Detailed description of listed Carbon Funds

²⁷ Heyse, Tine. Belgian CDM Tender. Telephone interview.

rate of seedlings due to drought, fires, floods, animal grazing, etc.²⁸. Several of the carbon funds are new and it is possible that they are looking to avoid more complex implementations in the beginning. There is also the fact that carbon credits generated by A/R CDM-projects cannot be traded within the framework of the European Union Emission Trading Scheme.

But the position on A/R projects is not fixed and there are indications that it could change and LULUCF be included in a more general way. The EU Commissioner for Environment, Stavros Dimas, has for example recently stated that he believes that greenhouse gases from all sectors, including forestry, must be included in the global GHG reduction scheme for the second commitment period, i.e., post 2012: "...the future regime must include all greenhouse gases and all sectors, including aviation, maritime transport and forestry. Deforestation is an important source of global emissions that we cannot continue to overlook²⁹".

A/R is not the only area with limitations under the CDM; biomass is also subject to new rules. The CDM Executive board recently decided to exclude from small-scale CDM, projects that replace non-renewable biomass. This affects for example the Nepal Biogas Program, listed as an example in the general Annex³⁰, where the cooking fuel kerosene is replaced with biogas (methane).

2.7 Carbon Accounting

To plan and implement an A/R project requires deep knowledge about a site and its potential. What will the A/R project have to face in terms of heat, rain, and potential danger of flood, fire or drought? One of the main issues is how many hectares of how many trees of which species have to be involved, in order to reach a target of X tons of sequestered carbon dioxide equivalent? To start with, you need to know how much carbon a single tree of a specific type can capture given certain prerequisites.

If....

One hardwood tree (like Eucalyptus), with the circumference of 45 cm can capture approximately 150 kilograms of CO₂-eqv/year.

And....

1 ton of CO₂-eqv = 1000 kilograms of CO₂-eqv

Then...

1000 kilograms divided by 150 kilograms per tree = 6,7 trees = 1 carbon credit

Source: Basic figures from www.greenhouse.crc.org.au

²⁸ Kögler, Peter. Kommunalkredit, Austria. Telephone interview.

²⁹ Dimas, Stavros. Extract from speech held at a Climate Change conference in Vienna, Austria. 4 October 2005. http://www.co2-handel.de/article185_748.html

³⁰ Detailed Description of Listed Carbon Funds in General Annex

The mechanism for calculating the amount of carbon sequestered in biomass is referred to as carbon accounting³¹. A tree's biomass is the sum of the dry weight of its 3 main living components, stem, canopy and root.

The most commonly used method to assess biomass in a tree is allometrics. Simplified it means that the circumference of the tree is measured at breast height normally, the diameter is then calculated and the height and the diameter of the tree are put into an equation specific for a particular species of tree for example Eucalyptus or Acacia. At the homepage³² of the Australian Greenhouse Office a free CD is available with amongst other things a set of tools for tracking greenhouse gas emissions and carbon stock changes from land use and management, including the FullCAM modeling software and Data Builder.

Approximately 50% of the dry weight of the biomass in a forest is pure carbon

Source: http://www.forest.nsw.gov.au/env_services/carbon/accounting/Default.asp

After discussing with an expert on carbon sequestration³³ it became clear that generalization is not useful; a northern European fir tree growing in a temperate or sub-arctic climate grows more densely per square kilometer than for example Eucalyptus trees in an arid tropical climate, also a fir tree has a different growth cycle and different sequestration capacity compared to a Eucalyptus. There are several other factors that have to be taken into account such as average rainfall, temperature, possible erosion, soil fertility, etc. Even when comparing two relatively similar trees and sites, results can be very different. An expert should make estimations, on site, of how much carbon dioxide can be sequestered within a project area. However, for the purpose of explaining what carbon accounting can do there is an example below based on facts from an expert on Sudanese forestry.

³¹ NSW (New South Wales) Department of Primary Industries/Forests. http://www.forest.nsw.gov.au/env_services/carbon/accounting/Default.asp

³² Australian government. Department of the Environment and Heritage, Australian Greenhouse Office <http://www.greenhouse.gov.au/ncas/ncat/guide.html#ordercd>

³³ Hedenus, Fredrik. Junior PhD Environmental Sciences, Department of Physical Resource Theory, Chalmers University of Technology, Göteborg University, Göteborg, Sweden.

From dry weight biomass to carbon dioxide
A theoretical example of Acacia Senegalensis in Sudan

In nature Acacia S grows widely scattered, averaging 200-300 trees/ha. In research fields, they are planted more densely, averaging 400-600 trees/ha. For this example we assume that 400 trees/ha is feasible. An Acacia S of age between 15 and 20 years old is about 4-5 meters high and has a trunk circumference of between 60 and 90 cm. The dry weight biomass of such a tree varies between 17 and 49 kg. About 50% of the total dry weight biomass is carbon (NB! Not carbon dioxide), so theoretically such a tree could sequester very roughly 15 kg of carbon.

$X \text{ kg of carbon multiplied by the atomic weight of CO}_2 (44) \text{ divided by } 12 = X \text{ kg of carbon dioxide}$

$15 \text{ kg of carbon multiplied by } 44 \text{ divided by } 12 = 55 \text{ kg}$

If one 15-20 year old tree holds 55 kg of carbon dioxide and 400 trees are planted/ha then 22 tons of carbon dioxide will be sequestered/ha and generate 22 carbon credits/ha.

The minimum yield of carbon credits/year of a small scale CDM project according to the World Bank is 30 000. To achieve this minimum limit an area of between 1300-1400 ha would have to be planted and left to reach the mature age of 15-20 years.

Source: Mohamed Ahmed Elfad, University Senior Researcher Dr.Sc.(Forestry) VIT-RI / Viikki Tropical Resources Institute, University of Helsinki, FINLAND. mohamed.elfadl@helsinki.fi

Hedenus, Fredrik. Junior PhD Environmental Sciences, Department of Physical Resource Theory, Chalmers University of Technology, Göteborg University, Göteborg, Sweden. hedenus@chalmers.se

When comparing the example of the Eucalyptus that sequesters 150 kg of CO₂ per year and the Acacia that according to this very rough example sequesters 55 kg of CO₂ per year it becomes apparent that forestry experts with good knowledge of the area will be essential for an accurate calculation of possible carbon dioxide sequestration. Which in turn will be essential to the calculation of future yield of carbon credits and the financial possibilities it may open.

2.8 Chapter Annex

Ethiopia Humbo Assisted Regeneration

[http://carbonfinance.org/biocarbon/router.cfm?Page=html/
EthiopiaHumboAssistedRegeneration.htm](http://carbonfinance.org/biocarbon/router.cfm?Page=html/EthiopiaHumboAssistedRegeneration.htm)

The objective of this project is to increase carbon sequestration by restoring 15,000 ha of diverse natural forest in Southwestern Ethiopia, an area characterized by high altitude and high rainfall and consequently severe erosion and flooding as well as loss of biodiversity.

The project will be carried out through the use of the Farmer Managed Natural Regeneration (FMNR) technique, in which existing tree and shrub root material in the soil is identified, selected, pruned, and managed to enable re-growth. Only native species will be regenerated since the technique is based on genetic material already present on the sites.

In addition to sequestering carbon this project will reduce soil erosion and local flooding, which would reduce sediment runoff into Lake Abaya - located 30 km downstream from the project sites. As many as 65,000 people access their drinking water from springs and streams originating in the project area, and reforestation will protect the quality of this drinking water. The project will also offer significant benefits with regards to biodiversity enhancement providing habitat for many species, including ten identified on the IUCN Red List. Additionally, the project provides an opportunity to bring critically needed sustainable revenue streams directly to poor rural communities. Direct benefits include access to forest products, employment, and sale of carbon credits that will allow for investments in local infrastructure and food security activities. The target population for this project is approximately 110,000 people. An important indirect benefit to the community will result from learning the techniques of Farmer Managed Natural Regeneration that is also applicable on small private farms and it is expected that the knowledge will spread throughout neighboring regions.

The project is expected to sequester around 1,890,000 t CO₂e by 2012. World Vision Australia is financing the project. Project implementation will be undertaken by World Vision Ethiopia and Australia, the Ethiopian Agriculture, Rural Development & Forestry Coordination Office, and the Humbo Forest Management Group. World Vision has been involved in reforestation projects in Ethiopia since 1984 and will facilitate and manage the establishment of the Humbo Forest Management Group, which will include representatives from all community interests and stakeholders as well as World Vision and the Ethiopian Forestry Department.

Niger Acacia Community Plantations

<http://carbonfinance.org/biocarbon/router.cfm?Page=html/NigerAcaciaCommunityPlantations.htm>

The project will reforest a maximum of 22,800 ha of *Acacia Senegalensis*, a species endemic to the whole African Sahel, over a 5-year period. The project will build on a first pilot phase started in 1993 and developed by Achats Services International (ASI), a dynamic local company. 1,200 ha have already been planted and an adapted technology has been developed with the support of ICRISAT. Out of the potential 22,800 ha, 800 ha will be directly developed by ASI on private land and up to 22,000 ha by farmers under partnership agreement on communal land. More specifically ASI will develop and manage cost-effective modern nurseries, contribute to farmers' training and assistance for planting trees, maintaining plantations, and gum harvesting techniques. The project will also re-introduce agricultural activities through intercropping with groundnuts and cowpeas. The project is the first implementing the National Strategy developed by the Government of Niger for the development of *Acacia Senegalensis* plantations. This strategy aims at dealing with the disappearance of Niger natural dry forests provoked by clearing way beyond regeneration capacity to meet the growing demand of firewood. This deforestation has particularly affected gum-producing *Acacia Senegalensis*, which has resulted in a drastic decrease of the country gum production while the international market is improving.

The project should allow the sequestration of around 0.822 Mt CO₂e by 2012 and around 1.763 Mt CO₂e by 2017. Moreover the project should annually produce about 1,200 tons of gum as well as groundnut, cowpea and other crop production resulting from intercropping. *Acacia Senegalensis* is superbly adapted to harsh ecological conditions and produces several additional environmental benefits. Besides producing gum, it allows the rehabilitation of degraded areas that have become unfit for agriculture. *Acacia's* rooting system is very powerful (subterranean biomass is twice the aerial part), which makes it efficient for dune-fixing as well as wind and water erosion control. Its nitrogen-fixing ability improves soil fertility up to restoring agriculture. The restoration of a tree cover will also benefit local biodiversity. About 15,000 farming families are expected to receive social benefits from the project through additional revenues generated by Arabic gum, grains and forage, combined with Credit Emission Reductions (CERs). Their sale will be coordinated by ASI in partnership with Eco-Carbone (www.eco-carbone.com) and will provide the necessary additional income to realize the project. ASI will purchase Arabic gum from, and redistribute the proceeds of CERs sale to participating farmers. The project will be implemented on desert land, which makes any leakage very unlikely, and the benefits brought to the population, along with other specific measures to fight fires, will significantly reduce the risk of non-permanence of the plantations.

ASI will be the pivot enterprise in the development of the project, with ICRISAT continued technical support and Eco-Carbone assistance for CERs marketing. The

majority of the proposed planting falls under the framework of the World Bank Niger Community Action Program (CAP Niger), and the project will therefore also benefit from its technical support.

In case of successful implementation, the project will be highly replicable in Niger as well as in the whole Sahelian belt of sub-Saharan Africa.

Biodiversity

The acacia plantations will be developed on deforested lands with less than 5% tree cover, which are currently completely degraded and unfit for either agricultural activity or grazing. The *Acacia Senegalensis* is one of the most robust species in the Sahelian Belt with an exceptional potential to thrive in very harsh ecological conditions, while simultaneously restoring degraded ecosystems. The plantations will start a virtuous cycle helping to restore the local ecosystem and biodiversity. The pilot phase has successfully developed 1200 ha of such plantations in the area, and has also witnessed a progressive return of wildlife once the trees were developed enough and fencing was eliminated. The trees will provide natural habitats and shadow for bees, birds, small animals. Finally, the sustainable management of the plantations will also provide fuelwood that will help reduce the pressure on the existing natural forest.

The new forest will be created by the propagation of cuttings, which will avoid any negative effect on the native tree population. These cuttings will be obtained from phenotypically selected seedlings to ensure significant genetic variation.

Other Environmental Benefits and Risks

Acacia Senegalensis is a multi-purpose tree, and using it for reforestation in a sustainable framework will provide several additional environmental benefits.

The powerful rooting system of the trees will improve dune-fixing, and will also help reduce erosion in conjunction with the improved agriculture methods. Being leguminous plants, they will enhance nitrogen fixation in the soil. Their cover will increase shade and serve as windbreaks for crop land, and leaves falling each year as part of the life cycle of the trees will also fertilize the soil. The soil regeneration in turn will provide more grass and animal fodder, and raise water table. The development of intercropping will provide extra income to project participants but also help regenerate the ground with nutrients. Finally, the plantations will improve landscape.

The majority of the proposed planting falls under the framework of the World Bank Niger Community Action Program (CAP Niger). The monitoring of the project's environmental impacts will therefore be integrated in its monitoring plan. These efforts will be more easily replicated elsewhere once the project has proven successful. As local communities become more experienced with the plantations, they will also certainly wish to expand their reforestation efforts.

Socio-economic benefits and risks

Several hundreds of jobs, permanent and temporary, will be created on the ASI plantations for their management and the production, transport, and selling of Arabic gum. In addition, the management of ASI's nurseries will create about 200 jobs. About 10,000 farming families are expected to benefit from the second part of the project. They will be given the possibility to manage their own acacia plantations, about 30-40 ha per community.

Communities will derive direct benefits from Arabic gum sales to which ASI will commit. Additional benefits will come from the reintroduction of agriculture through intercropping with groundnuts, cowpeas, and other local crops, which will be developed at the start of the rainy season. Finally, forage from leaves and seeds and the sustainable production of fuel wood will help improve local livelihoods. These additional benefits are likely to exceed direct income from the plantation. At the national level, the sale of Arabic gum will also provide an additional inflow of foreign exchange. Both ASI and ICRISAT will be heavily involved in training local communities to better manage their Acacia plantations and produce high quality Arabic gum. Training will cover basic agricultural techniques, possibilities for inter-cropping, correct pruning of trees and proper gum searing and sorting techniques.

All these benefits will be ensured and formalized through a contractual relationship between ASI and each community, which will also include the supply of farmers with acacia seedlings of improved quality, the purchase of additional biomass from tree pruning and the administration and payment to local farmers of their share of revenue from the sale of temporary CERs. ASI will therefore have a strong economic incentive to ensure that training is adequate and extensive as this will improve the quality of Arabic gum it has committed to purchase. This training will also ensure the transfer of know-how and create a more favorable basis for long-term income growth.

Rural communities will be involved as part of the World Bank Niger CAP program, which has its own criteria for selecting participants. The community input process and monitoring of social benefits and potential risks will also be managed and taken into account by the World Bank Niger CAP program, which is based on a very participatory approach. This approach is meant to empower local communities by allowing them to express their own development priorities. Significantly, the project will need to be approved by the local communities participating before becoming operational.

Leakage

The Project will be implemented on lands currently unsuitable for any economic activity and only covered at 5% by trees. These areas do not serve as source of fuelwood either. The project will therefore not cause any resettlement of populations but will provide employment locally. Farmers outside the areas to be replanted under the projects are expected to progressively start their own replanting of *Acacia Senegalensis* by getting improved seedlings from project-induced modern nurseries. Therefore the project is not expected to cause any leakage.

Risk of Non Permanence

Premature tree harvesting or land conversion represent potential risks to the permanence of the project. They, however, are rather unlikely. Local communities will have a financial interest to continue with the plantations as they will provide them with a steady revenue stream for Arabic gum through the purchasing agreement with ASI. Acacia plantations will also become more and more arable for intercropping, providing another durable source of income. These benefits significantly exceed the economic benefits of prematurely harvesting trees for firewood. Communities will be made aware of this fact through training and know-how provided by ASI, which will also provide them with the tools to maintain them.

In addition, the World Bank CAP consultation process will ensure that land tenure rights are well established for all plantations to be managed by local communities.

Risk from overgrazing will only be significant at the beginning of the project, and fencing will be employed to control it. Risk of fire will be mitigated by keeping a non-cultivated buffer zone around the plantations. In addition, local communities will be involved and provide safekeepers to patrol the plantations.

Additionality

The land devoted to the project is completely degraded, so that neither agricultural nor grazing activities are possible. More broadly, no such project has successfully taken place in Niger or neighboring countries over the last 20 years. Past experience has also demonstrated that local communities on their own have not been able to successfully develop and manage Acacia plantations. The pilot phase, operated without external funds, showed a limited financial return. However, this lack of profitability mainly came from the low quality of Arabic gum being produced, due notably to the lack of capacity of local populations and personnel. Additional financing will therefore be necessary to allow ASI to expand existing acacia plantations and offset the additional costs associated with providing training, maintaining a high quality nursery and transferring other know-how to local farmers. Carbon finance will also provide an important complementary source of income to local communities, particularly during the first few years of the project, when the Acacia trees are not yet producing Arabic gum.

3. List of Carbon Funds relevant to Watershed Management Project Financing

This chapter will give an overview of the carbon funds deemed relevant for Watershed Management Project Financing. The ToR stated specific interest in the carbon funds launched and managed by the World Bank: The BioCarbon Fund, the Community Development Carbon Fund and the Prototype Carbon Fund. The World Bank also manages funds for other governmental organizations. In addition to these national funds, other bilateral national funds have also been studied and some of them are included here. As stated previously, there are also private carbon funds. These were also investigated according to ToR, although the search for private carbon funds has not been exhaustive, some promising findings have been made.

Excluded from this listing are funds that:

- Are either permanently closed or will not open in the foreseeable future
- Do not engage in CDM projects
- Do not find Egypt, Sudan or Ethiopia geographically eligible
- Are cooperating closely with the GEF (excluded by the TOR)

The strongest common feature between Watershed Management activities and eligible Carbon Financing activities are A/R activities (Figure 02). The first 3 funds listed have been chosen for their willingness to buy CERs from such projects. The other funds in the list state specifically that they do not buy credits from LULUCF (for now), but have been included because they are interested in biomass energy or hydro which are other activities that might be possible to include as a component in a Watershed Management project. The different funds of the UNFCCC will not be mentioned here, because of their cooperation with GEF (excluded from this consultancy as per the TOR). Also excluded from the list is the Prototype Carbon Fund, which is permanently closed to PINs.

3.1 List of Funds

Name of Fund	Eligible Activities Key Info	Financing Options
BioCarbon Fund (World Bank)	Community Plantation Assisted Regeneration Watershed Reforestation “Sequester or conserve carbon in forest and agro-ecosystems”	Payment of CERs Facility for financing capacity building, baseline studies, monitoring plans (BioCarbon <i>plus</i>)
Finnish JI/CDM	Afforestation/Reforestation	Payment of CERs

Pilot Programme	Small-scale/Mini Hydro Small-scale Biomass Official program launches by end of 2005 Small-scale CDM	Upfront payment – possible Help to finance transaction costs (PDD, validation e t c)
CarbonNeutral Company	Mixed projects A/R and small-scale hydro	Payment of CERs Upfront payment – possible
Community Development CarbonFund (World Bank)	Small Bundled Hydro Hydro and A/R Biomass “Development plus Carbon”	Payment of CERs Facility for financing capacity building and feasibility studies (CDCF <i>plus</i>)
Austrian JI/CDM Programme	Hydro Clean biomass Manager: Kommunalkredit Public Consulting	Payment of CERs Help to finance transaction costs (baseline study, validation, monitoring plan e t c)
Netherlands Clean Development Facility (World Bank)	Hydro Clean biomass Preference for LDCs	Payment of CERs Upfront payment – possible Will only finance project if it does not receive GEF funding
Danish Carbon Fund (World Bank)	Hydro Biomass	Payment of CERs
IFC Dutch Carbon Facility (IFC)	Hydro Clean biomass	Payment of CERs annually

Belgian JI/CDM Tender	Small-scale hydro Sustainable biomass Preference for LDC in project selection process	Payment of CERs Upfront payment – possible
KfW Carbon Fund (KfW Förderbank)	Hydro Biomass At least 50000 ton CO2 eqv per annum	Payment of CERs Facility for financing preparation costs in the second phase
Rabobank-Dutch Government CDM facility	Hydro Clean biomass	Payment of CERs
The ICECAP Carbon Trading (Pty) Limited	At least 100 000 tons of CO2 eqv per year Bound by the rules of EUETS ³⁴	Payment of CERs

3.2 Project Cycle and Application forms

A list of web site addresses leading to application forms, and in some cases to project documentation, is provided in the general Annex³⁵. Where available, links to application guides are also included. The funds considered particularly interesting have additional links to a wider range of information like project descriptions, completed PINs, Monitoring protocols and validated PDDs. Also there is a brief description of each fund available in hard copy in the general Annex³⁶.

Application processes for the various funds are all based on the standards and procedures stipulated by the Kyoto Protocol and are therefore very similar. Generally speaking the first step is a PIN or an Expression of Interest (a more elaborate PIN), then there is sometimes official approval from the host country government and complementary documentation to be rendered, then there is the Baseline Study and the Monitoring Plan to be developed. These are necessary documents in order to get the PDD validated. After the PDD is validated, negotiations ensue and eventually the Emissions Reduction Purchase Agreement (ERPA) will

³⁴ European Union Emissions Trading Scheme

³⁵ List of Web Sites for Application Documents, Application Guides, General Annex

³⁶ Detailed description of listed carbon funds

be signed. Then the project is in principal ready to start. The Monitoring Plan will be implemented and the verification and certification of the emission reductions begins. The last step includes the issuing of the CERs, the transfer of the legal title to the CERs from project to fund and the payment from the fund to the project.

This report finds the Project Cycle outlined for the World Bank³⁷ funds to be useful. It explains the order and the nature of the documentation necessary and gives a good idea of the general procedure. The European national funds outside the World Bank management tend to demand more paper work and more documentation from the host country, for example proof that a project proponent has been in the business for a certain amount of time and/or has not been tried and convicted for serious crimes.

³⁷ <http://carbonfinance.org/router.cfm?Page=ProjCycle> Also included in hard copy in general Annex

4. Payments for environmental services

4.1 Introduction

Payments for Environmental Services (PES) are being tested in a variety of countries. Payments for Environmental Services have become of great interest as a way to leverage funding for environmental protection with the potential to provide a sustainable flow of funding after initial donor funding has been used up. Payments for Watershed Services are a subset of PES. Other typical services are: conserving biodiversity, **carbon sequestration** and preservation of scenic beauty.

There are several definitions of Payment for Environmental Services or watershed services, among which the following appears most useful³⁸:

A PES is:

1. a well-defined environmental service that
2. is being bought by a minimum of one buyer
3. from a minimum of one provider
4. if and only if, the environmental service is actually rendered.

This is the definition of a pure PES scheme³⁹. PES in this chapter will, unless specifically stated, refer to watershed services and not the whole range of services within the concept.

Typically in a PES scheme, a user fee would be paid by downstream actors to upstream actors for ecological services performed in the upper watershed. The services could consist of everything from up-rooting invasive plants and vegetation thereby enhancing water flow, to planting degraded mountain slopes to mitigate erosion and siltation downstream. It could mean flood control, regular water supply and improved water quality. PES offers a possibility to alleviate poverty and reduce land/water degradation at the same time. Because it is not completely dependant on external funding, but rather depends on local organizations and ability it can be sustainable and potentially also build capacity and social capital.

4.2 PES and Poverty

PES schemes have the potential of being poverty alleviating depending on the structure of the scheme and on the terms stipulated for entering. The Payment to poor land users is the main mechanism by which PES may contribute to mitigating poverty⁴⁰. However, it is important to remember that the PES schemes do not automatically help

³⁸ Wunder, Sven. *Payments for environmental services: some nuts and bolts*. CIFOR, Occasional Paper No 42.

³⁹ It may, however, be useful to dare think outside the definition in order to find a structure that works for the Eastern Nile Countries

⁴⁰ Pagiola, Stefano. Arcenas, Augustin. Platais, Gunars. *Can Payments for Environmental Services Help Reduce Poverty? An Exploration of the Issues and the Evidence to Date from Latin America*. July 2004. The World Bank, Washington, DC, USA.

to mitigate poverty. A PES relies on geographic targeting and cannot prioritize poverty over geographic eligibility i.e., a poor area cannot be targeted simply because it is poor, there has to exist the geographical opportunity to render an environmental service.

Also, a PES must be market oriented and provide services that are attractive to the market. It cannot prioritize a service that a poor community can render if there is no buyer for it.

4.3 Structuring a PES

Whether poverty is alleviated through a PES or not depends heavily on two features in the scheme:

1. The remuneration
 - how much, when is it paid, how is it calculated
2. Opportunity costs for participating
 - transaction costs, foregoing alternative land uses, etc.⁴¹

Remuneration

Payments can be apportioned out in several different ways. Forestry activities for protecting watersheds are often paid per hectare. Different levels of remuneration are calculated depending on the activities on the land and then paid out monthly, annually, quarterly depending on the scheme.

Example:

A owns 20 ha of land. 10 ha are untouched forest, 5 ha are pasture and 5 ha are reforested. **A** gets USD 2/ha for untouched forest, USD 0,2/ha for pasture and USD 1/ha for reforested land. Payment is made after inspection every 3 months.

What is a reasonable level of remuneration? It is somewhere in between the “minimum willingness to accept (WTA) of upstream land users to change their land use and maximum willingness to pay (WTP) of the downstream service receivers for the service they want.⁴²” On what terms will it be paid out and how? The questions surrounding remuneration are very much an issue to be addressed during consultation, before implementing the PES scheme. There is no one solution, every scheme will have to find the structure of payment that fits best. Remuneration is considered to be one of the most important aspects for a PES scheme to work in a poverty-alleviating way.

Opportunity Cost

The opportunity cost should be kept as low as possible. That may feel like an obvious point to make – but it gains importance when looked at from a poverty angle.

⁴¹ Pagiola, Stefano. Arcenas, Augustin. Platais, Gunars. Op cit.

⁴² Pagiola, Stefano. Arcenas, Augustin. Platais, Gunars. Op cit.

Opportunity costs must be kept in mind as one of the main reasons for small land users not to enter into a PES scheme. See case Virilla in Chapter Annex.

4.4 External Issues

Three external circumstances that will influence the successful outcome of a PES scheme include:

1. Land tenure - insecure land holdings, lack of title, etc.
2. Access to credit - lack of access to credit, lack of bankable security
3. Institutions - governmental and non-governmental

Land Tenure

Land tenure, land holding, user right, tenant, there are many ways to bargain over land. To address the issues of tenure may require creative solutions, according to Pagiola et al, and they may be easier to come to when there are strong local organizations and NGOs. They can help provide a forum for discussion and consultation and they can organize participants. This report also found some promising examples where very different forms of land tenure have successfully become parts of PES schemes. This is just to show that individual titles to land may not be necessary for a PES scheme to work.

Nepal Makalu Barun National Park – communal user right

Since the government has transferred **stewardship rights** to local user groups, they have the authority to set and collect fees themselves and impose fines and penalties for community members who violate the regulations for sustainable harvesting.

Source: Why are Resources Flowing Downhill Unsustainably? From a participatory electronic conference.
www.mtnforum.org/resources/pfm/forum-2a.htm

Mexico Ejidos – communal ownership

The word *ejido* refers to an area of land where **the title to the land is held communally**. Communities have been given ownership and management responsibilities for forested areas. Decisions are made collectively through oversight and approval of plans formulated by Mexican government forestry technicians.

Source: Why are Resources Flowing Downhill Unsustainably? From a participatory electronic conference.
www.mtnforum.org/resources/pfm/forum-2a.htm

Access to Credit

Poor landholders may have no access to credit or they may lack the security necessary to obtain credit. A loan is almost always needed to be able to make the investments necessary for participation. To make participation for poor landholders possible it is imperative to take into account the investments the land user is required to make. Should the PES provide credit? It is not within the scope of a PES, but the PES can adapt its remuneration so as to consider the credit situation for example by making payments front loaded, with large payments during the initial years of participation and smaller amounts later⁴³. Also, the PES can structure the scheme so that the level of investment suits the poor in the community better. For example provide in other ways some of the products (fences, tree plants e t c) that would otherwise need investment.

Institutions

Since most PES build the whole scheme on for example land tenure and legal agreements, legal institutions are naturally an important part. Water is a cross-cutting issue in many ways and it often shows in the maze of laws that have to be taken into account when implementing a PES scheme. The legal framework of laws, regulations and enforcing institutions differ from country to country and the implementation of a PES scheme must not be in contradiction with a country's national laws. In the case of Pimampiro⁴⁴ for example there are quite a substantial number of laws that play a part in the implementation of the PES scheme. Governmental institutions like ministries, local government and other governmental entities are also important for the implementation of a PES and for the enforcement of its rules. The municipality of Pimampiro has several members on the board of the trust fund and they run the administrative part of the project as well as deal out sanctions according to the rules set up by that local scheme. Financial institutions are often crucial for the possibility of smaller land holders to participate in a scheme. Without a loan for initial investments it may be quite impossible for a scheme to take off at all.

In the case of Virilla⁴⁵ in Costa Rica the situation differs rather from many of the other PES programs because Costa Rica has worked on capacity building within institutions for several years and has created a solid institutional basis in every respect. This facilitates the typical PES scheme considerably.

4.5 Possible financing mechanisms for government implemented PES

Some financing mechanisms are reserved for governmental entities, for example taxes or tax alleviations, fees for licenses, concessions and the like. There are many different ways to pay for environmental services (ES). In Ecuador they have water meters and pay by the cubic meter to a private water company. Part of the billed sum,

⁴³ Pagiola, Stefano. Arcenas, Augustin. Platais, Gunars. Op cit.

⁴⁴ See case study in Chapter Annex

⁴⁵ See case study in Chapter Annex

in turn goes to the trust fund that pays the providers of environmental services. In Zambia the government have water-use licenses that are issued for 5 years at a time. Different licensing schemes could be a source of funding for ES, if for instance a part of the license fee was earmarked for that purpose. A system of water-use licenses could also be one way of safely transferring money from buyer of ES to a fund or other accumulation point for investment in necessary infrastructure or capacity building for instance.

Zambia: Financing Mechanisms for Water Resource Management

The National Water Policy of 1994 states that water should be recognised as an economic good. Presently there is a system of licensing the use of surface water, but groundwater is still exploited at will. The renewal and the issuing of new licenses as well as the penalty charges constitute the revenues for the Water Development Board. Unfortunately the database supporting the billing of licenses is poor and only between 50% and 60% of all license holders actually pay for it.

According to the Technical Component 5, Economics and Finance the following issues need to be addressed in order for the water resource management sector to cover its own capital expenditure:

- Up-dating of the water right holder data base
- An efficient billing system
- Functioning revenue collection system
- Inclusion of ground water tariffs
- Regular adjustments of tariffs to ensure the real value is not eroded.

Source: Government of Zambia, Economics and Finance. 2000

⁴⁶There are other ways of solving the issue of water demand. In Chile, water use rights are defined for a fixed quantity per unit of time and they have to be applied for. Water use is granted free of charge and recorded in a national register. There are two types of rights: consumptive rights (irrigation) and non-consumptive rights (hydropower and recreation). The benefit is that the market manages water scarcity. However, the market may fail to include costs to society.

Other incentives (other than actual cash payment) for land users or landowners to participate in a PES scheme might be alleviation of taxes or fees or other relevant cost reductions in return for not using the land or for changing land use in a conservation area.

⁴⁶ Why are Resources Flowing Downhill Unsustainably? From a participatory electronic conference.
www.mtnforum.org/resources/pfm/forum-2a.htm

4.6 Discussion of applicability within Nile ENSAP

The Payment for Environmental Services is a market-based approach. In order for it to work, ideally there should be a market with some basic functions: safe exchange of compensation and commodities, buyers, providers, clear information and transparency. While the smoothly working institutions of a market would make the implementation of a PES scheme relatively easy, there are still good chances that PES schemes, well adapted to site and situation, can work even if conditions are not ideal.

Land Tenure

The example from Pimampiro shows that each of the participants had title to their lands. Individual titles give a clear, straight forward legal base for a PES scheme. There is never any doubt as to whom the remuneration should go, there is no discussion of how it should be divided, no discussion as to who should be fined or otherwise punished for breaking the rules of the scheme and so forth. Rewards and punishments are easily assigned.

Individual titles are not the rule among small land users. Generally, the poorer and more marginalized, the more insecure and unclear is the tenure of the land. Also, completely different ways of looking at land and its goods have given rise to different traditions of land tenure. In for example Ethiopia⁴⁷, the land is sometimes publicly owned and only the right to use it is bestowed on the farmer. In fact, (at least hypothetically) he or she can be made to give up some (or all) of the land to newly formed households, thus creating an insecure situation for the farmer. This, however, has not stopped farmers from uniting in Peasant Associations for instance.

There are other ways of formulating the right to use land, and so one single formulation (individual title) should not be used to set the standard. The examples of Nepal and Mexico show that a PES scheme can very well be implemented in a community that does not use individual land titles as long as the structure of the PES embraces the situation and adapts to it.

Poverty

It has to be remembered that PES is a market-based scheme. PES schemes do not automatically alleviate poverty and at some sites it may not be possible to achieve poverty alleviation because for example a) the residents of the site are not poor b) the residents of the site are poor, but they cannot render an environmental service that the market is interested in paying for.

In principal, extreme poverty is not an obstacle for implementing a PES scheme. The scheme will have to be adapted to the site and the situation. Does the scheme require large or small investments? How can we make participation easy for poor land users?

⁴⁷
ENTRO. *Watershed management experiences and lessons learnt: some Ethiopian examples*. p 4.

What should the system of remuneration look like? These questions should be put to the community involved and their answers taken into account when the scheme is set up.

Institutions

Pagiola points out the necessity for supporting institutional infrastructure⁴⁸. For example: a safe channel for the compensation to flow from the beneficiaries to the providers, access to information about the services and their price, clear property rights, monitoring and enforcement mechanisms.

Typically a successful watershed management project containing a PES component would be heavily relying on functioning official institutions. If the institutions are relatively strong and they have the authority and means to carry out decisions, then a PES scheme relying on several institutions to work will not be a problem. However, if a nation has weak institutions it might be a solution to implement a PES scheme on a very local level, avoiding involving a large number of official institutions, but rather depending on local, possibly informal, institutions. It could be argued that this may weaken the official institutions, but on the other hand it may strengthen civil society and build local capacity.

4.7 Lessons learned about Implementation of PES schemes

Institutions

If there are functioning governmental, legal and financial institutions that can support the PES scheme it makes the implementation easier. However, it is not impossible to implement a PES scheme even if the official institutions are weak. It is a matter of adapting the scheme to the site and the situation.

Ownership

Who has what right and where does it say so? It is important to clarify what rights the land user/users has/have from the very beginning. There are several ways of solving the issue of owning and using and the important thing is not whether the title is to the land or to the use of land (or water), whether it is individual or not, but that it is clear and recognized.

⁴⁸ Pagiola, Stefan and Platais, Gunars. *Environment Strategy Notes. Payments for Environmental Services*. No 3 May 2002. The World Bank.

Rules for participation

Who will the rules affect? Rules should be carefully considered. They may have effects on others than the targeted group. In the case of Pimampiro the small land-holders thought that the strict rules of logging was a constraint to participating and they hesitated to join the scheme. Strict rules of access to the forest may also affect non-participants adversely. The poorest are often relying on non-timber forestry products for survival and restricted access to the forest as a rule may have an adverse impact.

What happens if the rules are not obeyed? A survey done in Pimampiro showed clearly that the participants thought that punishments for not abiding by the rules were absolutely necessary. In this case, it will also have to be taken into account that the level of remuneration was quite low and so the economic loss of being for example excluded from the scheme for a while, was perhaps not very deterring. A higher level of remuneration might have inspired more, since the cost of breaking the rules would then be higher. If there are several positive incentives, the need for several deterring punishments will probably decrease.

The enforcement of agreements, rules, taxes and regulations is of course vital. A prerequisite for enforcement to work without physical intervention is that the enforcing institutions are perceived as legitimate. The higher the level of perceived legitimacy, the higher the level of voluntary compliance.

Legitimacy

The one thing that seems to unite scientist from all camps regarding the implementation of a successful PES scheme is the importance of confidence and trust, on every level. This helps build legitimacy for the project. There has to be trust among the stakeholders, there has to be confidence in the communities' ability to implement the PES. There has to be confidence among stakeholders that the proposed PES will be beneficial to them, confidence that local views and ideas will be heard and taken into account, confidence in the project leaders competence and ability. The emphasis on transparency, equity, accountability, responsiveness and other essential building blocks that help build confidence, is strong wherever PES is discussed. The importance of consulting with the providers of the service cannot be overrated. The idea has to be well rooted within the target community. A project that has been developed together with the target community, also enjoy legitimacy in the eyes of that community. Another way to build trust and legitimacy is to cooperate with an organization or institution that already enjoys the target community's trust and confidence.

Poverty

PES schemes are not automatically poverty alleviating. Still, PES schemes have the possibility of being poverty alleviating as long as the scheme takes poverty into account. A PES scheme should make it easy for poor land users to participate by making sure for example that the payment procedure is well adapted to poverty and that transaction costs are kept low.

4.8 Chapter Annex

Case references of Payments for Environmental Services schemes

Nepal Makalu Barun National Park and Conservation Area Project

Previously: The forests were managed by the central government, local people paid high fees to the central government for their legal use.

Now: Since the government has transferred **stewardship rights** to local user groups, they have the authority to set and collect fees themselves and impose fines and penalties for community members who violate the regulations for sustainable harvesting. More than 2000 households have been given stewardship rights.

Source: Why are Resources Flowing Downhill Unsustainably? From a participatory electronic conference.

www.mtnforum.org/resources/pfm/forum-2a.htm

Mexico Ejidos

The word *ejido* refers to an area of land where **the title to the land is held communally**. Communities have been given ownership and management responsibilities for forested areas. Decisions are made collectively through oversight and approval of plans formulated by Mexican government forestry technicians. In Mexico's largest *ejido*, Ejido El Largo y Anexos, members have rejected clear cutting the forest for aesthetic reasons. Because most of the forest activities in Ejido El Largo are not mechanized, timber extraction is quite gentle on the forest and also the employment level is high within the *ejido*.

Source: Why are Resources Flowing Downhill Unsustainably? From a participatory electronic conference.

www.mtnforum.org/resources/pfm/forum-2a.htm

Case studies of Payments for Environmental Services schemes

The case of Pimampiro, Ecuador⁴⁹

Water in Ecuador

Because water potentially touches so many areas for example agriculture, fishery, environment, forestry, health, industrial development, energy e t c, it is perhaps to be expected that several legal frameworks have to be taken into account when a PES is implemented. The case in Pimampiro, Ecuador is no exception, several important laws, decrees and policy documents rule the possibilities to implement the scheme. The problem of jurisdiction became quite visible when a study in Ecuador identified no less than 25 laws and 11 institutions as having direct or indirect jurisdiction over water resources. The box below only highlights the main laws. Generally, legal enforcement in Ecuador is poor and this applies to the enforcement of environmental laws too. In this confusing system the solutions and initiatives seem to be quite local and some quite possibly even disregarding certain of the several legal frameworks pertaining to water.

Main water laws and regulations in Ecuador

1960 Irrigation and Soil Sanitation Law regulates irrigation systems.

1966 Decree 1551 creates the Ecuadorian Institute for Water Resources (Instituto Ecuatoriano de Recursos Hidráulicos - INERHI).

1971 Special Decree 188 (also known as the Health Code) regulates water services for human consumption.

1972 Water Law on the management of all marine, surface, ground and atmospheric waters in the country.

1973 Special Decree 40 regulates the 1972 law and establishes the responsibilities of the INERHI, composed of an Advisory Council and 13 Water Agencies, and defines its jurisdiction to cover the whole country.

1994 Special Decree 2224 on the centralized planning, administration and control functions in the National Water Resources Council (CNRH). It also includes decentralized implementation, operation and maintenance of irrigation systems and water infrastructure, water quality control and conservation of watersheds by regional development councils. It also authorizes the transfer of irrigation systems to its consumers (UEP-PAT - Implementing Unit for Technical Assistance for Irrigation Projects).

1999 Environmental Management Law creates a decentralized environmental management system.

Source: Echavarría, M.,J. Vogel, M.Albán, and F. Meneses. 2003 p 7
The impacts of payments for watershed services in Ecuador. Emerging lessons from Pimampiro and Cuenca. International Institute for Environment and Development, London.

⁴⁹ Echavarría, M.,J. Vogel, M.Albán, and F. Meneses. 2003 *The impacts of payments for watershed services in Ecuador. Emerging lessons from Pimampiro and Cuenca.* International Institute for Environment and Development, London.

Pimampiro

The small town of Pimampiro implemented a payment for environmental services scheme in order to protect the Palaurco watershed, their watershed. The town Pimampiro is situated 32 km downstream from the Nueva América Association for Agriculture and Livestock land holdings.

The intended providers of the environmental services were the members of Nueva América. In 2003, the association had 24 members, all with individual title to their land. The level of literacy within the association was at the most the completion of 6th grade and 30% of the women were illiterate⁵⁰. The average size of property was 43 ha.

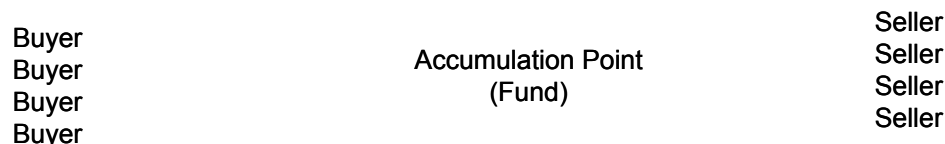
The actors involved in this initiative, apart from the members of Nueva América includes:

- DFC, a FAO-funded project for community forest management
- CEDERNA, an NGO which has evolved from DFC
- the Inter-American Foundation, a US donor
- the Municipality of Pimampiro

To improve quality of drinking water, a water treatment plant was installed in Pimampiro 2001 funded by a loan from the State Bank. Previous to the treatment plant, the water had been treated with chlorine and provided for two hours, two days a week. At the same time as the plant was installed, the tariffs for water were adjusted up by 20%. The increase was acceptable to the inhabitants because they perceived that the service in itself was so much improved both in quality, quantity and accessibility. After the raise a household paid USD 0.96 for 17 cubic meters of water. 1350 households have water meters and they are billed according to them. The tariffs should be a good starting point for economic viability, but only 60% of the water bills are collected⁵¹.

The construction of the payment mechanism started with the creation of a fund. Several sources of money is channeled into the fund: 20% of the Water Bills paid by Pimampiro households, an initial capital of USD 15000 as well as national and international funding.

Figure 05



⁵⁰ Echavarría, M., J. Vogel, M. Albán, and F. Meneses. 2003 *The impacts of payments for watershed services in Ecuador. Emerging lessons from Pimampiro and Cuenca*. International Institute for Environment and Development, London.

⁵¹ Echavarría, Marta. Vogel, Joseph. Albán Montserrat. Meneses, Fernanda. Op cit.

A committee that is responsible for the funds as well as for the management of the Payment for Environmental Services-project manages the fund. Some of the committee's responsibilities⁵² are:

- Authorization of quarterly payments based on inspections
- Analysis and approval of payment increases
- Approval of the incorporation of new beneficiaries
- Analysis of agreements with landowners and
- Determining sanctions in the case of violations

The make up of the committee is as follows: the Mayor of Pimampiro, the municipality's Financial Director, the president of the municipality's Environmental Commission and a representative from an involved NGO.

In order to enter the scheme, the members of Nuevo América have to sign an agreement with the municipality of Pimampiro. The agreement stipulates both which areas are covered by the agreement and which category of payment each area falls under.

The issue of sanctions against landowners who violate the agreement is dealt with according to the possibilities within the scope of the scheme. To monitor compliance with the agreement the committee sends out inspectors on random visits on a quarterly basis. Landowners can have their payments suspended and if a violation reoccurs or is severe, the landowner can be excluded from the scheme. The study clearly states that "sanctions are required⁵³". This is probably a quite efficient way of dealing with violations of the agreement, considering the general problem of law enforcement in Ecuador.

The services required from a participant in the PES would be one or more of the following:

- Watershed management and conservation
- Carbon sequestration
- Biodiversity protection

The tariff for compensation can be seen below⁵⁴

Figure 06

Payment categories	USD/month/ha
High altitude grasslands where no human activity has taken place	1.00
High altitude grasslands where human activity has taken place	0.50

⁵² Echavarría, Marta. Vogel, Joseph. Albán Montserrat. Meneses, Fernanda. P 26 Op cit.

⁵³ Echavarría, Marta. Vogel, Joseph. Albán Montserrat. Meneses, Fernanda. P 29. Op cit.

⁵⁴ Echavarría, Marta. Vogel, Joseph. Albán Montserrat. Meneses, Fernanda. P 27. Op cit.

Primary forest	1.00
Primary forest where human activity has taken place	0.50
Mature secondary forest	0.75
Young secondary forest	0.50
Agriculture and Livestock	0
Degraded land	0

The level of remuneration was not based on technical analysis, but was rather a political compromise. The tariff should also be considered against the background that the average Nueva América landowner received USD 21.1/month, the minimum wage in Ecuador is USD 114/month and that the monthly sum spent on food, medicine and education among the participating families was an average of USD 60.8.

The amount perceived as fair payment was between USD 1-10/ha/month among the Nueva América members and about USD 3.70/ha/month by the inhabitants in Pimampiro. Also, over half of the inhabitants in Pimampiro were **willing to pay more** for the watershed services than they currently did.

The level of participation of the members of Nuevo América Association dropped from 27 in January 2001 to 15 in July 2002 and the consultations indicated that they did not feel excessively motivated by the level of remuneration. This indicates the importance of finding the right level of compensation.

One positive social outcome was that the level of awareness of environmental regulations did seem to improve. One dimension of the new awareness was the interest in alternative activities such as the interest in medicinal plants, ecotourism and sustainable agriculture.

The cost for developing the project has been assessed to at least USD 45000, to compare with the initial capital for the fund, USD 15000.

The case of the Virilla watershed in Costa Rica⁵⁵

When Costa Rica set up its Payments for Environmental Services Programme in 1995, it was widely acknowledged as pioneering effort. The programme evolved from a process of institutional capacity building that started decades previously. The result is a solid legal, organizational and social base for a PES scheme. In fact, there are only two main laws pertaining to PES: Forestry Law no 7575 1996 and Biodiversity Law no 7788 1998, which gives a clear cut sense of the possibilities and restraints

⁵⁵ Miranda, M, I.T Porras and M.L Moreno. 2003. *The social impacts of payments for environmental services in Costa Rica. A quantitative field survey and analysis of the Virilla watershed*. International Institute for Environment and Development. London.

when it comes to a PES. Law no 7575 recognizes “four services provided by forests: watershed protection, scenic beauty, carbon fixation/sequestration, and biodiversity conservation.⁵⁶” The Virilla Watershed has been involved in the very first efforts to establish a PES and it hosted the first international certifiable tradable offsets (CTO) transactions between Costa Rica and the government of Norway in 1997.

Other voluntary agreements to improve watershed conditions include:

- Costa Rica-Norway Reforestation and Forest Conservation AIJ Pilot Project (carbon sequestration) and CNFL Project (watershed conservation)
- Payments for watershed conservation in strategic catchments of the Florida Ice & Farm brewery project
- Voluntary agreement and water use charges for watershed protection by the Empresa de Servicios Publicos de Heredia.

The Virilla PES programme, has evolved into a multi-institutional activity that has fostered co-operation between FUNDECOR, MINAE, CNFL among others. The programme holds both a component of generating and selling CTO and an environmental services component.

The stakeholders include:

- The Braulio Carrillo National park and Private Landowners
- FONAFIFO, National Forestry Fund
- FUNDECOR, Foundation for the Development of the Central Volcanic Mountain Range
- MINAE, Ministry of the Environment and Energy
- Florida Ice & Farm
- CNFL, National Company for Energy and Lighting
- ESPH, Heredia Public Services Company - provides electricity, potable water, public lighting and sewerage services. Owned by three municipalities
- OCIC, Costa Rican Office of Joint Implementation
- The Norwegian Government, buyers of the CTO generated by the carbon sequestration component

FONAFIFO works as an intermediary, purchasing rights to environmental services from owners of forest and then sells the services to local, national or international buyers. Local buyers include hydroelectricity companies like the CNFL, who are interested in watershed services, eco-tourism agencies that pay for the conservation of scenic beauty. National buyers of services are for example Florida Ice & Farm brewery, owners of the largest brewery in Costa Rica. They are interested in keeping their main ingredient, water, as pure as possible. At international level it is the service of carbon sequestration that is most interesting. FONAFIFO transfers CTOs to buyers like the Government of Norway via OCIC. Also, FONAFIFO receives a share of the fuel tax revenues on a regular basis.

The agreement between the FONAFIFO and the landowners are generally made for a 5-year period, during which the landowners cede their environmental service rights to

FONAFIFO. When the period is up the landowner is free to renegotiate prices, sell the rights to other parties e t c. The obligation of the landowners is noted in the public land register.

The participants involved in this PES scheme are considered relatively wealthy. Most households have at least one university degree, they had an average income of USD 820 per month. The minimum wages in Costa Rica is USD 220. The Virilla watershed is an area where the opportunity cost for the land is high. Many of the activities there are export oriented such as coffee production, ornamental plant cultivation, and dairy production. The most natural mix of land use for the inhabitants is livestock and forestry.

The services required from a participant in the PES would be one or more of the following:

- Carbon sequestration through reforestation, conservation of primary and secondary forest
- Watershed conservation and protection through forest conservation, reforestation and regeneration of forests.

Different services renders different prices:

Figure 07

Payment categories	USD/hectare/month
Reforestation	9.15
Forest management	5.83
Forest protection	3.75

The income from the PES scheme was reported by 60% of the inhabitants to be the second most important to the household. The average amount paid to the participants of the scheme is USD 4200 per year. The money is mainly used for reinvestment in the farm, although the smaller landowners use the money for short term expenditure.

The PES in Virilla Watershed has created quite a large amount of white-collar jobs within state organizations, NGOs and the private sector.

The PES in Virilla was not constructed with poverty alleviation as a goal and although the financial and social impacts on the participants of the scheme have been positive in several ways, poverty alleviation has so far not been a result.

Impact on Poor Households

Because the households of Virilla were found to be wealthy a small parallel study was conducted in the northern region to look for effects on small producers. Three main

⁵⁶ Rojas, M. Aylward B. *What are we learning from experiences with markets for environmental services in Costa Rica? A review and critique of the literature.* November 2003. Environmental Economics Programme. IIED.

obstacles for small producers to participate were found:

1. Poor households that are depending on the Government for benefits like for example housing are not entitled to enter a PES scheme.
2. Smallholders who have been assigned lands under the Agrarian Development Institute program for small farmers are not entitled to enter a PES scheme
3. The main source of finance in Costa Rica (National Bank System) did not until recently recognize forest activities as eligible for loans. This limited the borrowing capacity for small landowners to co-finance reforestation activities. The PES only covers a part of the total cost of reforestation.

Other issues were also perceived as considerable obstacles:

1. The legislation on tree-felling is too rigid. This only leads to more illegal activities and more hesitation to enter the scheme.
2. Transaction costs are very high for smallholders. Applicants for the program are required to let the forest be idle during the application period that varies from a little less than a year to almost two years. This is very costly for a small landowner.

5. Conclusions

The financing mechanisms explored in this report seem applicable to the Eastern Nile countries although some thought has to be given to adaptation with regards to PES and some thought has to be given to the stringent conditions surrounding carbon financing.

5.1 Major Findings

Carbon Finance

- Carbon funds are mainly interested in project activities involving renewable energy (water, wind, sun, geothermal, clean biomass) and new environmentally-friendly technology.
- Three main areas that are the most relevant from the aspect of Carbon Financing for Watershed Management are: A/R, Biomass and Hydropower.
- Carbon funds work as agents and buy credits on behalf of their clients.
- The BioCarbon Fund and the Finnish JI/CDM Pilot Programme are expressly interested in A/R CDM projects (although the BioCarbon Fund is currently oversubscribed).
- Because Carbon Funds pay when the legal title is delivered they are suited to fund recurring costs.
- Under the CDM both A/R and Biomass projects have been subject to important limitations. i) Projects involving carbon sequestration in the form of sinks through LULUCF have several limitations on the projects as well as on the credits generated by such projects. ii) The CDM Executive board recently decided to exclude from small-scale CDM projects that replace non-renewable biomass.
- All carbon projects that are interested in CDM are subject to the rules and procedures stipulated by the UNFCCC and its Protocols.
- The funds processes of application are similar to each other, but they are not exact copies. Studying the World Bank Project Cycle for carbon funds gives a good idea of what to expect in general.

Payment for Environmental Services

- To implement a PES scheme in the Eastern Nile Countries should be quite possible provided that the scheme is well thought through and well adapted to the site.
- PES schemes can have poverty alleviating effects, but not automatically. In order for a PES to have an impact on poverty, the scheme has to be structured in a way that takes poverty into account.
- If there is an absence of strong official institutions, it may be an option to start implementing PES schemes at a local level, depending on NGOs or other local institutions in an area, adapting the scheme to each site and each situation.
- It is important to give the scheme legitimacy in the eyes of the community and

one way of contributing to that is to implement the scheme in cooperation with an institution that already has the trust of the community and to include a strong component of community consulting.

- PES concerning watershed management has been implemented in South and Central America since the middle of the 1990's and the projects there have the longest standing experience to date. There are several useful lessons to be learned from the American PES schemes, but it is uncertain whether their scheme structure can be copied and directly applied in Africa.
- A PES scheme can under the right circumstances very well be attached to a carbon project or vice versa.

5.2 Recommendations for Future Action

It is the conclusion of this report that the ENSAP has several alternatives when it comes to taking action:

1. *A/R Project.* Within A/R the following areas would be eligible: afforestation, reforestation, agro-forestry, terracing, area protection and grazing regulations. An A/R project can be diverse and sustenance oriented, which is an advantage if the project is situated in a poor area and it can under the right circumstances be attached to a PES scheme⁵⁷. Given the wide range of eligible activities, an A/R project could include several components related to forestry for example: environmentally sustainable bio fuel plantation, intercropping, reforestation of watersheds e t c. Money would be generated from sales of ecological services, carbon credits, agricultural and forestry products. Benefits could range from new permanent work opportunities, sustainable interaction with the environment, improved water quality and quantity and so forth. The Niger Community Plantation that the BioCarbon fund is currently considering, is one example of how several components are brought together in the same project to create maximum benefit for the local population and local companies.

2. *Hydropower.* An environmentally low-impact, small-scale hydropower project is eligible for carbon financing. It is quite possible to include an A/R component here as well, for instance to protect the watershed and the dam from siltation. The investors in the hydropower plant could be interested in paying for the caretaking of the watershed (PES). If the A/R component is big enough, it could also be eligible for carbon credits. A hydropower plant could for example contribute to the regulation of flow of the water. Interested carbon funds are among others the CDCF, the Austrian JI/CDM Tender, and the CarbonNeutral Company

3. *Biomass.* Biomass could be agricultural or wood residue or even manure. In order for a biomass project to produce electric power in an efficient way, the biomass

⁵⁷ If, for example, the carbon project contains a component to regenerate forests in an eroded watershed, then that component could also be attached to a PES scheme.

plantation or source of biomass ought to be very close to the furnace that will burn it. Otherwise the leakage may be too big. Biomass generated power is eligible for credits from several of the funds listed in this report.

Another way of using biomass that is not necessarily dependent on an electric grid is to use the technique of a biodigester. The process generates biogas (methane) and organic fertilizer. The replacement of fuel wood with methane would reduce pressure on the vegetation surrounding a community and is clearly compatible with at regenerative project component. The CDCF for example is involved in a methane project in Nepal

4. If time is an issue this report recommends that small-scale projects be considered, since there are simplified procedures surrounding small-scale CDM, and the applications are quicker to process.

General Annex

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Contains information on success factors. Provides a step-by-step guide to implementing a Carbon Project and gives special attention to the Feasibility Phase.

Dimas, Stavros. Extract from speech held at a Climate Change conference in Vienna, Austria. 4 October 2005. http://www.co2-handel.de/article185_748.html

Echavarria, M.,J. Vogel, M.Albán, and F. Meneses. 2003 *The impacts of payments for watershed services in Ecuador. Emerging lessons from Pimampiro and Cuenca*. International Institute for Environment and Development, London.

ENTRO. *Watershed management experiences and lessons learnt: some Ethiopian examples*.

Government of Zambia, Economics and Finance. 2000. Technical Component 5. Water Development Board.

Provides interesting insights into the situation on water and governance in Zambia and may be a source of inspiration.

Hedenus, Fredrik. Junior PhD Environmental Sciences, Department of Physical Resource Theory, Chalmers University of Technology, Göteborg University, Göteborg, Sweden. Telephone interviews.

Heister, Johannes. Team Leader, Quality Assurance and Regulatory Policy, Carbon Finance Business, World Bank.

Heyse, Tine. Belgian CDM Tender. Telephone interview.

Kyoto Protocol to the United Nations Framework Convention on Climate Change. Art 12, §2

Kögler, Peter. Kommunalkredit, Austria. Telephone interview.

Miranda, M, I.T Porras and M.L Moreno. 2003. *The social impacts of payments for environmental services in Costa Rica. A quantitative field survey and analysis of the Virilla watershed*. International Institute for Environment and Development. London.

Mugenyi, Enock. *Capacity Development Workplan for the Clean Development Mechanism in Uganda, Roles and Composition of the Designated National Authority*. Uganda Management Institute.

<http://www.cd4cdm.org/.../Uganda/First%20National%20Workshop/Designated%20National%20Authority.ppt>

A review over how a Designated National Authority can be set up.

NSW (New South Wales) Department of Primary Industries/Forests. http://www.forest.nsw.gov.au/env_services/carbon/accounting/Default.asp

Explains carbon accounting and has link to free carbon accounting CD

Pagiola, Stefano. Arcenas, Augustin. Platais, Gunars. *Can Payments for Environmental Services Help Reduce Poverty? An Exploration of the Issues and the Evidence to Date from Latin America*. July 2004. The World Bank, Washington, DC, USA.

Pagiola, Stefan and Platais, Gunars. *Environment Strategy Notes. Payments for Environmental Services*. No 3 May 2002. The World Bank.

Rojas, M. Aylward B. *What are we learning from experiences with markets for environmental services in Costa Rica? A review and critique of the literature*. November 2003. Environmental Economics Programme. IIED.

Why are Resources Flowing Downhill Unsustainably? From a participatory electronic conference. www.mtnforum.org/resources/pfm/forum-2a.htm

Wunder, Sven. *Payments for environmental services: some nuts and bolts* CIFOR, Occasional Paper No 42.

List of Web Sites for Application Documents, Application Guides

BioCarbon Fund

<http://carbonfinance.org/biocarbon/router.cfm>

Contact person: Benoit Bosquet

bbosquet@worldbank.org

Finnish JI/CDM Pilot Programme

http://global.finland.fi/english/procurement/cdm/itt_cdm.pdf

Contact person: Kari Hämekoski, Programme Manager

kari.hamekoski@ymparisto.fi

The CarbonNeutral Company

<http://www.carbonneutral.com>

Contact person: Bill Sneyd, Operations Director

Bill.Sneyd@carbonneutral.com

PDD Template can be found in Annex of chapter no 3

Community Development Carbon Fund

<http://carbonfinance.org/cdcf/router.cfm>

Austrian JI/CDM Programme

<http://www.ji-cdm-austria.at>

Contact person: Peter Kögler at Kommunalkredit Public Consulting

p.koegler@kommunalkredit.at

Netherlands Clean Development Facility

<http://carbonfinance.org/router.cfm?Page=NLClean>

Danish Carbon Fund

<http://carbonfinance.org>

Link at bottom of page

IFC Dutch Carbon Facility

<http://www.ifc.org/enviro/EMG/carbonfinance.htm>

Belgian JI/CDM Tender

<http://www.klimaat.be/jicdmtender>

Contact person: Tine Heyse

jicdmtender@health.fgov.be

KfW Förderbank

http://www.kfw-foerderbank.de/EN_Home/Carbon_Fund/index.jsp

http://www.cd4cdm.org/.../Region/Jerba%20Investment%20Forum/18-KfWCarbonFund_Suennen.ppt

Contact person: Christian Dörner

christian.doerner@kfw.de

Rabobank-Dutch Government CDM facility

<http://international.vrom.nl/pagina.html>

<http://www.cdminfo.nl>

<http://www.rabobank.com>

The ICECAP Carbon Trading (Pty) Limited

<http://www.icecapltd.com>

Contact person: Dave Allen

dave@lesscarbon.com

World Bank

Carbon Finance Business Project Cycle⁵⁸

The time it takes for a project to go through the entire Carbon Finance Business (CFB) project cycle varies greatly, reflecting the variety of project types, their novelty, sizes, circumstances, and countries, and the complexities of establishing a baseline as well as the preparedness of the sponsor and project.

However, the CFB is now beginning to see some repetition in project types and baselines, monitoring and other project cycle issues. It has also developed a better understanding of concepts and procedures, which leads to a more rapid drafting of project documents and a faster overall processing of such projects.

Project Idea Note (PIN) - Either a Host Country representative or a third-party project sponsor may submit a PIN to the CFB. This PIN is quickly evaluated and if it falls within the project eligibility criteria, the CFB will contact the project sponsor for further information.

Early Notification and Letter of Endorsement (LoE) - If the PIN was submitted by a third-party project sponsor, and the CFB decides to develop it further, the Host Country (e.g. the UNFCCC National Focal Point) will be notified of the project. The CFB will ask the Host Country for a letter of endorsement for the project, to ensure that the Host Country approves of the project and understands its follow-up responsibilities under the Kyoto Protocol.

Host Country Committee Memorandum of Understanding (HCC MOU) - If a Host Country becomes interested in learning about and participating in the CFB, it may sign a MOU with the CFB and become a member of the HCC. This will allow the Host Country representatives to attend meetings of the HCC.

Carbon Finance Document (CFD) - CFB experts will investigate further and evaluate particular aspects of the project in discussions with the project proponent and prepare a CFD, formerly known as the Project Concept Note (PCN). The CFD is an intermediate document that provides enough information on the project to allow the Fund Management Committee (FMC) (and the Participants Committee (PC) if required) to review and clear the project and its further development. The CFD notes areas that need further study after clearance.

⁵⁸ Extract from World Bank home page of Carbon Financing

<http://carbonfinance.org>

Letter of Intent (LoI) - The CFB formally signals its intention to purchase emission reductions generated by a specific project under terms agreed in return for the exclusive right to contract for the purchase of emission reductions. By signing this letter the project entity commits itself to repay project preparation costs if it decides not to proceed to negotiate an Emission Reductions Purchase Agreement with the CFB Trustee in relation to the project.

Letter of Approval (LoA) - With the issuance of a Letter of Approval the Host Country formally approves the project for the purposes of Article 6 or 12 of the Kyoto Protocol, and confirms that the project assists the Host Country in achieving sustainable development. A Letter of Approval is a requirement for all JI and CDM activities under the Kyoto Protocol and is therefore a prerequisite for the signing of an ERPA with the CFB Trustee.

Baseline Study (BLS) and Monitoring Plan (MP) - Once the CFB has decided to include the project in the Portfolio, it will commission a Baseline Study and Monitoring Plan. The Baseline Study investigates the project-based creation of ERs and explains how those ERs are 'additional' to what would have happened 'anyway' without the project. First, it defines the 'without project' scenario as the baseline. Next, it quantifies the number and timing of ERs created by the project. The MP defines how project operation will be monitored, how achieved ERs are calculated, and how the ERs will be independently verified on a periodic basis throughout the project operational phase.

Project Design Document (PDD) - A project-specific document required under the CDM which will enable the Operational Entity (OE) to determine whether the project (i) has been approved by the parties involved in a project, (ii) would result in reductions of greenhouse gas emissions that are additional, (iii) has an appropriate Baseline and Monitoring Plan. The PDD is prepared by the CFB and project sponsor.

Validation - After the BLS, MP, and PDD have been satisfactorily developed, the CFB engages an Independent Validator to validate them. This means that the Validator agrees that the ERs are additional to the baseline, the MP is sufficient, and that the ERs have a high chance of being certified under the Kyoto Protocol.

Pre-Negotiations Workshop / Consultations - At about the time of validation, the CFB team may arrange a Pre-Negotiations Workshop and/or intensive Consultations on the project. This event brings together the project sponsor(s), the Host Country representatives, and the CFB team assigned to that project. The workshop is an instrument to ensure fairness in the process of negotiating and concluding. During the Workshop, the Host Country representatives are appraised of all important issues which might affect their position in negotiating a Host Country Agreement and an Emissions Reduction Purchase Agreement (ERPA) with the CFB.

Negotiations / Host Country Agreement / ERPA - After the Workshop or Consultations, the CFB legal team prepares a 'term sheet' and/or a draft ERPA for

further discussion with the Host Country representatives. During the negotiations, the final terms of the ERPA are agreed between the CFB, the project sponsor, and the Host Country. The project sponsor signs the ERPA and the Host Country signs the parallel Host Country Agreement.

Post-Negotiations Workshop - If the finalized CF project is unique and the project preparation process has been a 'best practice' experience, the CFB may share the lessons learned from this project with a wider audience of CFB constituents. Host Country representatives from the region or from countries with similar technology barriers are invited for presentations by the Project Host Country, project sponsor, and the CFB. Discussion of lessons learned is encouraged.

Initial Verification / project commissioning - After the project's construction and before its commissioning to produce ERs, the CFB contracts an Independent Third Party (a Verifier) for the project (different from the Validator). The Verifier will establish contact with the project and undertake an Initial Verification, which should confirm that the project is ready to generate verifiable and certifiable ERs. This will trigger the CFB acceptance of ERs from the project.

Monitoring - As part of project implementation, the project operator must implement the MP, which provides a methodology and a tool for measuring and calculating the emission reductions generated by the project. Once the project starts to generate emission reductions, the project entity monitors the project in accordance with the MP.

Verification and Certification - Verification and certification of the emission reductions will be undertaken periodically in accordance with the MP and other applicable guidelines by an Independent Third Party (the Verifier), who is contracted for the project by the CFB. The verifier will issue a certificate, which will confirm that the ERs have been achieved in the verification period in compliance with applicable CDM/JI rules.

Transfer of emission reductions - Once the ERs are certified, the CFB will pay for the amount of ERs as agreed in the ERPA and the ERs are transferred to Participants in accordance with the ERPA and/or Host Country Agreement and applicable UNFCCC or other rules.

Honduras La Esperanza Hydro

Community Development Carbon Fund

All project documents can be found at:

<http://cdm.unfccc.int/Projects/DNV-CUK1098894708.4/view.html>

Including for example: PDD, Approval from Italy, Validation Report, Request for issuance e t c.

Project Description:

La Esperanza is a 12.7 megawatt run-of-river hydropower plant in a remote and

mountainous rural area of Honduras. The old abandoned hydro plant site has been recovered, the first stage of the project has been contracted, and all of the new generation capacity will be in place by the end of 2005. The project will be supported by the income from the sale of 310,000 tons of carbon dioxide emission reductions to the CDCF.

Current Context:

Honduras has historically been one of the poorest countries in Latin America. Most of the poor live in rural areas where the incidence of poverty is almost 75%. Only 37% of rural population has access to electricity. The town of La Esperanza has an irregular electrical supply and towns nearby are without power. The lack of power has stymied economic development and compromised livelihoods.

Community Benefits Plan:

The project sponsors carried out a series of meetings in the city of La Esperanza and Lepaterique, Santa Anita, and San Carlos, which are directly affected by the project. Promoters also met with governmental and nongovernmental agencies. Project information was disseminated and meetings announced through various means, including local radio, which has the greatest reach. To address any possible community concerns, the project sponsor CISA opened an office in La Esperanza in November 2000. The main community benefit will be a reliable and steady supply of electricity to the town of La Esperanza, and many of the surrounding communities, totally 40,000 people. In addition, the project has also provided much needed employment in La Esperanza and surrounding communities.

Deliverables: electricity; employment; financial contribution; capacity building; afforestation and reforestation;

Timeframe: by 2012

Cost: \$275,000

Deliverables

Financial

Project developer CISA contributes at least US\$12,000 by Dec 2007 to electrification program for 450 people in San Fernando and ENEE.

Electricity

Greatly improved electricity service for the town of La Esperanza (ca. 10,000 inhabitants) allowing for: 24h/day, reliable, high quality supply covering by mid-2004 the full demand of La Esperanza. Until now the use of three phase motors, electric machinery etc. for small businesses had not been possible. Electrification of the community of Santa Anita (ca. 50 households, 290 people) was completed in December 2004 (deadline was by end of 2007) and ca. \$12,000 contribution was made to electrify another community of 450 people.

Employment

Have provided full time employment for 120 people (target was at least 70) local residents during the Project construction phase and expect to employ at least 20 during operation phase.

Capacity Building

CISA will assist local communities in the Rio Intibuca basin to apply for rural electrification grants and/or loans from government and other sources. First two applications by Dec 2008

Afforestation and reforestation

CISA in collaboration with local communities and authorities afforest and reforest land in the project area, planting at least 25,000 seedlings a year from 2004 to at least 2012. (covering 22 hectares a year. Thus far the number of seedlings planted has exceeded the target and is likely to continue to exceed it. This will reforest degraded watershed areas around the project site. The deforestation has had a profound impact on the life of the local communities, as it threatens their water supply.

Monitoring Plan:

As laid out in the emission reductions purchase agreement, the monitoring plan identifies a set of performance indicators and if applicable, target values for these indicators that the project is expected to meet or exceed. For example, for improved electricity services, the company will track volume of electricity fed into the grid; number of outages; reduced voltage variation; reduced transmission losses; increased use of small business 3 phase motors. Payments for emission reductions to the project are dependent on the delivery of the agreed community benefits.

Uganda West Nile Electrification

The Prototype Carbon Fund

All project documents can be found at:

<http://carbonfinance.org/pcf/Router.cfm?Page=Projects&ProjectID=3108>

Including Baseline Study, ER Calculations, Monitoring Plan, Project Design Document
e t c

Project Summary

Wedged between the Congo, the south of Sudan and the West Nile river, the 1.5 million people in Uganda's West Nile region live in relative isolation from the rest of the country. Road connections are few, and driving conditions difficult. Nowhere in Uganda is oil and gasoline more expensive than in the West Nile. The national power grid does not reach into the northwest of Uganda, and power from generators is available only for a lucky few and only for a few hours a day.

Some entrepreneurs have started mills and small workshops, outfitting them with old diesel generators that are very expensive to operate. Some institutions such as the hospital and some of the richer households have their own diesel generators that help them escape the scarce and unreliable public power service. The growth in individual generators is indicative of a general upswing in economic activity in the region. But life without good roads, reliable electric power, and, until recently, public telephones, remains a challenge.

This will all change when, in a few months, the first new power will flow to customers, produced by a private company that won the concession to generate and distribute power in the West Nile. The PCF has been instrumental in making this possible. In early 2004, the West Nile Rural Electrification Company Ltd. plans to start up their new efficient diesel generators in the West Nile towns of Arua and Nebbi, to provide reliable power to the population during the day and most of the night. This is the first carbon finance project that has been approved in Uganda, with an Emission Reductions Purchase Agreement signed in March 2003. The company must expand their customer base quickly, because not only their income from power sales to the local population and industry, but also the PCF payments for emission reductions will depend on the speed and performance with which they manage the conversion. PCF payments also promote the construction and operation of the two new small runoff- river hydropower plants of 5.1 and 1.5 megawatts. Hydropower will significantly increase the emission savings and therefore the income to the company from selling the emission reductions to the PCF. Reliable power will soon be available for workshops and hospital, for schools and households, and it will release the development potential that is buried in the West Nile's soils and people.

Will The West Nile Project Be Sustainable?

An important innovation with which the Clean Development Mechanism assists host countries in achieving sustainable development is its long-term approach to development. The emission reductions from CDM projects will have to be verified by an independent "operational entity" for as long as 21 years. The PCF contract with the West Nile company runs through 2017. Thus, a regular review and verification of the project's technical, commercial and emission-reduction performance is critical for a successful commercial relationship with any carbon buyers.

The PCF has also included in the verification process a review of the project's long-term social and environmental performance. Thus, there is a good chance that, by the end of the project's crediting period, the region will have made enough economic progress, and built enough local capacity, to ensure that the people of the West Nile are assured a long-term reliable power source, with all the inherent economic benefits that would follow.

Extract from The Conservation Finance Alliance, Conservation Finance Guide; Carbon Offset Projects

Read further details at: http://www.conservationfinance.org/Tools_and_Training.htm

1.6.2 Step-By-Step Methodology

The following methodology outlines general steps for implementing a forestry-based carbon offset project. In this illustrative methodology, land management activities (such as afforestation and reforestation) and forest protection activities (avoided deforestation) are considered viable options given the emerging opportunities of national and regional carbon policy regimes. It is important to note that precise sequencing and implementation of these steps will vary

considerably, depending on many circumstances specific to the project. It is also important to note that the steps outlined below (e.g. conducting an in-depth feasibility study) should be integrated into a broader conservation or land management plan. This methodology assumes that the carbon “project developer” is a conservation practitioner such as a protected area manager or environmental NGO.

Step 1: The project developer, with the help of consultants if necessary, conducts a pre-feasibility study to determine the potential of a carbon offset project proposal.

Approximate time: One month. Approximate Cost: less than US\$10,000

- Develop a general project concept by evaluating conservation management goals for overlap with climate change mitigation opportunities.
- Conduct a preliminary project site evaluation and apply first order screening criteria (see Table 2) to the project concept to determine if a full feasibility study is warranted.
- Carry out an approximate desk-study quantification of the project costs and potential carbon credits the project could sell.
- Verify that the host government supports carbon sequestration policy regimes. Identify the authorizing agency /Ministry for host government approval. Identify the requisite legislative process or applicable national policy regimes.
- Begin to gather necessary information for consultant(s) (see Section 2.1) to conduct a full feasibility study including: biological description of project area; land-use and demographic trends; land tenure information; budget estimates
- Carry out an approximate desk-study quantification of the potential carbon credits the project could sell.

IF THE PRE-FEASIBILITY STUDY INDICATES THAT A CARBON OFFSET PROJECT IS POTENTIALLY VIABLE AND RESOURCES AND INTEREST STILL EXIST:

Step 2: Project Developer develops the Terms of Reference for feasibility study (see section 2.4 for detailed Terms of Reference).

- Identify the project development team.

Step 3: Carbon project development team and/or consultant(s) conduct a feasibility study.

Approximate time: 3-6 months. Approximate Cost: US\$15,000-US\$50,000

- Project Developer provides consultants (or project development team) with descriptions of the project area and proposed project activities.
- Consultant conducts a literature search, expert interviews, and data collection needed to gather additional information necessary for study.
- The feasibility study will assess and document the following factors:
 - “Without project” baseline (a first-order baseline to estimate carbon benefits to be generated by the proposed project)
 - Estimate growth rates and prepare initial carbon offset estimates
 - Estimate project costs
 - Estimate cost/ton of carbon sequestered
 - Permanence
 - Identify strategies for leakage prevention and quantification

- Co-benefits – environmental services
- Opportunities to contribute to sustainable development
- Reliability
- Research land tenure situation
- A proposed monitoring protocol
- Investment potential

IF CARBON OFFSET PROJECT DETERMINED FEASIBLE:

Step 4: Project Developer or broker markets project to potential investors.

- Identify key GHG emitters and other potential investors with ties to the project area.
- Prioritize potential investors (Do they work in your region? Do they have an immediate or future need for carbon credits? Does your organization have an existing relationship with them?)
- Develop "project term sheet" (see sample in the Appendix, section 2) and/or business plan as a marketing tool for investors.
- Meet with potential investors to "sell the project."
- Obtain commitment for investor to fund project development phase.

IF FUNDING IS AVAILABLE INITIATE PROJECT DEVELOPMENT:

Step 5: Project Development

Approximate time: 10-14 months. Approximate Cost: US\$50,000-US\$500,000

Funding

- Identify funds for project start-up and secure commitments of purchase for carbon offsets
- Secure funding for project implementation.

Technical challenges

- Conduct first full-scale carbon inventory.
- Develop a detailed project plan, including initial fieldwork activities and a monitoring plan.

Social component

- Consultations with community representatives to introduce project, solicit input for project design
- Negotiate with landowners/sellers where land acquisition is a project activity (conduct a thorough title check on lands suitable for acquisition).

Legal component

- Evaluate the legal system to identify the appropriate legal framework for proposed project activities (land acquisition, easements, etc.).
- Draft and sign an initial Memorandum of Agreement between project partners
- Draft project contract/agreement among parties.
- Draft sub-agreements for various project components.

- Finalize all negotiations and contracts and sign a comprehensive legal agreement among all parties
- Obtain government clearances/approvals.

Operational

- Prepare operating protocols.
- Set up financial systems.
- Train staff for long term project implementation.

Step 6: Project Implementation

Approximate time: 30-70 years. Approximate Cost: US\$1 -15 million

- Transfer initial funds from project investor / buyer to project developer.
- Begin project implementation as per detailed project plan (e.g. take actions to reduce or prevent emissions – begin reforestation activities, acquire appropriate properties, etc.).
- Carbon offsets begin to accrue once proven emissions reductions occur and leakage prevention is assured (potentially 1-5+ years after beginning of implementation).
- Stay abreast of relevant approval and/or registration processes and submit a Project Plan to the appropriate agency or agencies as required.

List of Web Sites for Useful Information

International Finance Corporation (World Bank Group)

www.ifc.org/carbonfinance

Contents:

- List over eligible projects
- Carbon Finance Project Cycle
- IFC Carbon Finance Brochure
- Project Idea/Conception Note Template

Carbon Finance at the World Bank

<http://carbonfinance.org>

Contents:

- Carbon Finance Project Cycle
- List of Projects (descriptions and documentation)
- Eligibility Criteria
- Instructions for how to submit a project
- Links to all Carbon Funds managed by the World Bank

International Emissions Trading Association

<http://ieta.org>

Contents:

- Under Information Sources/Project Finance a list of carbon funds

NSW Department of Primary Industries

http://www.forest.nsw.gov.au/env_services/carbon

Contents:

- Research reports on efficient carbon accounting
- Free CD including software for carbon accounting

National Carbon Accounting Toolbox

<http://www.greenhouse.gov.au/ncas/ncat/guide.html>

Contents:

- Research reports on efficient carbon accounting
- Free CD including software for carbon accounting

CDM Watch

<http://www.cdmwatch.org>

Contents

- The Clean Development Mechanism (CDM) Toolkit

Austrian Ji/CDM Programme

<http://www.ji-cdm-austria.at/en/downloads.php>

Contents:

- A Guide to Joint Implementation and Clean Development Mechanism Projects within the framework of the Austrian Ji/CDM Programme (.pdf). Part 1: *The Kyoto Protocol and the Austrian Ji/CDM Programme*. Very detailed and specific about the requirements for participation in a CDM project and about the CDM institutional requirements as well as the CDM procedure.

Europe Aid Co-operation Office

http://www.europa.eu.int/comm/europeaid/index_en.htm

Contents:

- All tenders and grants open for calls
- Specifics about the 2005 Call for Proposals on Environment in Developing Countries and Tropical Forests budgetline

European Renewable Energy Council

<http://www.erec-renewables.org/default.html#IPCC>

Contents:

- Technical leaflets on small scale hydropower and biogas projects

UNFCCC

<http://cdm.unfccc.int>

Contents:

- A list of Designated National Authorities
- A list of Designated Operational Entities
- Project documents
- Project descriptions

Detailed descriptions of listed Carbon Funds

BioCarbon Fund

Background:

The BCF was launched in 2005 and it is specially designed by the World Bank to “demonstrate projects that sequester or conserve carbon in forest and agro-ecosystems”. The BCF triple goals are to promote biodiversity and work for poverty alleviation while delivering cost-effective carbon credits. The fund aims to demonstrate how LuLuCF⁵⁹ projects can be managed efficiently. The fund is currently fully subscribed.

Sector eligibility:

Reforestation and afforestation are the only LuLuCF activities eligible for carbon credits during the first commitment period under the Kyoto Protocol (2008-2012). See examples of projects that the BioCarbon Fund is considering at the moment in boxes below.

The Niger Acacia Community Plantations

The project will reforest 22 800 ha and is estimated to produce a mean of 117 000 carbon credits per year until 2012. The area will be planted with *Acacia Senegalensis*, an endemic specie to the African Sahel. The *Acacia* has twice as much biomass below ground as above and it makes the tree efficient in erosion control.

The project has been developed by Achats Services International (ASI), a local company. ASI will develop and manage nurseries, maintain plantations, contribute to farmers training for planting trees and using gum harvesting techniques. The project will also reintroduce inter-cropping with cownuts and groundpeas.

The idea is to restore the dry forests and at the same time improve the environmental and economic situation for the local farmers through sales of the interplanted crops and gum from the acacias.

<http://carbonfinance.org/biocarbon/router.cfm?Page=html/NigerAcaciaCommunityPlantations.htm>

The Ethiopia Humbo Assisted Regeneration

Restoration of 15 000 ha of biodiverse natural forest in Southwestern Ethiopia, an area of high altitude and high levels of rainfall suffering from erosion and flooding. The project will assist the regeneration of native tree and shrub root material using the Farmer Managed Natural Regeneration technique. The restoration of the natural forest will help reduce soil erosion and sediment runoff into Lake Abaya. As many as 65 000 people access their drinking water from springs and streams originating in this area and the reforestation will protect the quality of the water. The project will also provide access to forest products and employment. The project is estimated to sequester around 1890 000 tons of CO₂ eqv by 2012 or an annual mean of 270 000 tons per year.

<http://carbonfinance.org/biocarbon/router.cfm?Page=html/EthiopiaHumboAssistedRegeneration.htm>

⁵⁹ Land Use, Land Use Change, Forestry

The Albania Assisted Natural Regeneration

The project will cover about 6200 ha, spread over 30 communes. The activities planned are: protection of areas for natural regeneration or re-growth by fencing, supplemental planting at 250 seedlings/ha, vegetative cutting, weeding and basic silvicultural works. The project area suffers from degradation and erosion and natural regeneration is currently prevented by excessive grazing of goats. Socially the poor, rural communities will benefit from the sustainable revenue streams directed at them in exchange for public good services.

<http://carbonfinance.org/biocarbon/router.cfm?Page=html/AlbaniaAssistedRegeneration.htm>

The Uganda Nile Basin Reforestation

The project will cover around 2000 ha with *Pinus caribaea* and *Pinus oocarpa* as well as *Prunus africana* and *Maesopsis eminii*. The *Maesopsis* and the *Pinus* will provide timber and the *Prunus* will provide bark. The plantation will be established in 64 squares of 25 ha each. The National Forest Authority will provide seedlings and technical advice. The location is in an upper watershed area and the plantation will reduce siltation in the streams and rivers, reduce soil erosion, increase dry season flows and bring direct employment to the area. The project is estimated to generate 120 000 tons of CO₂ eqv by 2012.

<http://carbonfinance.org/biocarbon/router.cfm?Page=html/UgandaNileBasin.htm>

The Kenya Green Belt Movement Watershed Reforestation

The Kenya Green Belt Movement will reforest 4000 ha of degraded public land in two major watersheds. The majority of species will be native. By reforesting these sites waterflow should become more constant and soil erosion should decrease. The goal is to use the forest in a sustainable manner for a variety of products including fuel wood, charcoal, timber, medicinal plants and fruit. The members of the local Community Forest Association will be paid about USD 0.7 per planted tree and the same amount for every surviving tree 6 months later. This is the equivalent of USD 81 per hectare. The project is estimated to sequester 150 000 tons of CO₂ eqv by 2012.

<http://carbonfinance.org/biocarbon/router.cfm?Page=html/KenyaGreenBeltMovement.htm>

Type of Interventions supported:

The BioCarbon Fund buys CERs. They make no other investment into a project. However, the BioCarbon*plus*, a supplement to the BioCarbon Fund, was designed to address capacity-building that pertains to project preparation and implementation, including baseline studies and monitoring plans. The main objective of the BioCarbon*plus* fund is to defray project preparation costs⁶⁰. The intention is also to make available and disseminate lessons learned. Also the CF Assist, the umbrella facility for capacity-building in the carbon finance activities in the World Bank might provide support to meet similar and broader capacity needs⁶¹.

⁶⁰ carbonfinance.org - BioCFplus

⁶¹ carbonfinance.org – BioCarbon Fund - Basic of the BioCarbon Fund.doc

Type of Funds available:

As of September 2005 the fund has a capital of USD 53.8 million. Target is set at USD 100 million. The Carbon Finance Business will not provide any debt and/or equity finance for the baseline component of the project.

Institutional Requirements:

Same as required by the CDM (see details in the report *The Clean Development Mechanism – CDM*)

Application:

The Project Cycle is the same for the BioCarbon Fund and the Community Development Carbon Fund. For the Project Idea Note (PIN), there are ready made forms on the Carbon Finance homepage. A PIN is normally the first contact between a project proponent and the fund. To submit a PIN for a LuLuCF project, the following documents can be used:

1. **PIN Template for LuLuCF projects (required document)**
2. Financial Analysis Model for LuLuCF Projects (attachment)
3. LuLuCf Sequestration Input (attachment)
4. Carbon Finance Document (CFD) for LuLuCF Projects (advanced documentation)
5. Social and Environmental Benefits for BioCarbon Fund Projects (references)

<http://carbonfinance.org> - Project – Submit a Project

LuLuCF-projects should be submitted on the web-site <http://carbonfinance.org/biocarbon/home.cfm>.

Legal issues:

The BCF will pay for carbon credits on delivery⁶², which means that when the CERs have been issued by the Executive board of CDM and then transferred to the project participants, the project participants then transfer the legal rights to the CERs over to the fund and are consequently payed as agreed. **CERs from afforestation/ reforestation carbon projects may not be traded within the European Union Emission Trading Scheme.** According to article 3.3 in the Kyoto Protocol **the area intended for afforestation or reforestation**, in order to be eligible for carbon financing, **must have been cleared prior to 1990.**

⁶² carbonfinance.org/biocarbon - featured document on link: Basics of the BioCarbon Fund

Other

The BCF is open for PINs⁶³ for the second tranche from September 1 2005.

Terms

A project is expected to deliver no less than 400 000 tons of CO₂ over a period of 10-15 years. A small-scale project should not generate less than 30 000 tons of CO₂ eqv/year. For specific Minimum Requirements see homepage. Negotiated price is normally between USD 3 and USD 4 per tonne CO₂. Upfront payment may be possible in some cases, but it will reflect on the price per ton⁶⁴.

Community Development Carbon Fund

CDCF background

The fund was started in 2003. The CDCFs double goal is “development plus carbon”⁶⁵. To link small-scale projects looking to sell carbon credits with companies, governments and other buyers as well as improving livelihoods in poor communities are the CDCFs operational aims. The CDCF also specifically states that they will give special attention to small-scale projects in Least Developed Countries (LDCs).

Sector eligibility

The most obvious link between the funds eligibility criteria and the fast track watershed management projects that ENTRO is looking to set up would be reforestation/afforestation projects, strategically placed to benefit both soil and water. The project would also have to be constructed to benefit local, poor communities: “A distinct criterion for CDCF project selection will be the generation of benefits for poorer communities in developing countries.⁶⁶” Small-scale hydropower (including some A/R activities) as well as biomass is something that the CDCF has funded before. See examples in the boxes below.

⁶³ Project Idea Note – a short form, 6 pages, that outlines the project and constitutes the first contact between the World Bank carbon funds and the project proponents.

⁶⁴ carbonfinance.org – Basics of the BioCarbon Fund – A typical BioCarbon Fund Project

⁶⁵ carbonfinance.org

⁶⁶ carbonfinance.org/cdcf – Projects – Portfolio and Project Criteria

The Honduras La Esperanza Hydro – hydro and afforestation/reforestation

La Esperanza Hydro generates 12,7 MW and is a run-of-the-river hydro power plant. It is a power plant that had been abandoned and it is now recovered. It will generate 310 000 carbon credits for the CDCF by 2012. The lack of power has prevented economic development in the poor, rural area where the project is situated. The La Esperanza project will deliver the following community benefits: electricity; employment; financial contribution; capacity building; afforestation and reforestation.

The project sponsor in collaboration with local communities and authorities afforest and reforest land in the project area, planting at least 25,000 seedlings a year from 2004 to at least 2012. (covering 22 hectares a year. Thus far the number of seedlings planted has exceeded the target and is likely to continue to exceed it. This will reforest degraded watershed areas around the project site. The deforestation has had a profound impact on the life of the local communities, as it threatens their water supply.

<http://carbonfinance.org/cdcf/router.cfm?Page=html/HondurasLaEsperanzaHydro.htm>

Guyana Skeldon Sugar Modernization

The project would mean stable supply of electricity and additional employment for a poor rural region. The burning of biomass in the form of bagasse will generate as much as 77 Giga-Watss per year. Bagasse is the matted cellulose fiber residue from sugar cane that has been processed in a sugar mill

This is the first Carbon Finance Business project using bagasse as fuel to produce electrical power for internal needs, and for sale to the national grid in the process known as co-generation. The project sponsor is Guyana Suger Corporation.

<http://carbonfinance.org/cdcf/router.cfm?Page=html/GuyanaSkeldonSugarModernization.htm>

Nepal Biogas program – Community Benefits Plan

The Biogas program aims to develop biogas use as a market-oriented industry by bringing fuel for cooking and lighting to rural households. The project will install about 162 000 small-sized biogas plants. So far subsidies from the government has been a key factor, but revenue from the CDCF will reduce dependency and help expand the installations.

The plants will displace traditional fuels for cooking: kerosene, fuel wood, agricultural waste – and introduce a treatment of animal and human wastes as well as introduce a high quality organic fertilizer. The dependency on fuelwood has contributed greatly to deforestation with resulting erosion. Particularly women will benefit directly from this program. They will no longer have to use 3 hours a day to collect fuel wood and the new fuel for cooking does not give off hazardous smoke either.

<http://carbonfinance.org/cdcf/router.cfm?Page=html/NepalBiogas.htm>

Type of interventions supported

The CDCF buys CERs. They make no other investment into a project. It will not fund the baseline component of a project. However, the CDCF *plus* “provides governments, foundations and corporations with an opportunity to build local capacity to prepare small-scale Clean Development Mechanism (CDM)-eligible projects in least developed

countries (LDCs)...⁶⁷". Read more about CDCF*plus* in box below.

Type of Funds available:

The capital reserved for small-scale projects involving afforestation and reforestation is 10% of the total capital of the fund. The first tranche was capitalized at USD 128,6 million.

Institutional requirements:

Same as required by the CDM (see details in the report *The Clean Development Mechanism – CDM*)

Application:

The Project Cycle is the same for the CDCF as for the BioCarbon Fund. However, the forms for the PIN are different. To submit a PIN for a CDCF project, the following documents can be used:

1. **PIN template (required document)**
2. Financial Analysis Model (attachment)
3. Community Benefits Questionnaire for CDCD Projects (attachment)

<http://carbonfinance.org> - Project – Submit a Project

Legal issues:

The CDCF will pay for the carbon credits once the legal right to them has been transferred to the fund. CERs from afforestation/reforestation carbon projects may not be traded within the European Union.

Other:

The fund is always open to PINs.

Terms:

Price per credit ranges between USD 3 and USD 5 per tonne CO₂

*CDCF*plus*:*

The CDCF*plus* works in parallel with the CDCF and can help build local capacity to prepare small-scale CDM projects in LDCs, help with feasibility studies and with creating deal-flow.

The CDCFplus

As a CDCFplus participant you can among other things...:

- Maximize the value of scarce grant resources by leveraging private sector investment in small scale technologies in least developed countries and poorer areas of the developing world.
- Access knowledge dissemination and acquisition services provided by the World Bank and The World Bank Institute, including training programs, carbon finance fellowships, staff exchanges, and the CDCFplus Internship Program.

The CDCF can among other things do the following for you:

- Identify local intermediaries (commercial banks, savings and loan associations, cooperatives, development NGOs, utilities - and train them to prepare and implement small-scale carbon projects.
- Respond to specific requests from project developers for technical assistance to bring the project to validation stage, including partial funding

Lessons learned from the Prototype Carbon Fund:

- Supportive national CDM approval systems is the single most critical factor determining the attractiveness of a CDM investment.
- Competent, low-cost local intermediaries can substantially reduce business cost.
- Some of the highest transaction costs in small-scale projects are fees charged by international Operational Entities. Local OEs would reduce that cost
- Competent Designated National Authorities for the CDM that can implement clear, transparent and timely project approval procedures.

See more in Annex or at

<http://carbonfinance.org> - Community Development Carbon Fund - CDCFplus

The Finnish JI/CDM Pilot Programme

Background:

The aim of the Finnish JI/CDM pilot programme is to learn more about the flexible Kyoto Mechanisms and to buy between 1 and 1,4 million tonnes of CO₂ equivalent. The programme was launched 1999 and has so far allocated some €20 million of which €10 million was invested in the Prototype Carbon Fund (the World Bank). **They will launch an official programme by the end of 2005.**

Sector eligibility:

The existing pilot programme only implements small-scale projects and they are interested in Afforestation/Reforestation projects as well.

The Honduras RioBlanco - small-scale hydropower project

The project is expected to generate 5 MW and 200 000 CERs during the crediting period. The project consists of a diversion dam, a tunnel, a forebay, a penstock and a powerhouse. The project has been validated by Det Norske Veritas, one of the accredited international operational entities.

The Zambia Mwinilinga - development of a mini-hydro electricity power station

The Project is under development but is expected to generate 2 MW at two possible sites. One at Lwakela River and the other at Lunga River. The project will be a collaboration between Lwakela Investments Ltd, the project sponsor, CEEEZ Ltd, technical advisor and Ministry of Environment and Natural Resources acting as intermediary.

India Bangalore - 5 Biomass Gasifier Power Plants

The five individual gasifier power plants will generate a total of about 2 MW. The projects involve woody biomass or briquetted agro residues. The gas is then cleaned and cooled and used for power generation. The expected emissions savings from the proposed bundle of the 5 gasifier projects are 108 170 ton CO₂ over a ten year period.

Read more about the projects at: <http://global.finland.fi/english/projects/cdm/projects.html>

Type of Interventions supported:

The Finnish Programme can offer help developing the project.

Type of Funds available:

It is too early to say at what level the new tender will be capitalised. The new and the existing Finnish CDM Programme will (most likely) fund transactional costs for finishing a PDD, for validation and the like as well as buy carbon credits, but these costs will be taken into account when defining the actual purchase price for CERs. The possibility of up front payment exists too, up to 50% of the total sum of purchase with the appropriate guarantee. That could be useful for securing missing funding from other sponsors.

Institutional requirements:

The Finnish programme requires the same institutions as are stipulated by the Kyoto Protocol: Operational Entity and Designated National Authority. See detailed process at The Clean Development Mechanism above.

Application:

Phase 1 of application involves the submission of an Expression of Interest. If the project outlined meets the criteria of eligibility, the project proponent will then be invited to make a Binding Offer. This is phase 2.

Read more on the homepage about the details. The forms and the guide to the forms as well as a filled in Expression of Interest or a PIN can be found on the homepage.

To submit an Expression of Interest the following forms should be used:

1. Expression of Interest .pdf
http://global.finland.fi/english/procurement/cdm/eoi_cdm.doc
2. Statement of social responsibility
http://global.finland.fi/english/procurement/cdm/statement_socialresp_cdm.doc
3. Requirements for the participation in public contracts
http://global.finland.fi/english/procurement/cdm/requirements_cdm.pdf

Guide to project cycle and application

http://global.finland.fi/english/procurement/cdm/itt_cdm.pdf

Legal issues:

The Finnish Pilot programme is headed by a Steering Committee. The agreement for selling CERs will be signed by the Ministry of Foreign Affairs of Finland and the project sponsor. No Memorandum of Understanding has to be completed between the host country and Finland in order to implement a CDM-project.

Other:

At the moment there is a special CDM tender. Deadline for submitting an Expression of Interest is 31 October 2005.

Terms:

The price per CO2 eqv is estimated at € 2,5 - € 6.

Austrian JI/CDM Programme

Background of the Austrian JI/CDM Programme:

The Programme was amended in November 2004 and the Kommunalkredit Public Consulting was appointed manager by the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management.

Sector eligibility:

The Austrian JI/CDM purchases carbon credits from CDM projects. Any projects that will lead to the “avoidance or reduction of greenhouse gas emissions⁶⁸” are eligible. For the time being, the Austrian Programme does not buy credits from afforestation/reforestation projects. However, **on direct contact Mr Peter Kögler expressed interest in a forestry project geared to protect watersheds, although he stresses that A/R projects are not yet eligible for Austria.** After the second call they received Expressions of Interest from two afforestation/reforestation projects. One of the projects are in Ethiopia, in an area situated approximately 400 km south of Addis Abeba. The area afforested is 12000 ha. It is expected to yield about 205 000 tons of CO2 eqv. The

⁶⁸ www.ji-cdm-austria.at

other project is in China involving reforestation.

Normally, the projects that are particularly suitable for inclusion in the Austrian Programme are inter alia projects using renewable energy sources as well as projects leading to the avoidance or energy recovery of landfill gas and waste management resulting in the avoidance of GHG emissions.

Type of Interventions supported:

Apart from buying carbon credits according to negotiated deals, the programme may also finance certain immaterial services, such as Baseline studies, monitoring plan and validation etc⁶⁹, according to a certain set of rules.

Institutional requirements:

The project has to go through the process stipulated under the CDM as well as have a designated national authority (DNA) for CDM projects.

Application:

The project cycle for the Austrian application process is detailed and the demands for proving the applicants financial and economic standing, eligibility, technical capacity, social responsibility and the ability to generate at least the minimum 250 000 CO₂ eqv until 2012 are high. The Kommunalkredit Public Consulting will evaluate the received Expression of Interest (EoI) within 30 working days. The procedure of Expression of Interest is an extended version of simply submitting a PIN. The PIN is only one part of the whole Expression of Interest. The EoI should be mailed as well as e-mailed and written in English. The detailed information on how to apply and what documentation is necessary can be seen in the box below and in Annex.

The PIN template document is called:

A guide to Joint Implementation and Clean Development Projects within the framework of the Austrian JI/CDM Programme. Part 2: preparation of the Project Idea Note (PIN). (Call for Expression of Interest: Appendix 7). Vienna, July 2005.

<http://www.ji-cdm-austria.at/blueline/upload28291.doc>

The guide to the application process also includes the required attachments and the document is called:

Call for Expression of Interest for Emission Reductions generated by CDM projects under the Austrian JI/CDM Programme. Call for Expression of Interest. (Publication reference; KPC/CDM/2005/03. Vienna, July 2005.

<http://www.ji-cdm-austria.at/blueline/upload12447.doc>

⁶⁹ www.ji-cdm-austria.at

Legal issues:

Austria has signed Memoranda of Understanding with certain potential host countries, but MoU is not a prerequisite for project eligibility.

Contractual partner is EcoSecurities Ltd.

Other:

Third calls for projects are open from 1 August 2005 until 31 January 2006. After the closure of the third call a new call is already planned for CDM projects.

Terms:

Projects must not yield less than 250 000 tons of carbon dioxide equivalent up to 2012.

The CarbonNeutral Company

Background

The private company started in 1992 under the name Future Forests. This year (2005) the name changed into the Carbon Neutral Company. They work with carbon offset projects as well as carbon management to face and deal with climate change.

Sector eligibility

The company invests in technology that is considered significantly different from that used locally and in technology that promotes a more sustainable future for example renewable energies and fuel switching to biomass. The CarbonNeutral Company also supports community-based forestry projects.

All countries are eligible. Upon direct contact Mr Bill Sneyd, explains that they are more interested in a mixed project, hydro/A/R for example.

Type of Funds available

They would purchase CERs, they would not invest otherwise in a project. Upfront payment is possible depending on the project.

Other

The application form is heavily based on the small-scale CDM PDD.

Currently they have projects in Mozambique, Uganda, Bhutan, Mexico and India. The projects have been developed using the "Plan Vivo" principles, <http://www.planvivo.org>

The Netherlands Clean Development Mechanism Facility

Background:

The facility was established in 2002 and the total capitalisation of the fund is currently €136 million. The Netherlands facility will buy carbon credits from Annex I countries and preferably LDCs.

Sector eligibility:

The fund states on the home page, among other things, that they will buy carbon

credits from sequestration as well as from “clean, sustainably grown biomass (no waste)⁷⁰” projects and small-scale hydropower projects. But LuLuCF projects are “only eligible after the COP/MOP has decided on the relevant modalities and guidelines and VROM⁷¹ has agreed to accept such projects.⁷²” As far as can be discerned the VROM has not yet made A/R an eligible activity.

Type of funds available:

Upfront payment is possible only if “...at least 50% (fifty percent) of the total financing needs of such Project will be provided by other entities which are at least A+ rated by S&P or A1 rated by Moody’s (bank rating or debt paper rating)⁷³”. Projects will only be included in the Netherlands facility if it does not receive funding from the GEF and the project must be complementary of the GEF measures and programs. Price per ton of CO₂ should not exceed € 5.5. Sequestration ranks the lowest on the facility’s list and that should be reflected in the price. Find link to criteria in List of Web Sites for Application Documents in Annex.

The Danish Carbon Fund

Background :

The fund opened in January 2005. The target is to buy reductions of 5-6 million tonnes of CO₂ equivalents. To do so the fund will place approximately USD 35 million in a first portfolio of 5-7 projects.

Sector eligibility:

“The Carbon Finance Business, in accordance with the Marrakesh Accords, can support afforestation and reforestation projects in non-Annex I countries.⁷⁴” However, the DCF lists the following areas as their main interests: wind power, combined heat and power, hydropower, biomass-use-for-energy purposes and landfill projects.

Type of funds available

The DCF adheres to the common rules of practice⁷⁵ that the World Bank Carbon Finance Business has set up. A fund will not provide debt and/or equity finance for the baseline component of the project. Payment on delivery of Emission Reductions. Price of Emission Reductions should range between US\$3 to US\$5 per ton of CO₂. See reference to website in List of Web Sites for Application Documents in Annex.

The IFC-Dutch Carbon Facility

Background

The fund currently has USD 80 million that it shares with the NECaF. The INCaF is managed by the IFC (International Finance Corporation) which is the private sector

⁷⁰ carbonfinance.org Link at bottom of page - DanishCarbonFund

⁷¹ the Netherlands Ministry of Housing, Spatial Planning and the Environment

⁷² carbonfinance.org Link at bottom of page – The Netherlands CDM Facility

⁷³ See Annex

⁷⁴ carbonfinance.org – Submit a project – Minimum Requirements for Carbon Finance Projects – Type of Project

⁷⁵ See the Minimum Requirements for Carbon Finance Projects in the Annex

investment arm of the World Bank group.

Sector eligibility

The fund is particularly interested in renewable energy f ex hydropower or biomass, energy efficiency, recovery and utilization of methane, switching fuels e t c in non-Annex I countries.

Type of Funds available

Once a project is approved, annual payments will be made to the project upon the delivery of carbon credits. Advance payments for credits may only be considered under unusual circumstances⁷⁶.

The Belgium JI/CDM Tender

Background

The first tender opened in May 2005 and the budget is estimated to € 9.3 million. The Tender gives preference to project activities in Africa and in LDCs during the second phase of the selection.

Sector eligibility

All project activities that reduces GHG emissions are eligible, save nuclear power projects and not yet A/R activities. Projects involving renewable energy like f i small-scale hydropower or energy production using clean, sustainably grown biomass (no waste) would be eligible. Upon direct contact, Tine Heyse expressed the hope that for the second tender the discussion surrounding forestry would be finalised and the area included in the tender.

Type of Funds available

The Belgian tender may contribute to preparations costs under special circumstances. Prepayments are possible to receive on up to 50% of the contract value. A bank guarantee is required.

Other

The Tender is open for expressions of interest between 13 May 2005 and 23 September 2005. The second tender is expected to open in the beginning of 2006.

⁷⁶ www.ifc.org/carbonfinance

The KfW Carbon Fund

Background

The fund was launched in the middle of 2004 and its aim is to provide German and European companies with carbon credits under the CDM as defined in the Kyoto protocol. The KfW fund manages between € 25-50 million.

Sector eligibility

Any project that reduces GHG listed in the Kyoto protocol⁷⁷ is eligible as long as it is not a LuLuCF project, a large scale hydropower project or a nuclear energy project. Projects should generate at least 50 000 tonnes of CO₂ equivalent per year.⁷⁸

Type of Funding available

The KfW Carbon Fund only buys the credits and finances the preparation; they do not fund the development of the project otherwise.

The KfW CF has established a financing facility to help with the preparation costs. The support is limited to those proposals that have passed the initial phase and qualified for detailed assessment. In the event a contract eventually is signed for delivery of carbon credits, the beneficiary shall repay the support plus 10%.

Other

Latest call for Expression of Interest was issued 1 April 2005.

The Rabobank-Dutch Government CDM facility

Background

The Dutch government through the Ministry for Housing, Spatial Planning and Environment (VROM) has contracted Rabobank, an international private Dutch bank, to install a facility tasked to purchase carbon credits only from CDM-projects on behalf of the Dutch government.

Sector eligibility

Projects involving for instance renewable energy including clean biomass and hydropower are eligible. Not eligible are afforestation and reforestation projects and projects involving nuclear energy.

Other

The facility is open always for CDM project proposals.

⁷⁷ CO₂ CH₄ N₂O HFCs PFCs SF₆

⁷⁸ "Terms of Reference, KfW Carbon Fund, Purchase of Certified Emission Reductions (CERs) – Call for Expression of Interest" – www.kfw.de/carbonfund

The ICECAP Carbon Trading (Pty) Limited

Sector eligibility

All projects other than nuclear, LuLuCF and large scale hydropower are eligible. They operate under the European Union Emission Trading Scheme and are bound by its rules. Projects should not generate less than 100 000 CO2 eqv per year.

Type of Funds available

When asked if the facility takes on incremental costs of developing a project, the answer was that it will be reviewed on a case by case basis.

Other

The facility is currently open for calls.

