ORO VERDE
Die Tropenwaldstiftung

Global Nature Fund

Investing in forest carbon projects

Guidelines for companies and private investors

IMPRINT

Issued by:

OroVerde – The Tropical Forest Foundation

Kaiserstraße 185-197
53113 Bonn
Germany
Phone +49 228 24290-0
Fax +49 228 24290-55
info@oroverde.de
www.oroverde.de

Global Nature Fund (GNF)

International Foundation for Environment and Nature
Fritz-Reichle-Ring 4
78315 Radolfzell
Germany
Phone +49 7732 99 95-80
Fax + 49 7732 99 95-88
info@globalnature.org
www.globalnature.org

Responsible according to the German press law:	Dr. Volkhard Wille (OroVerde), Udo Gattenlöhner (GNF)
Authors:	Tobias Hartmann, Max Vöhringer, Stefan Mielke, Dr. Elke Mannigel, Stefan Hörmann
Translated by:	Britta Kunze
Revision:	Tina Teucher (ALTOP Verlags- und Vertriebsgesellschaft)
Graphic Design:	Didem Sentürk de Jonge
Production:	Druckerei Krammer
Release:	February 2011

This publication was funded by the German Federal Environmental Agency and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in the framework of the project "Forest and Climate Conservation for the Private Sector". The authors take responsibility for the content of this publication.

Photos: U. Gattenlöhner (p. 3 right), B. Henneberger (p. 8 top), J. Holbein (p. 19), S. Jenal (p. 1 left, p. 6 bottom right), B. Löber (p. 3 left), Dr. E. Mannigel (p. 6 top, p. 8 bottom left, p. 9, p. 10, p. 14, p. 15 bottom, p. 24, p. 28), K. Mouratidi (p. 1 bottom right), Dr. V. Wille (p. 8 bottom right, p. 27), K. Wothe (p. 1 middle right, p. 5, p. 6 bottom left, p. 12, p. 13, p. 15 top, p. 20, p. 21, p. 25, p. 26, p. 29, p. 30), Fotolia - Monkey Business (p. 1 top right), Fotolia - Claudia Otte (p. 11), H. N. Souza (p. 23)

SUPPORTERS

The content of the publication is supported by the following institution:

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

ACKNOWLEDGEMENTS

An important basis for the development of these guidelines was the discussion during an expert workshop concerning "Climate and forest conservation for the private sector" that took place on November 11th 2010 in Berlin. We would like to thank all participants of the workshop for their contributions. They include: Anika Schröder (Misereor), Lars Schmidt (free lance consultant), Kristin Gerber (Germanwatch), Ralf Barthelmes (DED), Elmar Seizinger (FSC Germany), Ruth Irlen (EED), Wolfgang Kuhlmann (ARA), Hermine Kleymann (WWF), Juliette de Grandpré (WWF), Christoph Meyer (AGEG Consultants), Harald Himsel (AGEG Consultants), Martin Bolte (ForestFinance), Angelika Smuda (Federal Environmental Agency, DEHSt), Corinna Gather (Federal Environmental Agency, DEHSt), Dr. Martin Gehrig (Trees Consulting), Britta Kunze (Hochschule für Nachhaltige Entwicklung Eberswalde), Dr. Manfred Vohrer (Global Woods), Dr. Karl-Heinz Stecher (KfW), Sabine Schielmann (INFOE), Tobias Wittmann (GTZ), Hermann Edelmann (Pro Regenwald), Anke Benndorf (von Thünen Institut), László Maráz (Forum Umwelt & Entwicklung) and Carla Kleinjohann (Treems). Participants from OroVerde were Dr. Elke Mannigel, Max Vöhringer and Pauline Blaszczyk. From the GNF Stefan Hörmann, Stefan Mielke, Tobias Hartmann and Judith Niggemann participated in this workshop.

FOREWORD


Dr. Volkhard Wille


Udo Gattenlöhner

„Plant trees to save the climate“ – everyone has probably heard of this simple advice. Booking a flight, visiting a social event or holidaying on a cruise ship are some examples where ones carbon footprint can be reduced by compensating inevitable emissions through investments in so called climate mitigation projects. An increasing number of private persons as well as companies are interested in contributing to climate protection using this track. A very popular measure is planting trees that absorb and store carbon as wood throughout their long lifetime.

A closer view at this topic reveals that there are many questions to answer concerning the details and quality demands of such projects. After all, no one wants to invest in questionable tree monocultures or projects that displace the local population. Therefore it is important to create standards for forest carbon projects which integrate three central aspects: climate and biodiversity conservation as well as socio-economic side effects.

For this reason, OroVerde and the Global Nature Fund, funded by the German Federal Environmental Agency and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, hosted the project “Climate and Forest Conservation for the Private Sector”. On the basis of comprehensive research and after consultation with experts from various organizations the following guidelines were developed for companies with an interest in offsetting their emissions. They shall help to identify high quality carbon projects in the forest and climate sector.

Dr. Volkhard Wille
Executive Board of OroVerde

Udo Gattenlöhner
Executive Director of Global Nature Fund

CONTENTS

AT A GLANCE

Forest carbon projects are quite popular measures when it comes to compensating greenhouse gas emissions. An increasing number of companies invest in forests as carbon sinks. Still the uncertainty regarding the eligibility criteria of such projects remains large. Besides "safe" carbon storage the social and ecological integrity of forest carbon projects plays a crucial role. The following guidelines will help you to find your way through the jungle of project types and quality standards.

Forest conservation is climate change mitigation.

- **Project types:** Forest carbon projects usually belong to one of the following categories: afforestation and reforestation, sustainable forest management and REDD (Reducing Emissions from Deforestation and Forest Degradation).
- **Markets:** Carbon credits from forest carbon projects are mainly traded on the voluntary carbon market. The so called compliance market is regulated by the Kyoto Protocol and plays a minor role with respect to forest carbon so far.
- **Standards:** They are intended to ensure the high quality of a forest carbon project and additionally verify its compliance with defined requirements. Two categories of standards exist: standards that lead to the issuance of carbon credits and standards that explicitly define and control social and ecological criteria (co-benefits).
- **For the German market the following standards are of relevance:** Clean Development Mechanism (CDM), CarbonFix Standard (CFS), Plan Vivo System and Standards (PVS) and the Verified Carbon Standard (VCS), as well as the Climate Community and Biodiversity Standard (CCBS) and Social Carbon Standard (SCS) as co-standards.

What to look for?

Standards for forest carbon projects should absolutely include the following aspects:

- **Calculation of the emission balance according to comprehensive and strict methods**
- **Formulation and implementation of integrated risk management strategies for ensuring long-term carbon sequestration**
- **Clarification of local land-use rights**
- **Active integration of the local population from the start**
- **Proof of positive social and economic outcomes**
- **Completion of an environmental impact assessment (EIA)**
- **Proof of positive ecological effects through a baseline inventory of species diversity and continuous monitoring**

Our analyses show that VCS and CFS fulfil a majority of the most important criteria for the calculation of the carbon balance. CCBS and PVS cover potential socio-economic and ecological risks most comprehensively. The CFS also fulfils extensive requirements regarding ecological aspects.

- Your certification of the carbon balance calculations should at best be carried out by VCS or CFS, completed by a co-certification of the socio-economic and ecological criteria through CCBS or PVS. With an investment in projects with one of these co-standards you do not only minimize project risks, but safeguard additional benefits in terms of rural development and biodiversity conservation.

1 HOW TO USE THESE GUIDELINES

„Click here to compensate the CO_2 emissions generated by your flight!"

You are certainly familiar with this proposal from your everyday life. For some years now it hardly surprises anyone to be offered this service when booking a flight. For a relatively low additional fee carbon projects are supported that lead to a reduction of greenhouse gas emissions and thus compensate the emissions caused by your flight. Besides projects that promote climate friendly energy sources, afforestation and forest conservation projects (so called forest carbon projects) play an increasingly important role. This is due to the fact that the contribution of such projects to climate conservation is much more vivid and easier to communicate than those of energy related measures: trees store carbon in their biomass and in the soil. In contrast to that, a cut down tree is a symbol for environmental destruction. Not only airlines and their clients are interested in forest carbon projects. More and more companies from various business sectors also strive to reduce their ecological footprint in the face of the omnipresent threats of climate change. To do so they voluntarily support projects, advertise climate neutral products and report about their efforts through public relations.

The market for so called "voluntary carbon offsetting" has grown tremendously over the past years. At the same time uncertainties with respect to the content and effectiveness of these voluntary projects remain on the part of investors as well as the public. Besides the question of how the measures reduce the emission of climate-damaging gases, critical reports on single projects and their negative effects stir up doubts. Forests provide livelihoods and an economic basis for many people. There is the risk that the land rights of local communities are violated by forest carbon project proponents. Furthermore, there is the risk of large forest monocultures being established in the name of climate conservation. Monocultures do in fact store carbon but they retain much less of the gas for a much shorter period of time than near-natural forests and primeval forests. Additionally, plantations can strongly impair the habitats for local flora and fauna.

Such negative side effects of carbon projects can lead to business risks for investors and companies such as loss of reputation and lawsuits. To counteract these risks a large number of quality standards have been developed. Their purpose is to ensure the integrity of forest carbon projects. Still, the diversity and complexity of the monitored criteria make a useful quality estimate of projects difficult.

There are a number of standards that aim to guarantee the quality of forest carbon projects. This publication brings light into confusing numbers of standards and provides guidance.

The following questions are important for making the right investment decision:

- Which types of forest carbon projects exist?
- How does the voluntary carbon market work?
- Which aspects are especially important to look for in forest carbon projects?
- Which standards cover and monitor these aspects?

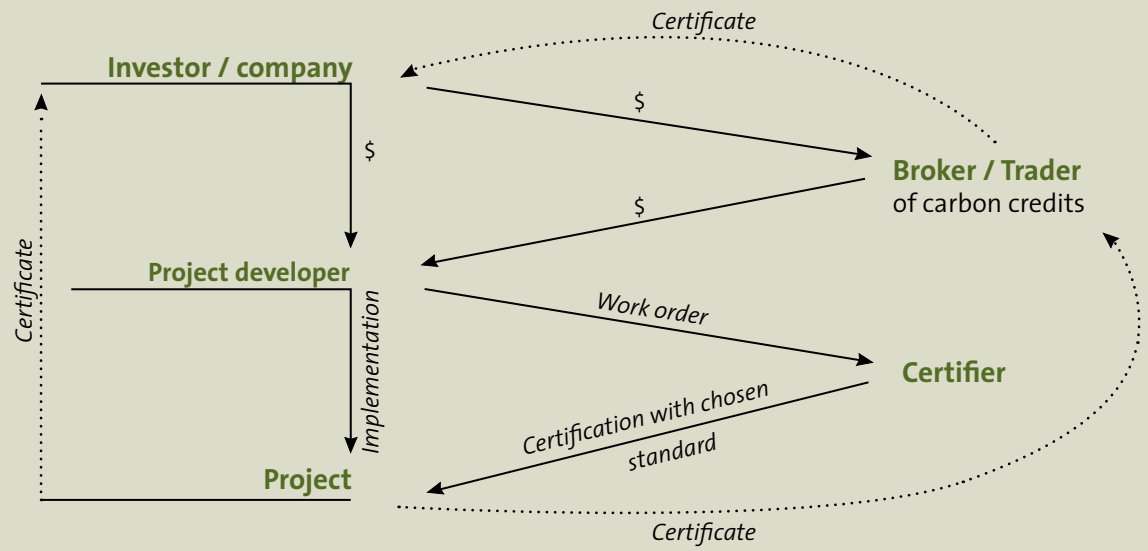
This guidebook answers these questions and provides interested investors with clear and easily applicable guidelines which you can use when it comes to deciding which forest carbon projects you want to support. The requirements and criteria given here also support the implementation of projects with high quality standards. The guidebook is therefore also helpful for project developers, who can align their project ideas and concepts with the demands of sustainability oriented investors.

The chapters 2, 3 and 4 provide you with background information regarding forest carbon projects:

- **Chapter 2:** Types of forest carbon projects: afforestation – sustainable forest management – forest conservation
- **Chapter 3:** The voluntary carbon market, its functioning and framework conditions
- **Chapter 4:** The most important standards for forest carbon projects on the German voluntary carbon market

Chapter 5 explains the goals and effects of forest carbon projects in terms of the greenhouse gas balance and the potential social and ecological consequences. Case studies illustrate the findings. Minimum requirements for forest carbon projects are defined and the existing quality standards are evaluated concerning these requirements.

FROM A PROJECT TO THE INVESTOR – WHO IS DOING WHAT?



Carbon credits from forest carbon projects can either be directly bought from the project developer or from brokers that trade carbon credits. While the developers design and implement projects, the certification with a standard chosen by the developer is carried out by an external organisation (certifier).

2 TYPES OF FOREST CARBON PROJECTS

There are different possibilities of how forest projects can contribute to climate conservation. A growing forest binds (sequesters) carbon and withdraws it from the atmosphere and thus becomes a carbon sink. On the other hand forests can also become an emission source when the stored carbon is set free through deforestation or forest fires. Forest carbon projects can be divided into three categories according to how the additional carbon sequestration is achieved.

Afforestation and reforestation (A/R)

In this project type the carbon pool in biomass and soil is increased through the planting, sowing or steered natural regeneration of trees. Non-forested areas are converted into forested areas. However existing forests may not be cut down in order to reforest the site afterwards within the context of a forest carbon project. Therefore, most standards require that the reforested sites have been non-forested land for at least 10 years. The term afforestation is used with respect to sites that have been non-forested at least for the last 50 years.

Sustainable forest management (SFM)

In managed forests that serve the production of paper, industrial timber or energy crops a higher amount of carbon can be stored through improved and more sustainable management strategies. Measures within these kinds of forest carbon projects include for example improved harvesting techniques, forest conversion towards mixed stands, effective fire management or the extension of the rotation periods (time span between planting and harvesting).

Afforestation with tree seedlings is one option to mitigate climate change.

Reducing emissions from deforestation and forest degradation in developing countries (REDD)

Up to 17 percent of the global greenhouse gas emissions are generated though deforestation and forest degradation. Preventing this two negative impacts can save an enormous amount of emissions. This is the basis of REDD projects. They aim at Reducing the Emissions from Deforestation and forest Degradation.

The idea is to reward regions or countries for reduced deforestation, i.e. for the protection and conservation of intact forests. Depending on the cause for deforestation or degradation these forest carbon projects can stop a planned deforestation, e.g. through the purchase of logging permits. Further they can counter unplanned deforestations, e.g. through the spread of improved, sustainable land use practices that substitute illegal logging activities alongside new roads.

Above: Healthy forests are an important reservoir of greenhouse gases. Through deforestation these are released into the atmosphere again.

Left: Sustainable forest management secures the livelihoods of forest dependent people and protects the forests at the same time.

3 THE CARBON MARKET

Activities that reduce climate change should begin first and foremost "at your own doorstep". Before thinking about compensating, all measures that help to avoid and save your own emissions should be taken. Only that way can the immense global amount of greenhouse gas emissions be reduced. Numerous companies are already actively engaged in working towards a "carbon free" future by leaving behind outdated technologies and unsustainable practices.

To responsibly reduce your greenhouse gas emissions, the following steps should be taken in the given order:

- **Avoid** – e.g. non-essential flights
- **Reduce** – e.g. through the use of more efficient technologies or the use of renewable energy, meat consumption, auto travel
- **Compensate** – e.g. through forest carbon projects

For all emissions that cannot (yet) be avoided, compensation through the support of climate protection projects is the way to go.

THE KYOTO PROTOCOL

This protocol is an international binding agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC). It was adopted in Kyoto, Japan in 1997 and entered into force in 2005. The major feature of the Kyoto Protocol is that it sets mandatory targets for industrialized countries for reducing their greenhouse gas (GHG) emissions. A central instrument to reduce emissions is the trade of so called emission allowances via the "carbon market". In this market, credits that have been generated within projects in developing countries that have been set up on the basis of the Clean Development Mechanism (CDM) can be traded. The CDM is a project certification scheme developed and regulated by the UNFCCC.

Currently there are two ways to compensate:

- The so called **compliance market** is regulated through specifications of the Kyoto Protocol and is implemented in the European Union i.e. through emission trading schemes.
- On the **voluntary carbon market** companies as well as the public can compensate their emissions. This market attracts stakeholders of all sectors that want to compensate their emissions apart from the compliance market or in addition to activities carried out within the compliance market.

So far the voluntary carbon market is of major relevance for forest carbon projects. Until 2009 credits worth 138 million US dollars in total and a volume of almost 18 mega tons of CO_2 were traded here. Especially since 2006 the number of forest carbon projects has increased tremendously. Only in 2008 forest credits in the order of 36.8 million US dollars were traded on the voluntary market. On top of these registered investments come those from companies that do not necessarily buy registered carbon credits but mainly invest in voluntary projects with great advertising appeal. These projects are not included in the statistics.

Current facts regarding the state of the voluntary carbon market and the importance of forest carbon projects can be found in the regularly published English publications „State of the Forest Carbon Markets" and „State of the Voluntary Carbon Markets" at:

http://www.ecosystemmarketplace.com

The reasons for purchasing credits on the voluntary market vary:

- **Corporate social responsibility:** the investment is seen as a measure of corporate social responsibility and serves among others to strengthen the external image of a climate responsible company.
- **Pre-compliance:** Investors financing forest carbon projects speculate that the credits become eligible in a future compliance market. This aspect plays an important role on the US market at this time.
- **Market driven:** Investors (in this case often brokers) purchase credits to sell them later (in the case of new political regulations) at a higher price.

When using credits for compensating own emissions, it is crucial to take care that the purchased credits retire instantly after closing the deal (through an

Avoiding and reducing greenhouse gas emissions should be a priority. All emissions that cannot be avoided or reduced (yet) should be compensated. Forest carbon projects are one option to do this.

entry of the credit's individual numbers in the corresponding third-party registry). Through this procedure one credit cannot be reused to compensate further emissions and double-counting is being avoided.

The first forest related carbon credits were mainly sold by non-profit organizations (NPO). Nowadays profit oriented companies play an increasing role and provide about 40 percent of the supply.

Meanwhile the compliance market commands that certain minimum requirements with respect to project design and implementation have been met, the voluntary carbon market remains largely unregulated. This explains why voluntary certification schemes have gained in importance over the last years. The standards ensure that the quality of forest carbon projects is guaranteed through third-party auditing. Thus, the risks for investors, the environment and the local population can be minimized. The buyers of credits obtain security regarding the effects and the effectiveness of the projects supported through the purchase.

Please note that a standard is not to be set equal with a project. A standard guarantees the project's compliance with minimum requirements. However, project implementation can far exceed these minimum specifications.

THE COMPLIANCE MARKET AND REDD

The compliance market currently only trades forest related credits from afforestation/reforestation (A/R) and sustainable forest management projects. However, these make up only one percent of the compliance market on a global scale and are not allowed in the European emissions trading system (EU ETS) so far.

In the process of creating of a global mechanism for forest carbon and especially REDD projects, progress was made at the negotiations of the UN climate convention in Cancún in December 2010. Yet, credits from REDD projects will remain tradable exclusively on the voluntary carbon market for the next years. The EU excludes projects of this type from the EU ETS until 2020 and prioritizes emission reduction efforts in other sectors (e.g. energy and building technologies etc.). It is commonly feared that REDD credits could flood the compliance market as long as global emission reduction goals are set too low.

4 STANDARDS FOR FOREST CARBON PROJECTS

Over the past years a number of standards with varying goals and emphasis were developed. The standards of relevance to the German voluntary carbon market are briefly introduced below.

The standards can be divided into:

- Standards that focus on issuing carbon credits which can be traded on the voluntary carbon market (and partly on the compliance market). The credits are either issued after emission reductions have been achieved and proven ("ex post") or in advance for planned emission reductions or prospectively planned emission reductions ("ex ante").
- Standards with focus on providing further socio-economic and environmental project benefits (co-benefits). These standards do not issue carbon credits. They mainly certify that projects deliver co-benefits. The co-certification with these standards increases credit attractiveness as they guarantee especially positive project effects such as sustainable local development and/or the conservation of rare animal or plant species. A certification with solely one of these standards only makes sense if explicitly no CO_2 emissions are to be compensated.

It is important to mention that every certification with one of these standards costs money. This is reflected by the price of the credits. However, the assurance of high quality given through these standards justifies the higher price.

Standards issuing carbon credits:

Clean Development Mechanism (CDM)

The Clean Development Mechanism (CDM) was developed under the framework of the Kyoto Protocol (see above). Basically, CDM allows investors from industrial countries to implement or invest in mitigation projects in developing countries. In return the investors receive **carbon credits** which they can use on the compliance as well as the voluntary market. CDM mainly covers projects in the **energy sector but also forest related emission reduction projects**. The CDM criteria were developed under the United Nations Framework Convention on Climate Change (UNFCCC) and CDM projects can be registered since 2001. In the forest sector only afforestation and reforestation projects are allowed under the CDM. An international group of scientists developed a methodology for measuring and calculating the exact amount of bound greenhouse gases. By now there are 9 approved AR methodologies available on the UNFCCC website. Many other standards use the same methods, have simplified them or have developed further methodologies. As of January 2011 altogether 18 forest projects were registered under CDM-AR while 42 further projects waiting in the pipeline.

Forest carbon projects may help to protect endangered species such as jaguars...

... or birds of paradise. However, not all standards assess their ecological impacts.

CarbonFix Standard (CFS)

CFS was founded in 1999 by the German non-profit association CarbonFix. In 2007 the first version of the standard was released. The goal of CarbonFix is to offer a simple and practically applicable high quality standard to project developers dealing with afforestation and reforestation projects. This standard can only be applied to these two project types. Apart from introducing sustainable forestry practices additional benefits for the environment and the local population are to be achieved. A special characteristic of the CFS is that credits can be issued "ex ante", that means before the actual storage of CO_2 through the growth of the trees takes place. Currently 7 forest projects are certified with CFS and 25 projects are in preparation.

Plan Vivo System and Standards (PVS)

Plan Vivo System and Standards was developed by the Edinburgh Centre for Carbon Management (ECCM), El Colegio de la Frontera Sur (ECOSUR) and the University of Edinburgh in 1994.

Plan Vivo focuses especially on **rural communities in developing countries**. The projects aim for emission reductions, sustainable community development and poverty reduction. The integration of the local population throughout the projects lifetime is a main concern of this standard. It provides no methods for greenhouse gas balancing; however, each project needs to develop its **own, project-specific methodology**. PVS issues both "ex ante" and "ex post" credits. So far, 5 forest carbon projects are certified and 6 others are in preparation.

Verified Carbon Standard (VCS)

In 2005 the Climate Group together with the International Emission Trading Association and the World Economic Forum developed the Voluntary Carbon Standard (VCS). On the first of March 2011 the name was changed to Verified Carbon Standard. The emphasis of this standard is on **carbon accounting for CO_2 balancing within all types of compensation projects**. Since 2007 a methodology for projects dealing with agriculture, forestry and other land uses (AFOLU) is available. Since 2010 the first carbon accounting method for REDD projects is available. VCS is suppor-

ted by the World Business Council for Sustainable Development and several non-governmental organizations. It was founded with the mission to create a more transparent, uniform and credible voluntary market for trading credits. Currently, 10 forest carbon projects are certified under VCS and 30 to 40 projects are in preparation.

Standards focusing on co-benefits:

Climate, Community and Biodiversity Standards (CCBS)

The Climate, Community and Biodiversity Standards (CCBS) were published in 2003.

They were developed in cooperation with several non-governmental organizations, research institutes and companies. CCBS can be used for the **development and co-certification** of forest carbon projects; however, it does not issue carbon credits. In order to generate carbon credits CCBS can be used in combination with a carbon accounting standard.

The most important goal of CCBS is to create additional benefits on top of carbon storage. Any project must therefore guarantee that it benefits the local population protects the environment. For projects that achieve outstanding benefit for biodiversity and/or local communities a **"gold level"** is awarded by CCBS. Currently 35 forest projects are certified and 21 are undergoing validation.

Social Carbon Standard (SCS)

Similar to the CCBS no tradable carbon credits can be issued through the Social Carbon Standard (SCS). It is therefore mainly used in addition to carbon accounting standards. The SCS is based on a method developed in 1998 by the Brazilian non-governmental organization Ecologica Institute. Goal of this standard is to continuously improve the social, ecological and economical achievements of CO_2 compensation projects. Currently 43 projects are in the process of certification. These are all projects from the energy sector.

Each standard assesses participation of local communities and socio-economic impacts differently.

5 QUALITY REQUIREMENTS FOR THE STANDARDS

As described in chapter 4 the standards have differing goals and approaches. In order to evaluate these differences effectively we recommend taking a closer look at the standards performance with respect to the following aspects:

- **Greenhouse gas quantification:** How are the saved carbon emissions within forest projects being calculated?
- **Socio-economic aspects:** Which impacts do the projects have on the local people and how are local communities integrated into the projects?
- **Ecological and silvicultural aspects:** How do the projects influence biodiversity – or the diversity of plant and animal species as well as ecosystems?

First of all it is of interest which requirements a standard should set and which are desirable in addition to that. Based on this question the existing standards have been evaluated. The evaluation of the selected standards can be found in the boxes below each of the following sections.

METHODS OF GREENHOUSE GAS QUANTIFICATION

One of the most important goals of forest carbon projects is their contribution to climate protection. For you as an investor it is very important to invest in a secure asset and to know the amount of stored CO_2 is as precise as possible. Although this may sound quite simple it was a great challenge for the first forest carbon projects to conduct an accurate assessment of carbon being stored. Over the past years objective and verifiable methods have been developed and are being demanded by standard organizations. Standards should provide comprehensible and simple methods to be used for the CO_2 accounting of the project to meet existing uncertainties and risks.

No project can be considered separately from its environment. Especially with forest carbon projects activities in neighbouring areas do often have an effect on the project itself and need to be carefully considered.

Important aspects include:

- a reality driven quantification of the project's CO_2 compensation potential
- the calculation of the amount of carbon leakage caused by the project
- the permanence of the compensation and
- the additionality of the project

Calculating the CO_2 reduction potential

The methodological steps include a quantification of the carbon stocks without and with project implementation („baseline" and "project scenario"). The emissions reductions potential is derived from the difference of the two scenarios. For afforestation and reforestation projects the uptake of CO_2 through tree planting is determined. For projects of sustainable forest management and avoided deforestation (REDD), the emissions values that are projected and permanently monitored over the duration of the project are calculated. The calculations contain i.a. an inventory of the forest stands which is based on scientific data and is subject to independent audits.

The carbon accounting can lead to conflicting goals with respect to the accuracy of the calculations in relation to their costs. It is often necessary to use samples and historic data.

- **Projects should communicate inaccuracies of the measurements and assumptions and provide high transparency regarding the carbon accounting.** Concealing the uncertainty does not mean that it does not exist. Disclosure of uncertainties is not to be seen as a weakness as it stands for serious calculations.

A forest inventory is the basis for a thorough greenhouse gas quantification.

Causes for emissions from carbon leakage

The shift of emissions beyond the project area can have various causes. The need for timber or fuel wood, the relocation of pastures and markets or even resettlements. Not all of these can be influenced and minimized by the project. For a realistic calculation of the emissions caused by project activities it is however important to include these in the balance.

Furthermore, projects always need to be considered in their national or regional context.

- Especially with respect to aspects such as carbon leakage an **integration of the project into national strategies** is crucial. Foremost, REDD projects should be integrated into national legislation and activities.

Off-site impacts (Carbon leakage)

The so far estimated CO_2 storage or emission saving potential needs to be lowered in a next step as not all of the emissions removals can be entirely realized:

First of all the emissions caused by carbon leakage through project activities need to be deducted. A shift or replacement of emissions can occur e.g. when trees need to be cleared at another site because agricultural activities are not allowed in the project area anymore. The net benefit for the climate would be zero or even negative. As a risk reduction strategy the integration of the local population into project activities plays an essential role. Furthermore, compensational measures should already be part of project development.

- The standards need to demand that the project developers actually deduct the quantified leakage effects from the carbon balance to ensure that only those climate impacts achieved are effectively shown.

The implementation of projects itself is not climate neutral. Fuel is needed for on-site visits; motorized machinery may be used, etc. Even if these emissions are very small they should be considered in the carbon balance (project emissions).

Overcompensation to increase security – the special case of PRIMAKLIMA

One of the options discussed to overcome permanence issues is to set the calculated CO_2 storage significantly lower for forest carbon projects. The non-profit organisation PRIMAKLIMA implements projects in a way that systematically more carbon is being stored than the customer needs in order to reach 100 percent carbon neutrality.

The forested area needed to absorb the desired amount of emissions is sized in a way that allows reaching the reduction goal within 10 years. The expected CO_2 storage per hectare and year is set conservatively. The carbon storage capacity of further decades of growth is added to the project as a security buffer. Thus after a 50 year project period a multiple achievement of the planned reductions is reached.

AND HOW MUCH CO_2 IS REALLY STORED?

Essential criteria						
	CDM	CFS	VCS	PVS*	CCBS**	SCS**
Carbon leakage effects are subtracted from the CO_2 balance	✓	✓	✓			
Subtraction of project-caused emissions	✓	✓	✓			

* PVS does not provide a method for carbon accounting. The developed methods are project-specific.

** Not applicable, since CCBS and SCS do not issue credits.

ENSURE THE LONGEVITY OF YOUR INVESTMENTS!						
Essential criteria						
	CDM*	CFS	VCS	PVS	CCBS**	SCS**
Development and implementation of a risk management strategy		✓	✓	✓	✓	
Size of the risk buffer		30 %	10 - 60%	Min. 10%		
Proof of additionality through expanded assessments	✓	✓	✓	✓	✓	✓
Additional criteria						
Stockup of risk buffer with credits from other projects		✓				
Inclusion of risks outside the project area					✓	

* CDM only issues temporary credits (tCERs).

** Not applicable since CCBS and SCS do not issue credits. CCBS makes some requirements regarding the methods of carbon balancing nonetheless. SCS does not have its own requirements; co-certification with a carbon accounting standard is obligatory.

Permanence of CO_2 storage / emission reductions

The expression "permanence" is related to the possible risks of non permanent storage of carbon in trees and soils. Natural catastrophes such as forest fires or insect infestations as well as political shifts or illegal logging can pose a threat to the stands and forest conservation measures. In the worst case a carbon sink can turn into a source. To keep these risks as manageable as possible standards need to request project planners to describe and implement risk reduction strategies. For the risk analysis, risks within and beyond the project area that can potentially have negative impacts on the project's success need to be addressed through a management plan (e.g. road building in the surrounding areas).

Not all risks can be directly influenced by the project at all times. It can therefore become necessary to hold back a certain percentage of the carbon credits as a risk buffer. This buffer needs to remain in place under any circumstances. If it becomes necessary to withdraw credits from the buffer they need to be replaced right away.

As it provides additional security, it is regarded as a bonus when standards additionally require increasing a project's risk buffer with credits from completely different projects.

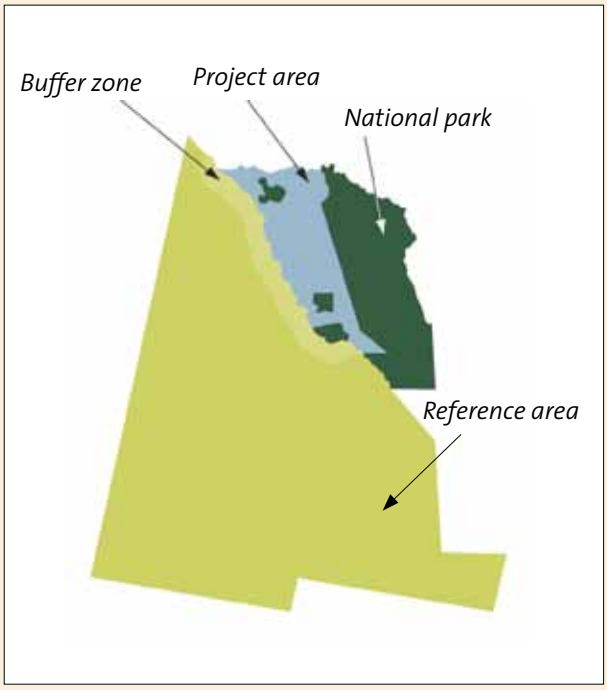
Besides the establishment of risk buffers it is possible to eliminate the risk of non permanence by setting an expiry date for the credits. This has the negative side effect that investors have to recertify or purchase new "temporary" credits after the expiry of the original ones.

Case study 1: Consideration of carbon leakage in the Noel Kempff project (Bolivia)

The Noel Kempff project in Bolivia is one of the pioneering forest carbon projects worldwide. The three energy companies American Power (AEP), BP and PacifiCorp invested here in 1997 to compensate part of their emissions. The project is implemented by the US environmental organisation The Nature Conservancy (TNC) in cooperation with the local NGO Fundación de Amigos de la Naturaleza (FAN). It reveals some of the central challenges for greenhouse gas quantification and especially for greenhouse gas monitoring. Until the start of the project in 1996 large-scale logging activities (as a consequence of the expansion of agricultural lands) as well as forest degradation caused by the commercial harvest of trees through timber companies with forest concessions were common throughout the 600.000 hectare large forest. The project tries to counteract these developments in two ways: Firstly a rural development program was established for indigenous communities within the project area. It fosters the recognition of land use rights and the spread of sustainable agricultural practices. Thereby the pressure to clear more forest to gain agricultural land is to be reduced. Local project managers monitor the success of these measures by regularly assessing the logging activities within a 15 kilometre wide strip adjacent to the project zone.
The second project component addresses timber companies: They commit to stopping their logging activities and to not assess new logging site within the next five years. FAN provides them with a financial compensation and buys their equipment. Further monitoring activities survey the shift of commercial logging activities to other areas. The logging companies allow FAN to control their activities in detail. Furthermore, a complex econometric model that includes the entire Bolivian timber market calculates how much of the reductions of the timber supply caused by the project are compensated through an increase of logging activities in other parts of the country. Calculations resulted in a leakage of about eleven percent with regard to the total carbon reductions. The share is deducted from the generated credits.

Inspite of the complex calculation and monitoring methods there has been some criticism: Monitoring agricultural activities should not only happen on one stripe beside the project area but rather all around. It is also said that the reflection of national logging activities in the econometric model is incomplete. They should be measured by explicitly monitoring the market. The model is supposed to be base on old legislature and thus assumes the timber supply to be too high.

The controversy shows the complexity of the greenhouse gas quantification and that of adequate monitoring. It makes clear that high quality standards in this field are very important.



Project area and adjacent buffer zone to monitor leakage effects

Source: Greenpeace International (2009)

Forest carbon projects will only be successful if they consider the livelihood needs of the local population.

Additionality of a project

Another aspect in the field of effective climate protection concerns the so called additionality: It must be proven that the project activities lead to additional emission reductions which could not be realized without the investments from the sale of carbon credits. Beside this financial proof many other criteria are possible and desirable. A possible ecological criterion could be the proof that there is no chance for natural reforestation on the project site. Legal requirements can regulate the implementation of forest carbon projects. When this is the case, a project may not be considered as additional. All standards surpass the financial test for additionality and address additionality aspects individually.

Integrating the local population at an early stage of a project increases its acceptance and sustainability and is essential for the creation of co-benefits.

SOCIO-ECONOMIC ASPECTS

In addition to the quantifiable climate effects forest carbon projects often have a strong social component and can have diverse impacts on the people living in or near the forest and depend on using the natural forest resources.

To advance positive and exclude negative impacts on the local forest communities the standards need to ensure that forest carbon projects

- protect existing (also informal "customary") land use rights to the forest,
- identify and promote socio-economic co-benefits
- integrate the affected local stakeholders into project development and implementation.

The adequate and structured participation process is an important basis for the clarification and assurance of the legal situation as well as for the analysis and the achievement of co-benefits.

Protect land use rights

Local land use rights cover a wide spectrum: from full property rights to more specific use rights that are bound to the use of certain forest products such as the collection of fuel wood or animal hunting. It is therefore absolutely **necessary to clarify existing legal as well as informal property rights and rights of use** to the designated site before the start of the project.

This is the only way that the protection of existing rights can be guaranteed and that the risk of future conflicts is minimized. Any conflict can eventually threaten forest conservation and the project itself.

Standards should assess whether all land use conflicts have been settled before a project starts. Conflict resolution mechanisms or adequate institutions need to be at hand in the case of civil disputes so that the legal situation can be clarified.

Local land use rights

Local communities and indigenous peoples have these rights – sometimes formally and other times only informally. The latter means that there may be no written proof of the legal rights to the land but that they can be based on e.g. traditional use. In many countries (customary) land use rights are not sufficiently clarified especially in remote rural areas.

AVOID LOCAL CONFLICTS!

Take care that the local land use rights have been clarified in advance to project start according to internationally agreed conventions!

Essential criteria						
	CDM	CFS	VCS	PVS	CCBS	SCS
Recognition of local land use rights (explicitly includes traditional rights)				✓	✓	✓
Description of the development of rights of use		✓		✓	✓	✓

GET EVERYONE ON BOARD!

Take care that the local population participates right from the start

Standards with requirements regarding the participation (ranked by intensity):

- **CCBS:** differentiated description of the integrational process, explicit specification of the free, prior and informed consent (FPIC)
- **PVS:** project development in cooperation with local communities is a prerequisite
- **CFS:** clear description of relevant stakeholders, possibilities to address concerns to the management staff and evidence that concerns are responded to
- **SCS:** integration of local stakeholders to determine the socio-economic situation and monitoring data are required

CDM and VCS do not specify any requirements regarding the type and intensity of public consultation.

PROMOTE LOCAL PARTNERS! Eliminate negative social effects and make use of positive ones!						
Essential criteria						
	CDM	CFS	VCS	PVS	CCBS	SCS
Positive socio-economic effects are explicitly required		✓		✓	✓	✓
Development of a baseline scenario, social impact analysis and monitoring		✓		✓	✓	✓
Additional criteria						
Strengthening of the adaptive capacity of local communities to climate change				✓	(✓)*	
Equitable access and benefit sharing required				✓	(✓)*	
Baseline scenario covers not only project area					✓	
* for CCBS Gold						

Participation of local stakeholders

Possible conflicts can easily harm any forest carbon project. The participation of the local population and the prevention of conflicts on the other hand strengthen the permanence of the project. Standards should require adequate measures with respect to local participation.

- It is important that participation starts at the earliest possible moment. Already during the project planning and development process all local stakeholders should be informed comprehensively and adequately on the project design and on the expected consequences. An extensive planning and consultation phase may seem work-intensive and costly in the short run. However, it certainly pays off in the long run: It creates trust, increases the acceptance of the projects from all local stakeholders and thus prevents conflicts.

The standards should not remain generic in this field. Precise requirements on the identification of local stakeholders and owners of land use rights and on the instruments to forward their active participation are needed.

Very important aspects are:

- The early information of the population,
- Adequate deadlines for submitting comments and complaints, and
- An adequate integration of the objections during the entire project lifetime.

International agreements on the rights of indigenous people:

UNDRIP – The United Nations Declaration on the Rights of Indigenous Peoples was adopted in 2007 by the plenary meeting of the United Nations. It sets out the individual and collective rights of indigenous peoples.

ILO-Convention 169 concerns indigenous and tribal peoples in independent countries. It was adopted on 27 June 1989 by the General Conference of the International Labour Organization (ILO) – a special organization of the United Nations.

Standards should ensure that project implementation complies with these agreements.

Case study 2: Integration of local communities in the Makira project (Madagascar)

The Makira project in eastern Madagascar is financed by various stakeholders. They include companies like Mitsubishi, Johnson & Johnson and Dell as well as rock stars like Pearl Jam and the Dixie Chicks. The US Wildlife Conservation Society (WCS) implements the project in close cooperation with the Malagasy Ministry for the Environment. The project shows in an interesting way for forest carbon projects to consider the needs of the local population and display how positive effects for the people can be generated. About 150.000 people live in the almost 700.000 hectare large rain forest area. Most of them live on subsistence agriculture and sell agricultural products for income generation. In part this includes slash-and-burn agriculture to prepare fields for rice cultivation. This is one of the main causes for the proceeding decline of intact forest areas. The goal of the Makira project is therefore to protect the forests from clearing while at the same time ensuring that the food production and income generation of the local communities are sustained.

The concept set up for this purpose plans for a decentralization of the area management which results in the integration of the local communities. A community management zone was established adjacent to the core zone of the project area where any use of the forest is prohibited. The pressures on the forest ecosystem are high within the management zone, as the logging activities of the resident households which belong to one of 120 communities constantly expand onto new sites. Contracts between the federal government, the formal land owner and the communities are now concluded through the Makira project. These contracts convey the responsibility for the planing and management of the local land use to the newly created community committees. They include a ban on slash-and-burn practices as well as on the commercial use of timber. With the bans the progress of forest degradation is stopped. However an important base for food production and income generation is lost to the locals. To compensate this further components of the Makira project consist of the promotion of alternative forms of land use like improved crop rotations or intensified rice cultivation as well as of the creation of new sources of income e.g. in ecotourism or through the production and marketing of organic products (organic vanilla, cloves, organic silk).

Agroforestry, here with the cultivation of bananas, is one of the types of sustainable land use that can create alternative income opportunities for the local population.

The holistic approach of the project is also reflected in the model that regulates the distribution of the income from the sale of locally generated carbon credits: The Wildlife Conservation Society (WCS) receives about one quarter of the income. It is used to finance i.a. the project components which promote new sources of income and alternative land use practices. The largest part of the income – about 50 percent – is given directly to the communities. A fond will be established that provides financial support for the community's forest conservation and rural development activities. The distribution of the funds has been shown to be very complex as the distributional code needs to consider the complex and partly inhomogeneous administrative structures of the region. Due to this funds have only been paid to regional administration to be used in development programs so far. Criticism regarding the delay of the transmission of carbon income to the local population is justified and shows the necessity of a regular and detailed assessment of the social situation in the vicinity of forest carbon projects.

It is the only way to ensure that all affected groups are reached and that project components aiming at the promotion of positive effects for local communities are successfully implemented. Currently the certification of the Makira project according to the VCS and the CCBS standards is in preparation. CCBS requires i.a. to assess the aspired socio-economic goals every five years. It specifies the implementation of a study on social effects and demands further the integration of the various population groups into the project implementation activities e.g. by providing project documents in the local languages.

It is vital that all of these activities are carried out in accordance to local social and cultural circumstances.

- Consultations are held within the local communities (and not only in the regional capital or the county seat),
- All relevant documents are readily available in the local languages.

The principle of the so called free prior and informed consent (FPIC) summarizes how the local population that holds land use rights must be integrated and consulted before the start of the project. It also establishes the right of local communities to approve or disapprove of measures that influences their living and economic space.

Project impacts for local people can be measured with social impact studies and monitoring mechanisms.

Forest areas that are home to rare or endangered species have an especially high conservation value.

Identify and foster positive socio-economic co-benefits

A third aspect with regard to socio-economic criteria concerns additional co-benefits for local communities as well as their assessment and monitoring. Projects can influence the situation of the locals in multiple ways, mostly in areas such as employment, infrastructure and land use rights. New sources of income may be created or existing ones restricted. In order to avoid possible conflicts **any negative impacts must be categorically eliminated** by the standards. This so called "no harm" criterion needs to be monitored on a regular basis. Moreover the **creation of positive effects** for the affected population is necessary. They promote the project's acceptance and ensure its permanence.

To make socio-economic effects measurable, a **socio-economic baseline scenario** should be set up. It already analyses the possible effects during the planning phase (social impact analysis). Aspired effects and goals as well as their indicators are specified in a **monitoring plan** which helps to analyse and document the results of the project.

Preferably standards put an emphasis on building the adaptive capacity of the local population concerning the impacts of climate change as well as the equitable sharing of the advantages and benefits created by the project. Since socio-economic impacts often also affect surrounding communities, an assessment of the surroundings in the baseline scenario is an asset.

ECOLOGICAL AND SILVICULTURAL ASPECTS

Impacts on the local ecosystems are intrinsic to forest carbon projects. Especially afforestation projects can cause major changes. In extreme cases a natural ecosystem is converted into another one e.g. when former pastures are afforested.

Standards for forest carbon projects should consider following aspects:

- in afforestation projects, forest areas should be developed in accordance to local natural forest types
- in existing forests: avoid negative ecological effects, support positive ones

In **afforestation and sustainable forestry projects** the goal should be build resilient forests that resemble local natural forest ecosystems as close as possible (close to nature forestry). Naturally non-forested

Ecological impacts are monitored through the collection and permanent control of data about populations of different species.

Advantages of close to natural afforestation projects

A close to nature forest is more resistant against pests and other risks and thus better adapted to climate change than a monoculture. High species diversity causes high ecosystem resilience against changes to the whole system. Important ecosystem services (such as CO_2 storage, water regulation, pollination etc.) can be conserved. Through the expansion of the habitats of native species projects can create positive effects for local biodiversity. Monoculture plantations are more prone to risks in the long run and usually have no positive benefits to local and regional species diversity.

ecosystem types such as bogs and wetlands should not be forested. The choice of tree species adapted to the local soil types and other site conditions is i.a. one of the criteria to evaluate the ecological integrity of a project. The selected sites are another important criterion because a project area needs to be considered in the context of the surrounding landscape. Corridors to enable species migration can be created or enlarged or several forested sites can be connected to create on single larger protected area.

The **protection of existing forests** from deforestation is the main objective of **REDD projects**. Therefore, a stronger emphasis can be put on ecological aspects here e.g. by selecting the project area according to species diversity or the occurrence of rare or threatened species. It is recommendable to integrate the surrounding ecosystems and to consider the regional context.

Furthermore, REDD projects often strongly interrelate to social aspects when so called ecosystem services of the project sites are being considered. For example,

CREATE AND PROTECT ECOLOGICALLY VALUABLE FORESTS WITH YOUR INVESTMENT!						
Essential criteria						
	CDM	CFS	VCS	PVS	CCBS	SCS
Requirement of an environmental impact assessment (EIA)		✓		✓	✓	✓
Investigation of baseline data and monitoring of species diversity		✓		✓	✓	✓
Regulations regarding invasive species and genetically modified organisms (GMO)		✓		✓	✓	
Additional criteria						
Regulations regarding site preparation and impacts on the water balance		✓			✓	
Priorities set on areas of high conservation value					(✓)*	
Consideration of the integration into the landscape / the connection of habitats				✓	(✓)*	✓
* for CCBS Gold						

The selection of trees is very important – site-adapted and mainly native species should be planted.

forests do have strong impacts on regional water balances which in turn play an important role for local communities.

Consequently, several requirements for standards arise in the ecological sector:

- A standard must not only ensure that **no negative ecological impacts** arise from the projects. It must also demand the **enhancement of positive side effects**.
- Similar to socio-economic aspects, the **investigation of baseline data concerning species diversity** and former land use in the area is necessary. The data can be used to continuously monitor and measure the projects progress in strengthening the ecosystem.
- From a silvicultural point of view, **site adapted and mainly native tree species** should be planted while invasive species should be excluded (cultivated plants such as coffee are an exception) to ensure sustainability of the project.

Standards should make specifications regarding soil preparation techniques and consider project impacts on the water balance.

- **Genetically modified species (GMO) may not be planted under any circumstances.** They can have unforeseen and irreparable impacts on the local flora and fauna.

It is desirable that standards make clear specifications regarding soil preparation techniques and the management of project impacts on the water balance. The use of pesticides and fertilizers must be clearly specified.

No project area can be seen as separated from its surroundings. Interdependencies between project sites and regions always exist. Concerning the choice of the project area a standard should advocate connectivity between different habitats and should preferably select project sites with very high species diversity. If such smart choices are taken during project design threatened species can not only keep their hunting, migration and breeding grounds but continuously expand them.

It is an asset if afforestation and sustainably managed forest areas set aside a certain portion of the lands as conservation area. It is absolutely favourable when projects consider national biodiversity policies.

6 FINAL EVALUATION AND CONCLUSION

The guidelines at hand give you an overview over the different types of forest carbon projects and standards as well as necessary quality requirements important for proper project design and implementation.

Forests are much more than just carbon sinks. They provide food and shelter for millions of people. They are home of innumerable animal and plant species. Investing in forest carbon projects is more than investing in a forest's carbon storage capacity. It is about protecting and restoring the livelihoods of many people and of biodiversity.

Forest carbon projects that merely perform well with respect to carbon accounting do not offer long term investment security. Unrecognised and unresolved social and ecological risks may cause such projects to easily fail.

- When investing in forest carbon projects always make sure that reliable standards evaluate and verify the methods for CO_2 balancing as well as socio-economic and ecological aspects.

The standards providing specific carbon accounting methods and issuing carbon credits include VCS, PVS, CFS and CDM. **VCS and CFS comply with the majority of relevant aspects regarding the methodologies of CO_2 quantification.** PVS demands that project developers come up with project-specific methodologies. Comparability is therefore difficult. The same applies to the CDM which is the only standard that issues temporary carbon credits (tCERs).

Only PVS and CFS as well as the co-standards CCBS and SCS consider socio-economic and ecological aspects more broadly. **CCBS and PVS cover potential socio-economic risks most comprehensively.** They take into consideration aspects such as the clarification of land use rights, the integration of local communities and the analysis and evaluation of social effects.

With respect to ecological aspects the most important questions are addressed by CCBS and PVS while CFS specifies far reaching requirements as well.

Given the differing strengths of the various standards a double certification with co-standards makes sense for projects generating carbon credits. This way one standard ensures the desired climate effects and another one the creation of co-benefits.

- In practice this means that VCS or CFS should be mainly used for ensuring sound greenhouse gas emission quantification and should be accompanied by a co-certification via CCBS or PVS that guarantees net positive ecological and socio-economic impacts.

With an investment in projects with one of these co-standards you do not only minimize project risks. Moreover, the additional benefits in terms of rural development and biodiversity conservation are safeguarded. "Well-meant" turns into "well-done"!

FURTHER INFORMATION

FURTHER STUDIES ON STANDARDS AND ON THE MARKET OF FOREST CARBON PROJECTS

Hamilton, K., Chokkalingam, U., Bendana, M. (2010): State of the Forest Carbon Markets 2009: Taking Root & Branching Out. (http://www.ecosystemmarketplace.com)

Hamilton, K., Peters-Stanley, M., Marcello, T. (2010): Building Bridges: State of the Voluntary Carbon Markets 2010. (http://www.ecosystemmarketplace.com)

Held, C., Tennigkeit, T., Techel, G., Seebauer, M. (2010): Analyse und Bewertung von Waldprojekten und entsprechender Standards zur freiwilligen Kompensation von Treibhausgasemissionen. (http://www.uba.de)

Kunze, B. (2010): Wie nachhaltig ist zertifizierter Waldklimaschutz? Ein Vergleich freiwilliger Standards für Waldklimaschutzprojekte hinsichtlich der Berücksichtigung zusätzlicher ökologischer und sozialer Leistungen im Regelwerk. Masterarbeit an der Hochschule für Nachhaltige Entwicklung Eberswalde. (http://www.4stconsult.de)

Merger, E. (2008): Forestry Carbon Standards 2008 – A Comparison of the Leading Standards in the Voluntary Carbon Market. (http://www.carbonpositive.net)

Walter, M., Kahlert, G. (2010): Forest Carbon Standards. A WWF Assessment Guide. (http://wwf.panda.org)

WWF (2008): Green carbon guidebook. (http://www.wwf.de)

THE STANDARDS' WEBSITES

CFS (Carbon Fix)
http://www.carbonfix.info

PVS (PlanVivo)
http://www.planvivo.org

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

CCBS (Climate, Community and Biodiversity Standard)
http://www.climate-standards.org

SCS (Social Carbon Standard)
http://www.socialcarbon.org

CDM (Clean Development Mechanism)
http://cdm.unfccc.int

THE CASE STUDIES

Greenpeace International (2009): Carbon Scam: Noel Kempff Climate Action Project and the Push for Sub-national Forest Offsets. Sub-prime carbon brought to you by AEP, BP, and Pacicorp. Amsterdam. (http://www.greenpeace.org, 25.01.2011)

Holmes, C., Ingram, J. C., Meyers, D., Crowley, H. und Victurine, R. (2008): Forest Carbon Financing for Biodiversity Conservation, Climate Change Mitigation and Improved Livelihoods: the Makira Forest Protected Area, Madagascar. Wildlife Conservation Society Report to USAID. (http://www.theredddesk.org, 25.01.2011)

TNC, CI and WCS (The Nature Conservancy, Conservation International and Wildlife Conservation Society) (2010): Reducing Emissions from Deforestation and Degradation (REDD): A Casebook of On-the-Ground Experience. Arlington, Virginia. (http://www.theredddesk.org, 25.01.2011)

www.oroverde.de/projekte-national/wald-und-klima.html

www.globalnature.org/waldklima

OroVerde - The Tropical Forest Foundation, based in Bonn, Germany, is committed to the conservation of tropical forests through projects carried out by local partners in tropical countries. In Germany OroVerde conducts environmental education projects and promotes the exchange of information between the private sector, science, political institutions and organisations dedicated to conservation.

Dr. Elke Mannigel
International Project Coordination
Tel.: +49 228 - 242 90 12
E-Mail: emannigel@oroverde.de

Max Vöhringer
Project Manager Forest & Climate
Tel.: +49 228 - 242 90 22
E-Mail: mvoehringer@oroverde.de

Global Nature Fund is a non-profit, private and independent international foundation based in Radolfzell and Bonn, Germany. It was founded in 1998. Focus areas of GNF are the protection and sustainable use of lakes and wetlands, climate change mitigation and adaptation, the topic business and biodiversity, the promotion of renewable energy and environmental education.

Tobias Hartmann
Project Manager Climate Protection
Tel.: +49 228 - 1848 694 13
E-Mail: hartmann@globalnature.org

Stefan Hörmann
Project Leader Business and Biodiversity
Tel.: +49 228 - 1848 694 11
E-Mail: hoermann@globalnature.org

Stefan Mielke
Project Leader Climate Protection
Tel.: +49 7732 - 999 589
E-Mail: mielke@globalnature.org

Printed on 100 % recycled paper


ORO VERDE
Die Tropenwaldstiftung


Global
Nature
Fund