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Community guidelines for accessing forestry voluntary carbon markets

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Ben Vickers, Eveline Trines and Erica Pohnan

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Cover design and illustrations: Somchai Singsa

For copies write to:

Patrick B. Durst
FAO Regional Office for Asia and the Pacific
Maliwan Mansion, 39 Phra Atit Road
Bangkok 10200
THAILAND
Tel: (+66) 2 697 4000
Fax: (+66) 2 697 4445
E-mail: patrick.durst@fao.org

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Foreword

The impacts of climate change are many and varied, and notoriously hard to predict with great accuracy. However, one impact is beyond doubt; the climate change debate has brought forests to the forefront of the international development agenda. Forests have acquired a new value as one of the planet's most important stores of carbon, thus helping to ensure that levels of atmospheric carbon dioxide, the most abundant greenhouse gas, are kept below critical levels.

As with all newly-appreciated values, new markets are not far behind. Carbon markets allow forest owners to gain recognition, and financial compensation, for the work they do to keep the forests in place, and to manage them sustainably. Since the 1990s, this market has steadily taken shape, growing from simple, scattered beginnings to become a genuinely new financial innovation – the forestry Voluntary Carbon Market, or forestry VCM.

Forest owners, however, have generally not been the first to understand the potential of this new market. It operates along completely different lines from conventional markets for timber and other forest products. It is similar to other types of Payment for Ecosystem Services (PES), but at the same time it is more regulated and more objective than watershed protection or biodiversity conservation. It is a complex concept, and there is a very real risk that forest owners may surrender the potential benefits of this new market to other, better-informed actors.

Small landholders and local communities in rural areas of the Asia-Pacific region, who control large areas of the most environmentally valuable forest areas through formal or customary systems, are at the greatest risk of losing out in this new market. Moreover, with incomplete or

inaccurate information about the forestry VCM, they may unwittingly put their livelihoods, and their forests, at risk.

The Food and Agriculture Organization of the United Nations (FAO) engaged the services of Silvestrum VoF[1] to produce these guidelines as part of a project[2] which helps smallholders and local communities in the Asia-Pacific region to access the forestry VCM. Their aim is to create a more even playing field so that these grassroots stakeholders, and the groups that work on their behalf, can make the most of the potential benefits, and avoid the dangers, of this new market.

Although the guidelines introduce several terms and concepts which will be new to many forest sector stakeholders, a successful forestry VCM project is about local goals, resources and abilities. Local forest owners, and the communities to which they belong, must retain control of the decision-making processes. The value of the forestry VCM is, after all, small compared to the social, environmental and economic benefits on which so many rural livelihoods depend.

Hiroyuki Konuma

Assistant Director-General and Regional Representative for Asia and the Pacific,
Food and Agriculture Organization of the United Nations

1 Silvestrum VoF, 1546 LJ Jisp, The Netherlands, www.silvestrum.com
2 TCP/RAS/3210: Linking communities in Southeast Asia to forestry-related voluntary carbon markets

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Acronyms

AGNWB	Above-ground non-woody biomass
AGWB	Above-ground woody biomass
ALM	Agricultural Land Management
ARR	Afforestation, Reforestation & Re-vegetation
BAU	Business As Usual
BGB	Below-ground biomass
CO_2	Carbon Dioxide
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CFI	Community Forestry International
CFS	Carbon Fix Standard
CSR	Corporate Social Responsibility
ERPA	Emissions Reduction Purchase Agreement
FPIC	Free, Prior and Informed Consent
GHG	Greenhouse Gases
GIS	Geographic Information Systems
GIZ	German International Cooperation
GPS	Global Positioning System
HWP	Harvested Wood Products
IFM	Improved Forest Management
IPCC	Intergovernmental Panel on Climate Change
KTGAL	Kyoto: Think Global, Act Local
LULUCF	Land-use, Land-use Change, and Forestry
MRV	Measurement, Reporting and Verification
PD	Project Description
PDA	Personal Digital Assistant
PDD	Project Design Document
PES	Payment for Environmental (or Ecosystem) Services
PIN	Project Information Note
REDD	Reducing Emissions from Deforestation and forest Degradation

SFE	State Forestry Enterprise
SFM	Sustainable Forest Management
SOC	Soil Organic Carbon
SOP	Standard Operating Procedures
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VCM	Voluntary Carbon Market
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VER	Voluntary Emission Reductions
VVB	Validation/Verification Bodies

Glossary

To make best use of these guidelines, the reader must be familiar with the following key terms:

Additionality

The general definition of additionality is: "The extent to which a new input adds to the existing inputs (instead of replacing any of them) and results in a greater aggregate."[3] In the carbon market this refers to the ***net*** reductions in GHG emissions resulting from a project activity that ***would not have happened*** in the absence of the project. Only when this is proved can the project claim to contribute to climate change mitigation and thus potentially earn ***carbon credits.***

Afforestation

The deliberate conversion of non-forest land to forest. This only applies to land that has not been forest for at least 50 years. Afforestation is always caused by humans, one way or another, for example by planting, seeding or assisted natural regeneration.

Agricultural Land Management (ALM)

These projects aim to reduce net ***Greenhouse Gas (GHG)*** emissions from croplands and grasslands by increasing the ***carbon stocks*** in one or more ***carbon pools***, such as soil organic carbon or above-ground woody biomass. They may be considered a type of forest carbon project under the ***Voluntary Carbon Market (VCM)*** if they involve the planting or management of trees on croplands or grasslands.

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3 Source: www.businessdictionary.com

Afforestation, Reforestation & Re-vegetation (ARR)

A type of forest carbon project in which trees are planted either (1) on areas that did not have forest before, (2) on areas that have not been forest for at least 10 years, or (3) on areas that need vegetation to be re-planted for rehabilitation purposes.

Carbon Credit

A common term used to describe the basic unit of the VCM. A project can claim a carbon credit when one metric ton of carbon dioxide, or the equivalent amount of other GHGs[4] is removed from the atmosphere or is prevented from being emitted in the first place. Carbon credits are therefore counted in units of 'one ton of carbon dioxide equivalent' (tCO_2e).

Carbon Footprint

The amount of ***GHGs*** resulting from an individual's activities is known as their carbon footprint. Carbon footprints can also be calculated for a household, a company or an organization by adding up the emissions caused by the use of power and transport and the consumption of food and manufactured products.

Carbon Neutral

An individual, household or organization that is responsible for zero net emissions of ***GHGs*** from all its activities can claim to be carbon neutral. This is usually achieved by cutting down on all types of consumption as much as possible and then using ***carbon offsets*** to compensate for any unavoidable emissions.

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4 Each GHG has a different Global Warming Potential (GWP). The GWP of CO_2 is taken as 1. The GWPs of CH_4 and N_2O, respectively, are 21 and 310. This means that, over a 100 year period, one unit of N_2O will have the same impact on global warming as 310 units of CO_2.

Carbon Offset

A ***carbon credit*** (one tCO_2e of emission reductions) generated through activities in one place may be 'sold' to individuals or organizations unconnected with those activities. The buyer of this carbon credit claims to have compensated, or 'offset', an equal amount of emissions generated from their own activities. The VCM is essentially a market in carbon offsets.

Carbon Pool

The locations within an ecosystem where carbon is present continuously. In a forest, the main carbon pools are in biomass (both above and below ground), dead matter and soil. ***Harvested Wood Products (HWPs)*** are also considered a carbon pool, although no longer part of the forest ecosystem, because they store carbon continuously in the long term.

Carbon Sequestration

The uptake and storage of carbon is known as carbon sequestration. Trees and other plants, for example, do this by absorbing CO_2 from the atmosphere. In the process known as photosynthesis, CO_2 is broken down into oxygen, which is released back into the atmosphere, and carbon, which becomes part of the plant. As a result, forests store (or 'sequester') large amounts of carbon.

Carbon Sink

Carbon sinks are ***carbon pools*** which store more carbon than they release. Forests and oceans act as major carbon sinks in the global carbon cycle; carbon constantly flows into them and out of them, back into the atmosphere. In some situations, forests may release more carbon than they store, making them 'carbon sources'. Note: the carbon stored in fossil fuel deposits is not considered a carbon sink, because it is not active in the carbon cycle.

Climate Change Adaptation[5]

Adjustment in natural or human systems in response to actual or expected effects of climate change. These adjustments are intended either to reduce the harm caused by these effects or to exploit any opportunities to benefit that climate change may present. Types of adaptation activities include anticipatory (before the effects of climate change are felt) or reactive (after the effects). They can also be planned and implemented, by public and private actors, or happen autonomously.

Climate Change Mitigation

Human intervention to reduce the intensity or severity of climate change. Mitigation actions aim to limit the concentration of GHGs in the atmosphere by either reducing the sources or enhancing removals by sinks of GHGs. Such actions may include: reducing emissions caused by fossil fuel combustion or deforestation; enhancing removal of CO_2 from the atmosphere by extending forest cover, or by improving forest management strategies.

Community Forestry[6]

Any situation that involves local people in a forestry activity. It covers a wide range of situations including; woodlots in areas which are short of wood and other forest products for local needs; growing of trees on farms for income generation; the processing of forest products at the household, artisan or small industry level; and the activities of forest-dwelling communities.

Deforestation

Those practices or processes that result in the conversion of forested land for non-forest uses, including the conversion of natural forest to commercial tree plantations.

5 http://www.ipcc.ch/pdf/glossary/tar-ipcc-terms-en.pdf

6 FAO. 1992. Community Forestry: 10 Years in Review. Rome, Italy. (Available at http://www.fao.org/docrep/u5610e/u5610e00.htm#Contents)

Ecosystem Services

Natural ecosystems supply a multitude of resources and processes that benefit human populations. Collectively, these benefits are known as ecosystem services and include, for example, the provision of clean drinking water, food and shelter. While scientists and environmentalists have discussed ecosystem services for decades, definitions of these services were formalized by the United Nations 2005 Millennium Ecosystem Assessment (MEA) grouping ecosystem services into four broad categories: *provisioning*, such as the production of food and water; *regulating*, such as the control of climate and disease; *supporting*, such as nutrient cycles and crop pollination; and *cultural,* such as spiritual and recreational benefits.

Environmental Services

In contrast to ecosystem services, environmental services are services provided by the environment as a whole, and not limited to the natural ecosystems which are part of that environment. In forestry, the main environmental services include: climate change mitigation (carbon retention in sinks), water regulation and retention and the conservation of biodiversity.

Emissions Reduction Purchase Agreement (ERPA)

An agreement, or contract, that describes the sale of carbon credits in the ***Voluntary Carbon Market (VCM)***. The ERPA clarifies the roles, rights and responsibilities of the buyer and the seller over the carbon credits involved in a particular transaction.

Forest[7]

In the context of the VCM, and for the purpose of these guidelines, a forest is an area of land, on which tree cover exists, and is able to reach

7 Many different definitions of 'forest' exist. These Guidelines use the definition provided by the UNFCCC in the Annex to Decision 16/CMP.1.

minimum threshold values at maturity of:

- Area: At least 0.05–1.0 hectare
- Canopy cover: At least 10–30 percent of the area
- Height: At least 2–5 metres.

The exact minimum threshold values used to define a forest differ between countries, and can be decided by the country itself. Since the emergence of the UNFCCC, and in particular of the Kyoto Protocol, most countries select values within these ranges. Young natural stands and all tree plantations, which have the ability to meet the minimum threshold values at maturity, are also considered forests, as are areas that are temporarily devoid of tree cover due to clearfelling but will be replanted or restored to forest cover, meeting the minimum threshold values.

Forest Carbon Stock

The amount of carbon contained within a defined ***carbon pool***. Forest carbon stock includes the total amount of carbon stored in all carbon pools.

Greenhouse Gas (GHG)

A Greenhouse Gas can absorb and emit infrared radiation. Through their presence in the Earth's atmosphere, more of this radiation from the sun is trapped near the surface. Without this 'greenhouse effect', the planet would be much colder. Water vapour (clouds) is the most significant GHG in terms of its overall impact on the greenhouse effect, but climate change negotiators focus instead on the GHGs which are most susceptible to changes in concentration as a result of human behaviour. These are Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Sulphur Hexafluoride (SF_6), Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs).

Harvested Wood Products (HWP)

All woody material taken from a forest. HWPs act as carbon pools, storing carbon for varying lengths of time. These products include, for example, firewood, construction timber, paper, fibreboard, and wooden furniture.

Leakage

Reductions in GHG emissions that are offset by increases in emissions in other areas or in other carbon pools; where both the reductions and the increases are the direct or indirect result of the same project or activity. For example, a forestry VCM project may plant trees on an area of cropland, which leads to local farmers clearing an area of natural forest elsewhere to replace the cropland. When calculating net emissions to be converted into carbon credits, a forestry VCM developer must show that all such leakage has been taken into account.

Permanence

Permanence refers to the longevity of a carbon pool and the stability of its stocks. A feature of land-based carbon projects is the possibility of a reversal of carbon benefits due to natural disturbances (e.g., fires, disease, pests, and unusual weather events), or due to human-induced activities, such as clearfelling forest without the intent to restore forest cover. This may result in the reversal of the carbon benefits previously achieved. In contrast to land-based projects such as forestry VCM projects, projects that replace fossil fuels with renewable energy sources lead to permanent emission reductions.

Project Description (PD) and Project Design Document (PDD)

A document that describes how a particular forestry VCM project will work. It includes, among other things, a basic description of the project context, monitoring methods, estimate of emission reductions and potential social and environmental impacts. *Note: Project Description*

(PD) is an official term under one particular type of VCM project – the Verified Carbon Standards (VCS). In other types of VCM projects, the PD may also be known as a Project Design Document (PDD).

Project Idea Note (PIN)

A PIN is a short document, similar to a concept note, which summarizes the project and its expected results and impacts, including how it will generate ***carbon credits***. It is usually one of the first steps in the VCM process, and is important for attracting investors. See also Annex 1 for a sample of a completed and approved PIN.

Reducing Emissions from Deforestation & forest Degradation (REDD)

A type of forest carbon project in which existing forests are not removed but instead are conserved, protected or otherwise managed differently than before. A project that reduces emissions from deforestation reduces the rate at which forest is converted into other land use categories. These projects relate to the area of forest. A project that reduces emissions from forest degradation slows the loss of forest biomass and with that the loss of products and services from a defined area of forest. These projects have no area dimension (the area remains the same).

Note: REDD in the VCM context must not be confused with REDD+, which is a term used in climate change negotiations. REDD+ includes REDD project types plus conservation, sustainable management of forests and enhancement of forest carbon stocks.

Reduced Impact Logging (RIL)

A systematic approach to planning, implementing, monitoring and evaluating forest harvesting which reduces the negative impact of these activities on forest products and services. RIL is a type of Improved Forest Management (IFM) approach.

Reforestation

The deliberate conversion of non-forest land to forest. In contrast to afforestation, reforestation applies to land that was a forest in the recent past, but which has not lost forest or other native vegetation within the last 10 years. Reforestation is always caused by human intervention, for example by planting, seeding or assisted natural regeneration.

Standard Operating Procedures (SOPs)

Instructions on how to implement activities in the same manner regardless of time, location, or personnel.

Stratification

The process of separating forest data into distinct elements (or ***strata***). The strata consist of parts that are physically separated but are similar in terms of carbon stocks and flows. Stratification can be spatial, dividing a large natural forest into distinct types of vegetation. It may also be vertical, dividing the forest into layers with differing carbon stocks, such as: ground vegetation; understory; and canopy.

Sustainable Forest Management (SFM)

SFM aims to ensure that the goods and services derived from the forest meet present-day needs while at the same time securing their continued availability, contribution to long-term development, and provision of economic, ecological and social functions at local, national and global levels.[8]

Transaction Cost

A cost relating to participation in a market. These costs may include, for example, the expenses incurred in getting legal approval for a project,

8 Adapted from FAO definition of SFM, retrieved from www.fao.org/forestry/sfm on 27th Jan 2012

obtaining and maintaining project records in a national database, training staff to a required standard and conducting due diligence on the market situation to ensure that the approach or strategy employed is the right one for the project situation.

Verified Carbon Unit (VCU)

A type of carbon credit traded under the Verified Carbon Standards (VCS) system. Whenever they are traded as carbon offsets on the VCM, they are tracked through a registry system.

Voluntary Carbon Market (VCM)

The 'carbon market' involves the buying and selling of ***carbon credits***, usually as ***carbon offsets***. The VCM consists of buyers who are not obligated to reduce their carbon emissions. They offset their emissions voluntarily. In contrast, the compliance carbon market is driven by the commitments taken on by industrialized countries that have signed the Kyoto Protocol. If these countries are not able to meet these commitments through their own actions, they *have* to pay for carbon offsets.

Voluntary (Verified) Emission Reduction (VER)

Voluntary Emission Reductions and Verified Emission Reductions are both known as VERs. They are ***carbon credits*** which are traded on the voluntary carbon market. VERs are verified through scientific methods to make sure that they represent real emission reductions.

Background information

Before using these guidelines, it is essential to understand the connection between carbon, climate change and forestry. Forests have a significant role within climate change, and their crucial role in climate change mitigation and adaptation is internationally acknowledged. This connection is clearly described within the first chapter of the guidelines.

Forests have a complex role in climate change. They are a potential **source** of Greenhouse Gases (GHGs), releasing carbon dioxide (CO_2) emissions when cleared. They also have great potential as **sinks**, removing CO_2 from the atmosphere, converting it to carbon, which is stored as biomass. Forests as a source of emissions aggravate climate change, while forests as a sink contribute to climate change **mitigation**. Forests are also sensitive to the effects of changes in temperature, precipitation and seasonal patterns, so their ecosystems are vulnerable to the adverse effects of climate change. However, through the products and **environmental services** they provide, forests also help to make human populations less vulnerable to the damaging effects of climate change, and are therefore important in **adaptation** strategies, such as:

- The sustainable use of timber and non-timber forest products for alternative livelihoods;
- On-farm plantations for protection of watercourses and provision of shade and dry season fodder for livestock, and;
- Maintenance of biodiversity corridors as shifting seasonal patterns cause wildlife habitats to change.

So there are many sound reasons why forests have become increasingly linked with efforts to address climate change over recent years. The growth of the forestry Voluntary Carbon Market (VCM) is part of this trend. Forestry VCM projects are valued because of their role in climate

change mitigation. But forests still provide the same benefits that they always did, before the emergence of the VCM. These benefits, such as biodiversity conservation, environmental services and their significance for local livelihoods, are often termed 'co-benefits' in VCM circles, but are much more important to local communities than the potential economic benefits of forest carbon projects.

The potential **environmental services** that forest carbon projects may provide include regulation of water supplies, maintenance of soil fertility, food provision, habitats for valuable non-timber forest products, pollination of crops, etc., but also include various benefits to local livelihoods, not necessarily provided by natural ecosystems but by the wider environment. The scale of co-benefits can vary.

The **social co-benefits** of forest carbon projects may include knowledge and skills generation through planning and management, timber and non-timber forest products, food security, employment opportunities and investments in local infrastructure. Local people may also benefit from forest carbon projects through their participation in the decision-making processes of the projects, clarification of land tenure and use rights, and through political and legislative changes which enhance these benefits.

These guidelines address the forestry VCM with a view to maximizing these social co-benefits by highlighting the importance of **community forestry** approaches, and the lessons of decades of experience in the Asia-Pacific region in community-based forest management.

The carbon market

Growing or establishing forests can help to combat climate change through absorbing CO_2 from the atmosphere, storing carbon in various carbon pools, and, once they leave the forest, in harvested wood

products. Forest owners and managers can accelerate this process by managing and conserving existing forest areas, or by creating new ones. If they can prove how much carbon has been stored as a result of their efforts, they may claim **'carbon credits'** based on this amount. The carbon market facilitates the trade in carbon credits, which generates resources to invest in the forestry sector.

There are two carbon markets: the **regulated (or compliance) market** and the **voluntary market.** The former is related to activities that are taking place under international negotiations through the United Nations Framework Convention on Climate Change (UNFCCC), whilst the latter is a market evolving on a voluntary basis, mainly driven by the private sector and consumer interest. These guidelines are aimed at forestry projects that are initiated, on a voluntary basis, to generate carbon credits, whilst at the same time improving local livelihoods and enhancing the environmental services provided by forests.

The **Voluntary Carbon Market (VCM)** helps to reward these positive actions. It is not a single entity, but covers all the mechanisms that facilitate the trade in carbon credits which are not generated for compliance purposes. **A forestry VCM project** implements specific forestry activities which result in a net uptake of carbon into forest biomass, soil, and timber products, and therefore, a reduction of CO_2 emissions, and those of other greenhouse gases (GHGs), into the atmosphere. The net quantity of carbon uptake and/or emission reductions (hereafter referred to as carbon benefits) is measured and turned into carbon credits that can be marketed through various mechanisms or markets, or be sold directly to buyers or investors.

The VCM supports different kinds of activities in the forestry sector, including the protection of forests, improving forest management, planting trees on non-forest land, and the rehabilitation of degraded forests and forest areas. These are all very different activities, and there are different **standards and methods** to account for the emissions and removals associated with these activities. These are described in more detail in Chapter 3.

What is a forestry VCM project?

In order to be considered for the VCM, a forestry project must set itself aside from 'traditional' forestry initiatives. Negotiators under the UNFCCC process agreed on a number of requirements, as set out below, which are also used by the voluntary markets. More detail is provided where necessary in later sections.

Additionality

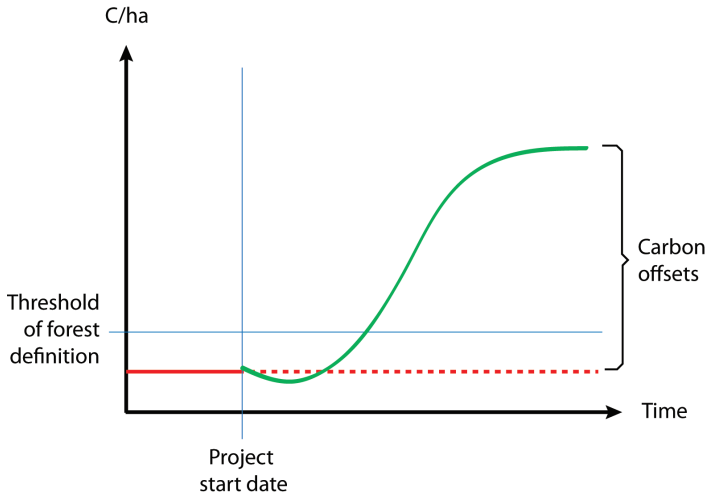
Simply 'repackaging' a normal forestry initiative is, therefore, not good enough. A forestry VCM project is considered additional if it meets the following requirements:

1. The activity does not take place on land that was covered by a natural ecosystem in the ten years preceding the start of the project;
2. It cannot be the *only* option. There must be plausible, credible alternative land-use scenarios that could happen on the land in question. If there are none, and the forestry activity planned under the project is the only plausible, credible land use, the project is not additional;
3. An investment analysis must demonstrate that without the income from carbon credits, one or more of the alternative land-use scenarios would be more economically viable; or,
4. Non-financial barriers (e.g. technical, institutional or governance barriers) need to be identified that would prevent the implementation of project activities without the benefits provided through the forestry VCM.

Methodology

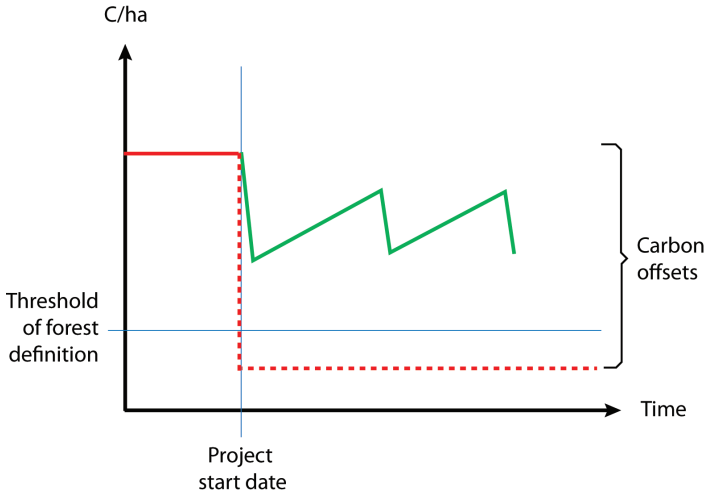
Projects must also be from an eligible project type or activity. Reforestation, improved forest management and avoiding deforestation or forest degradation are all types of activities that are eligible under various standards (the methods are described in more detail in Chapter 2). The figures below illustrate how the different forestry activities actually generate carbon benefits. It is important to note that carbon benefits are always quantified against the baseline: it is the difference between what ***would have happened*** in the Business As Usual (BAU) scenario and what ***is expected to happen*** in the project case that matters. That includes situations whereby the project case reduces emissions in comparison to the baseline but is actually still causing net emissions. An example is going from unsustainable, high impact logging to reduced impact logging (see Figures 1 a, b, c and d for graphical illustrations).

Figure 1: Generating 'carbon benefits' from forestry activities



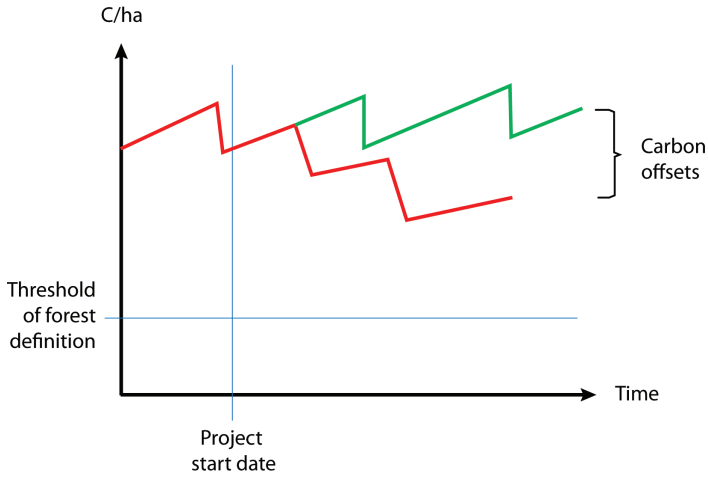
(a) BAU is non-forest cover, project case is afforestation

The dotted red line is the BAU scenario; it is consistently below the threshold value for forest (the blue line) and is therefore 'non-forest' land. If the carbon stock of vegetation is above the blue line, it can be considered forest. The green line represents the normal growth rate of a forest established under a forestry VCM project. The difference between the baseline (red) and the green line represents the carbon benefits of the project; carbon that is stored due to the implementation of the project in addition to the baseline.



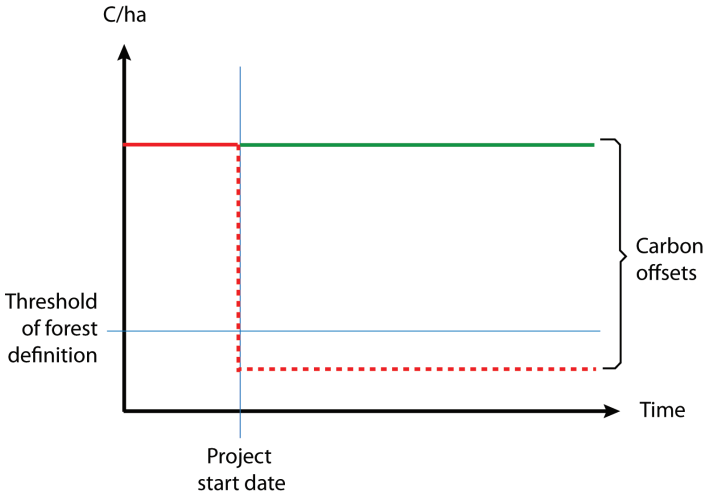
(b) BAU is deforestation, project case is sustainable logging

The dotted red line is the BAU scenario, showing forest cover and deforestation at some point in time. The green line represents a sustainable logging cycle, established as part of a forestry VCM project. It shows fluctuating levels of carbon stocks in the project as the area is logged, grows back, is logged again, and so forth. The difference between the baseline (red) and the green line represents the carbon benefits of the project; carbon that is stored due to the implementation of the project in addition to the baseline.



(c) BAU is unsustainable logging, project case is sustainable logging

The red line is the BAU scenario, showing fluctuating but steadily decreasing carbon stocks as the area is repeatedly logged on an unsustainable basis. The green line, as in (b), represents a sustainable logging cycle, established as part of a forestry VCM project. It shows fluctuating levels of carbon stocks in the project as the area is logged, grows back, is logged again, and so forth, while maintaining consistent levels of carbon stocks over time. In both the BAU and the project case, in this scenario, the project area retains its forest status (neither the red or green lines fall below the blue line). The difference between the baseline (red) and the green line represents the carbon benefits of the project; carbon that is stored due to the implementation of the project in addition to the baseline.



(d) BAU is deforestation, project case is forest conservation

The red line is the BAU scenario, showing forest cover followed by deforestation at some point in time. The green line represents the impact of a forest conservation programme, implemented as part of a forestry VCM project, where carbon stocks are constantly maintained at the level of the natural forest environment. Conservation doesn't mean 'doing nothing'; it may require an intensive programme of activities to address the human and non-human drivers of deforestation. The difference between the baseline (red) and the green line represents the carbon benefits of the project; carbon that is stored due to the implementation of the project in addition to the baseline.

The methods of calculating carbon offsets (see glossary) are defined in different ways by different VCM standards. These standards are outlined in Chapter 2. There are several aspects they have in common, and leakage (described below) is one of them.

Leakage

Leakage (see glossary) is the 'leaking away' of achieved carbon benefits, e.g. reductions in GHG emissions that are offset by increases in emissions outside the project area or in other carbon pools. A forestry VCM project must demonstrate convincingly it has taken all sources of leakage into account when calculating potential carbon benefits. Leakage can happen by either moving the baseline activity somewhere else (activity shifting), or by 'market leakage', where a different actor steps in to fill a gap in the market caused by the reduced supply of a product or service as a result of project activity, and in doing so causes emissions. This is also discussed in more detail later on, but it is important to note here that the project must aim to limit leakage, through proper design, and must adjust the projected carbon benefits of the project to account for any leakage that cannot be prevented.

If a forestry project meets these requirements, it can be considered a truly additional forestry VCM project.

Introduction to the guidelines

These guidelines will explain the step-by-step process for developing and implementing a successful forestry VCM project, by answering these key questions

- ***"What*** types of forestry VCM projects can be undertaken?"
- "***When*** is starting up a forestry VCM project a good idea?"
- "***How*** can a forestry VCM project be developed?"
- "***What*** does it take to implement a forestry VCM project successfully and verifiably?"

Who could benefit from using these guidelines?

These guidelines are meant for a broad audience, including rural communities, smallholders, NGOs, government officials, and/or partners who work with or advise these other groups.

Community-based forest managers

A growing proportion of forestry VCM projects are managed by community groups and the sector is taking note of this fact. The Plan Vivo standard (see Chapter 2) only certifies land-use projects designed by communities. This audience includes many types of community-based forest management groups throughout the Asia-Pacific region, such as Community Forest User Groups (CFUGs) in Nepal, Forest Protection Committees (FPCs) in India, Community-based Forest Management

Agreement (CBFMA) holders in the Philippines, and more. Many countries in the Asia-Pacific region have legal structures for formally recognizing communities that own, manage, or use forests, which means that these communities can explore involvement with forestry VCM projects as a means to achieve their management goals.

Smallholders/smallholder groups

Individuals, families, and groups who own and manage small plots of forest land may find these guidelines useful in assessing whether a forestry VCM project is compatible with their current management goals. Smallholders will learn the distinct advantages and disadvantages of developing forestry VCM projects. Chapter 6 highlights the importance of having clear property rights and simple benefit sharing arrangements in making project management less complicated and risky. Chapter 2 discusses the obstacles caused by high transaction costs of forestry VCM projects and the options for addressing these obstacles through grouped projects.

NGOs

These guidelines will also be useful for NGOs that are exploring the idea of developing their own forestry VCM project, and NGOs that partner directly with local communities that may be interested in getting involved with the forestry VCM. Nearly all existing forestry VCM projects have at least one NGO partner, and these guidelines will be useful for helping NGO workers give sound advice to their local project partners. NGOs can serve many different roles related to project management; these roles are discussed in detail in Chapter 3. This chapter also discusses the multiple benefits of forestry VCM projects related to poverty alleviation, land rights, and rural development, which are of particular interest to many NGOs.

Local forestry officials and government workers

Local forestry officials and government workers may serve as extension agents to communities and work in areas being developed for forestry VCM projects. They may also be called upon to provide expertise in matters like forest inventory procedures, boundary delineation, analysis of remotely sensed images, clarification of property rights and land tenure, and conflict resolution. These guidelines will be useful to these individuals who have a very specific role to play, by providing a broader picture of the forestry VCM project cycle from start to finish.

Box 1: Grouped project case study
Inpang Community Network, Thailand

The Inpang Community Network began in the mid 1980s with local farmers in Northeast Thailand. Inpang families have transformed a number of fields to diverse agro-forestry systems. The Inpang Community Network includes more than 4 000 households in five provinces in Northeast Thailand. Their farms include a wide variety of tree plantations and agroforestry systems. Carbon2Markets, a private sector company, is developing this project in cooperation with the Inpang Community Network and Mahasarakham University (MU).

The Inpang Community Network provides training and services in sustainable farm management and sufficiency economy to farm communities and groups throughout Thailand and they operate a training center in Sakhon Nakon Province, called the Life University. The Inpang Community Network is working cooperatively with the researchers at the University and the National Research Council of Thailand (NRCT) to coordinate this project with Inpang member

farmers in three provinces: Kalasin; Nakhon Phanom; and Sakhon Nakon. Network members and researchers at MU and the NRCT are working on farms to develop the project, establish site boundaries, permanent sample plots, and tree measurements. Carbon2Markets and Michigan State University are providing technical backstopping and supporting the project through the deployment of an on-line project management application to ensure project transparency of the carbon accounting and provide geospatial tools for efficiently managing and monitoring sequestered carbon in this dispersed small holder agroforestry system

(Source: FAO. 2010. *First Regional Workshop: Setting the Foundation. Linking Communities in Southeast Asia to Forest Voluntary Carbon Markets. Chiang Mai, Thailand* (Available at: http://www.carbon2markets.org/uploads/news/FAO_RAP_Agenda_Chiang_Mai_Sept_2010.pdf)

Students

Local universities and schools often become partners in forestry VCM projects. For example, Mahasarakham University in Thailand has provided technical backstopping for the Inpang Community Network's agroforestry programme (see Box 1) by helping to establish site boundaries, permanent sample plots, and conducting tree measurements. Forestry VCM projects can become learning opportunities for both students and community members who participate in trainings and capacity building activities conducted through such projects. Students may go on to become involved with other forestry VCM projects, and these guidelines provide the context to prepare them to take on other roles in project development and implementation.

Objectives of the guidelines

The **overall aim of the Guidelines** is to assist the groups listed above to decide whether or not to undertake a forestry VCM project, and, once a decision has been taken to proceed with such a project, to provide guidance on how to design and implement a project that:

a) will benefit the community for whom it is intended;

b) mitigates climate change;

c) provides co-benefits; and

d) for which all benefits are real, measurable, long-term, and sustainable.

The specific objectives are the following:

Objective 1: Promote knowledge and learning about the forestry VCM.

NGO workers, extension agents, and advisors who work with local communities can familiarize themselves with the forestry VCM project cycle in order to build their own ability to provide good, sound advice to their local partners.

Objective 2: Inform the decision-making process regarding development of forestry VCM projects.

Many questions need to be answered before a well-informed decision can be made on whether or not to start a forestry VCM project. These guidelines address many of these questions, including:

- What kind of knowledge and skills are needed to develop a forestry VCM project?

- Which different groups need to be involved, and what are their roles and responsibilities?
- What risks, challenges, and barriers may occur when undertaking a forestry VCM project?

It should be noted here that a favourable legal and policy environment is a prerequisite for a successful forestry VCM project. If a country does not permit any trade in carbon credits, for example, then community-level guidelines such as this will be of little use. This is addressed further in the 'Getting Started' checklists in Chapter 3.

Objective 3: Describe the steps of the forestry VCM project cycle.

All project stakeholders benefit from learning about the entire forestry VCM project cycle, from start to finish, so that they can understand how their specific role will affect particular aspects of the project. These are some of the steps that will be discussed in later chapters.

- Preparing the community;
- Designing the project;
- Fieldwork;
- Verifying the project's outcomes;
- Managing risks; and
- Marketing carbon credits.

Step-by-step guidelines

These step-by-step guidelines, grouped into chapters, have been designed to take the reader through the most critical issues facing potential project developers regarding engagement with the forestry VCM:

Chapter 1: *Forests and climate change*

Forests play a very important role in the global carbon cycle, because they can both be sources of emissions as well as carbon sinks. This chapter explains the relationship between forests and climate change, discusses the impacts of climate change on forest health, and introduces the six important forest carbon pools. It also considers the benefits that forests provide in addition to climate change mitigation.

Pre-project phase

Chapter 2: *Project types and standards*

The forestry VCM includes several different project types, which can be assessed against a number of different standards. This chapter reviews the four main standards used in the forestry VCM. It also presents a number of case studies: afforestation, reforestation and re-vegetation (ARR); Improved Forest Management (IFM); and Reducing Emissions from Deforestation and Forest Degradation (REDD).

Chapter 3: *Getting Started*

This chapter serves as a guide through the pre-feasibility phase. It provides an assessment checklist and reflects on the skills that will be needed to implement a forestry VCM project.

Project phase

Chapter 4: *Project implementation: office work*

This chapter identifies the paperwork associated with setting up a sound forestry project for the VCM. It describes what a Project Idea Note (PIN) should contain, and what documents have to be elaborated during each step in the project cycle. This includes the preparation of a Methodology, a Project Description (PD) or Project Design Document

(PDD), monitoring reports and documents relating to verification of carbon claims.

Chapter 5: *Project implementation: field work*

This chapter covers actual project implementation and deals with some of the basic field activities, such as: boundary demarcation and mapping, inventory, stratification, measuring carbon pools, identification and quantification of leakage, stakeholder consultation and monitoring activities .The chapter concludes with references to websites where tools and additional guidance can be found.

Chapter 6: *Identifying, managing and quantifying risks*

Managing risk is crucial for guiding forestry VCM projects towards successful outcomes. All forestry VCM projects will face some risk, including forest fires, land-use conflicts, and corruption. This chapter outlines strategies for preventing and managing technical, financial, legal, political, and natural risks. A risk assessment tool is provided for potential project developers.

Additional information

Chapter 7: *Further help and advice*

This chapter includes lists of organizations and contact information for getting more advice on project design, financing, and legal issues. These resources will be useful for finding answers to specific questions not addressed in the guidelines, and should serve as a reminder that help and support is available from a variety of sources.

1

Forests and climate change

Chapter 1: Forests and climate change

This chapter's main objective is to explain the connection between forests and global climate change. The first section briefly explains the science of climate change and the positive and negative impacts it has on forests, natural resources, and people. The second section takes a tour of the forest to see where and how carbon is stored in vegetation and trees.

By the end of this chapter, the reader should know:

- Where and how carbon is stored in forests;
- How forests can help us mitigate and adapt to the impacts of climate change

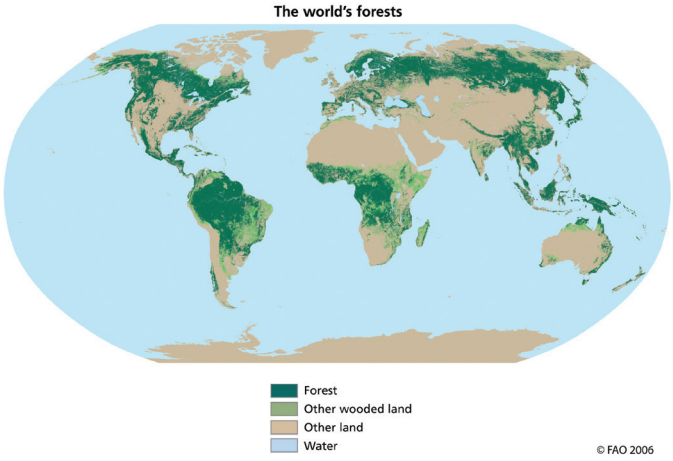


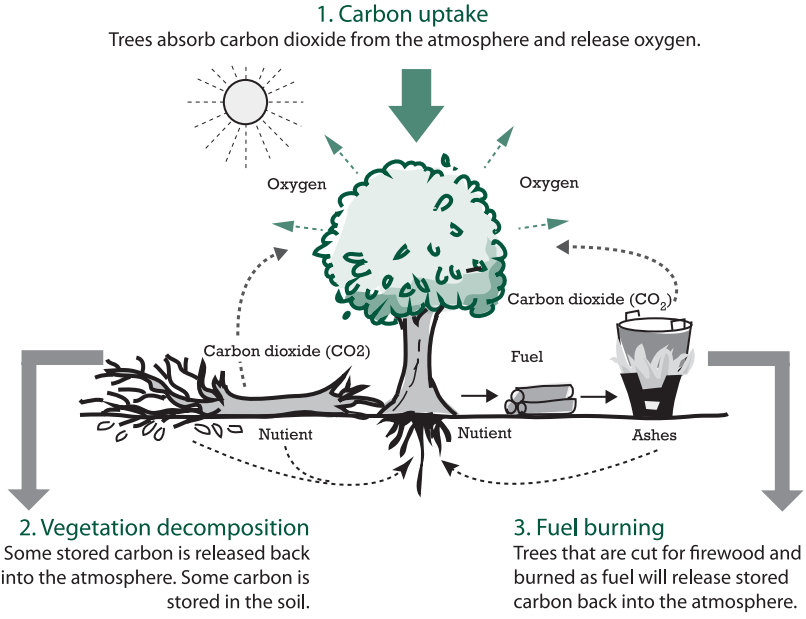
Figure 2: The world's forests.
Source: FAO Global Forest Resource Assessment 2010

Forests play a vital role in combating climate change. Tropical forests cover about 15 percent of the world's land surface and contain about 25 percent of the carbon on the planet's surface (see Figure 2). The loss and degradation of forests accounts for 15 - 20 percent of global carbon emissions. The majority of these emissions are the result of deforestation in the tropics, largely due to conversion of the forest to more lucrative economic activities such as agriculture and mining.

There are plenty of other major sources of emissions, such as industry, energy consumption and transport. However, only forestry activities also have the potential to remove (or ***sequester***) carbon from the atmosphere. This sequestration creates carbon 'sinks'. As well as being potential sources of emissions, forests can also help to mitigate climate change through the creation of additional sinks. Uniquely, forestry practices are a serious part of the climate change problem, but also, potentially, a key part of the solution.

1.1 How do forests store and release carbon?

Trees absorb carbon dioxide (CO_2) from the atmosphere during photosynthesis and store carbon in their stems, branches and roots, which can also transfer carbon to the soil. By removing CO_2 from the atmosphere in this way, forests help to reduce (or mitigate) the severity of climate change (see Figure 3). The different places in which carbon is stored in a forest are known as ***carbon pools*** (see Figure 4).



When a tree is cut down or burned, much of the carbon it stores is released into the atmosphere as CO_2. However, if this material is converted into, for example, furniture or construction timber, the carbon remains stored for as long as these products are in use. Harvested wood products (HWP) are therefore considered an important carbon pool. They include all woody material which leaves the harvest site. HWPs store carbon for varying lengths of time. More and more countries estimate and report on carbon stocks of HWP in their national greenhouse gas (GHG) inventories. But, once cut down, forests and trees stop acting as carbon sinks and become sources of carbon emissions.

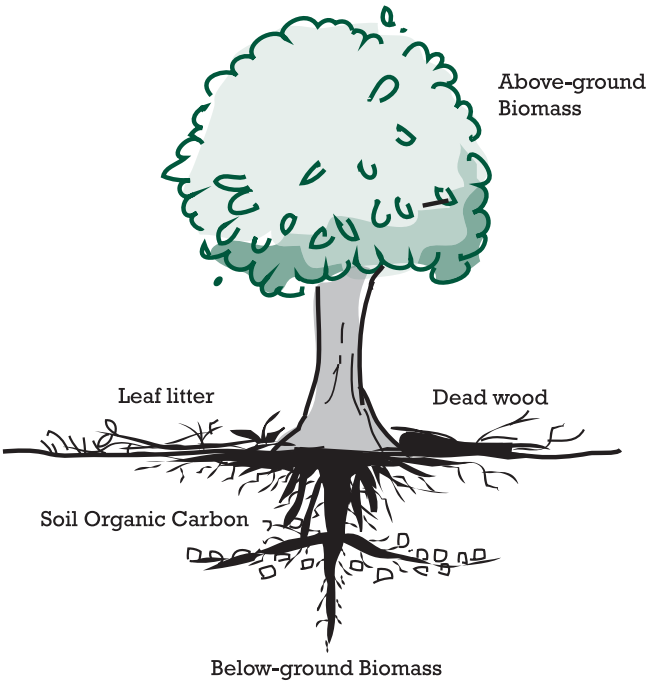


Figure 4: Forest carbon pools

Forest carbon is stored in five places within and around vegetation. These are called carbon pools

1. **Above-ground Biomass:** stems, bark, leaves etc.
2. **Below-ground Biomass:** roots of all sizes
3. **Dead Wood and**
4. **Soil Organic Carbon (SOC)**

Harvested Wood Products (HWP) are considered as a 6th forest carbon pool.

Amended after: TNC 2009 Introductory course on REDD: A training manual

1.2 What are some of the impacts of climate change?

Negative impacts of climate change include the following.

People

Health may suffer if people are exposed to hotter temperatures, have less access to water, and face greater risk of disease.

Livelihoods

Rural livelihoods may be negatively affected by climate change to the point where many households can no longer sustain themselves.

Wildlife

Animals may no longer be able to live in their natural habitat if the temperature rises or water and food is no longer available.

Natural resources

Plants may no longer be able to grow in certain areas. New plants that are able to grow may invade, changing the ecosystem.

Some impacts may also be positive, depending on the circumstances:[9]

1. **Length of growing season:** Warmer temperatures for a longer period of time will increase food productivity in some areas and reduce it in others, depending on water supply and crop adaptability.
2. **Agricultural productivity of land**: Warmer temperatures will make it possible to expand agriculture in northern regions like Russia and Canada, but make some crops, particularly in the tropics, more susceptible to disease and heat stress.
3. **Higher plant productivity**: Increased carbon dioxide levels will increase rates of photosynthesis in many types of plants, which may result in higher yields of certain global crops.
4. **Levels of precipitation**: Climate change is expected to increase annual precipitation in many parts of the world, leading to changes in crop productivity and natural hazards such as flooding and drought.

1.3 How does climate change affect forests?

Climate change can both improve and damage forest conditions. In situations where it negatively affects forests, it also reduces the benefits of forest products and environmental services.

9 UNFCCC. 2002. Climate Change Information Sheet 10: Agriculture and Food Security; Climate Change Information Sheet 13: Water Resources. From *Climate Change Information Kit.* (Available at http://unfccc.int/resource/docs/publications/infokit_2002_en.pdf)

In some areas, decreased rainfall can:

Cause drought, increasing the severity of forest fires.

Reduce overall forest productivity, species diversity and prevent natural regeneration

In other areas, rainfall may increase.

It may be possible to plant and grow trees in areas that have not been forested before.

The forest may become more productive, resulting in increased biodiversity.

In some areas, increasing temperature can:

Cause heat stress, which can kill trees.

Increase the lifespan of forest pests and accelerate the spread of invasive species.

In other areas, decreasing temperature can:

Make it possible to grow new crops, which can be used in agro-forestry systems.

Reduce the risk of forest fire.

1.4 Forests and climate change adaptation

Forest-dependent communities in developing countries are particularly vulnerable to the damaging impacts of climate change, despite being the least responsible. However, with appropriate management strategies, forests can help individuals or communities to adapt to these impacts, and to provide buffers against them.

How do forestry projects help communities to adapt to climate change?

- **Properly designed and implemented forestry projects bring additional financial income to forest-based communities and diversify their livelihoods.** Additional income allows people to take advantage of a wider range of goods and services while a variety of income sources provides insurance against risk. Financial security and insurance increase the capacity to adapt to changing circumstances, climate-induced or otherwise.
- **Responsible carbon stewardship also ensures that forests and their services are sustained and restored.** This enables local communities to continue to use the resources that can provide additional income, such as non-timber forest products, and those that provide for their daily needs, such as food and fuelwood.
- **Forests also shield forest-dependent communities from some of the worst climate change impacts.** For example, coastal forests and mangroves can reduce the impacts of flooding, tsunamis, and typhoons. Forested hillsides can reduce the frequency and severity of landslides.

1.5 Forests and climate change mitigation

What kinds of forestry activities can make a difference?

'Think global, act local' became a slogan of sustainable development initiatives after the Rio Earth Summit of 1992. This means that all efforts matter, no matter how small in scale. One of the most important effects of successful large-scale projects and programmes is the facilitation of individual actions; they make it easier for 'ordinary' people to have a positive impact on the world around them. If enough people make changes in their own lives, we will end up with the significant and sustainable changes that we need at the global scale.

Working together to have an impact

In many developing countries, rural communities look after forests that would otherwise be degraded or removed. An analysis conducted by the Kyoto – Think Global, Act Local (KTGAL) Project[10] found that local forest management was often more effective than centralized management in reducing degradation and enhancing forest carbon stocks. This means that community-based forest management (CBFM or 'community forestry', see Glossary) prevents carbon emissions by reducing the rate of deforestation and degradation, and helping the forest to regenerate.

10 See www.communitycarbonforestry.org for more details of the K-TGAL project

So, local forest managers and forest users can have a significant impact on their local environment. Their actions can help to address climate change by:

- Locking up more carbon in the forest (enhancing the sink capacity);
- Preventing GHG emissions from the forest (avoiding degradation); and
- Ensuring that forests continue to provide the environmental services necessary for forest-dependent communities to sustain their livelihoods and their adaptive capacity.

There are three broad ways in which the forestry sector can help to mitigate climate change:

1. Planting: through afforestation or reforestation;
2. Improving forest management: thus reducing degradation of existing forests; and
3. Avoiding deforestation: preventing the conversion of forests to other land uses.

See section 2.4 for more details and case studies on these approaches. All of them can potentially have additional positive environmental and socio-economic benefits (or ***co-benefits)***, for instance by increasing biodiversity or the income-generating capacity of a community, but the nature and extent of these co-benefits depend on how the activities are implemented, as discussed in section 2.3.

2

VCM project types and standards

Chapter 2: VCM project types and standards

This chapter reviews the specific forestry activities that can help to mitigate climate change and how these activities relate to the forestry VCM. Its objective is to describe the forestry VCM project options, and the basic eligibility requirements under various standards for each project category.

By the end of this chapter, you will know the following:

- The three main forestry VCM project categories: (1) Afforestation, reforestation and re-vegetation (ARR); (2) Improved Forest Management (IFM); and (3) Reducing Emissions from Deforestation and forest Degradation (REDD) and some options for project activities within these categories.
- When you should consider developing a forestry VCM project.
- Details of four standards for certifying emissions reductions of forestry VCM projects and their co-benefits: (1) the Verified Carbon Standard; (2) Climate, Community and Biodiversity Standard; (3) Carbon Fix Standard; and (4) Plan Vivo System and Standards.
- Which project activity is eligible under each standard, and the relevant eligibility criteria that are tested under the various standards (e.g. leakage, permanence and additionality).

Before a project is started, consider the following:

1. What are the possible activities that can be undertaken in a particular location? What are the benefits and drawbacks of each of the options?
2. Does it make sense to pursue certification of the potential project? If so,
3. Which standard would be the right way forward?

2.1 Introducing the types of forestry VCM project

For each of the three main types of climate change mitigation activity through the forest sector, outlined at the end of Chapter 1, there is a recognized category of project under the VCM.

The Verified Carbon Standard (VCS), which will be introduced in more detail in section 2.4, defines these categories as follows:

1. **ARR** – Afforestation, Reforestation and Re-vegetation;
2. **IFM** – Improved Forest Management; and
3. **REDD** – Reducing Emissions from Deforestation and forest Degradation.

The VCS has more categories, but these Guidelines concentrate on forestry options and will therefore not discuss the other categories (e.g. agriculture and peatlands/wetlands) in much detail, though they can involve trees and forests.

For each community, and even for each individual, the development goals driving the choice of forestry activity may be different, including poverty alleviation, biodiversity protection, or the creation and retention of environmental services, or a combination of any of these.

To contribute towards these goals, communities may focus on specific forest management objectives, for example:

- Income generation from forest products;
- Watershed management; or
- Promotion of ecotourism, etc.

The goals and objectives, and their broader impacts, should be defined by the community members directly concerned with forest management as well as all other groups and individuals who will be affected by the activities. The choice of project activity also depends largely on the existing vegetation. For instance, if the area is already covered by forest, but is being constantly degraded due to poor forest management practices, the activities to be implemented will fall under the IFM category.

ARR and REDD are relatively straightforward in terms of defining the activity to be implemented. However, the enabling conditions required to undertake the activities may be quite challenging. IFM projects may take many different forms, as discussed below. However, in all cases, potential project developers must first ask themselves: "Is a forestry project viable?" Regardless of the VCM, forestry must compete with a number of other potential land uses. In some cases, such as government-sanctioned infrastructural developments, the decision is taken out of the hands of the community and the VCM has little relevance. In other cases, different sets of stakeholders may have very different ambitions for the same piece of land, leading to prolonged conflict and social tension. As discussed in Chapter 6, some risks to project development can be identified very early on. Others may become clear only at a later stage.

2.2 Forest management options for climate change mitigation

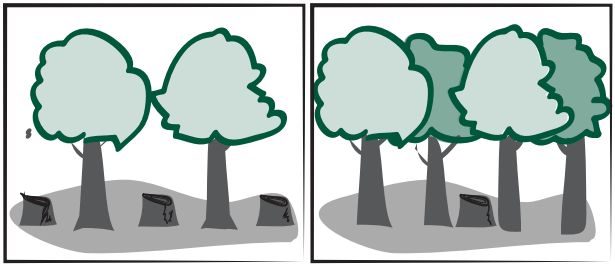
If forestry is indeed a viable activity on the land in question, there are many possible activities that can be undertaken which are relevant to climate change mitigation, as outlined below. The options presented below can take place in any of the three project type categories (ARR, IFM and/or REDD) as all of them can be implemented as soon as there is forest (in case the project is of the REDD or IFM type) or the intent to establish forest (in the case of ARR). Foresters will recognize many of these activities as elementary to the management of healthy forests. Following the general principles of sustainable forest management not only ensures the continued supply of multiple forest products and services, but also results in more efficient carbon sequestration than poorly-managed forests. The impacts of each of the activities for climate change mitigation and adaptation are summarized below, but this list is only a sample of the options available in the forest manager's toolkit.

2.2.1 Consolidate forest area; create a forest management group

Many forest management activities can be a challenge to undertake on your own, particularly if the forest area is small and surrounded by other forest areas over which you have no control. Your best efforts could be undermined by just one neighbor who, for example, does not pay attention to fire control. Forest managers can therefore contribute to effective adaptation and mitigation of climate change by forming groups and agreeing on a set of enforceable forest management rules. Community-based forest management systems are often more effective than individual forest managers at achieving climate change mitigation or adaptation outcomes.

2.2.2 Ensure optimal harvesting times

When trees are harvested, they can no longer continue to absorb CO_2. The dead wood and other material may then emit CO_2 and other GHGs through fire or decay. If you are managing plantations, you can contribute to climate change mitigation by identifying optimal harvesting time according to maximum carbon sequestration (highest growth rates) and optimum economic gain (largest carbon stocks). This optimal point changes once carbon benefits through a VCM project are taken into account. And it changes even more if the carbon that is retained by HWPs is taken into account.



Reducing harvest intensity

2.2.3 Reduce harvest intensity

Leaving more trees standing after a harvest is another way for forest managers to help mitigate climate change. If managing a natural forest, take fewer trees out whenever you harvest. If managing a plantation, consider changing your management system from one in which you harvest all trees in one area at the same time, to one in which you always leave some trees standing; a multi-aged system rather than even-aged. Maintaining a higher and more constant density of trees will also help to reduce soil erosion and may help in local efforts to adapt to climate change.

2.2.4 Keep livestock out of the forest

In many rural areas of the Asia-Pacific region, livestock such as cattle, goats and buffalo graze in natural forests. Their favorite food includes the seedlings of forest tree species and those seedlings that they do not eat are often trampled. Uncontrolled grazing can lead to serious damage to forests because too few seedlings survive to replace mature or harvested trees. Forest managers can therefore contribute to climate change mitigation by keeping grazing livestock out of natural forest areas, particularly from areas where there is abundant natural regeneration. This can be achieved by promoting stall feeding systems for livestock and by cultivating fodder, grass and tree species on farmland.

2.2.5 Create more forests

When people think of the link between forests and climate change, creating more forests is often the first thing that comes to mind. Planting trees on bare land certainly does help mitigate climate change by creating new sinks and increasing carbon stocks. Planting trees on areas that were once forests, but were cleared many years ago, does the same thing. In some cases, the forest may be naturally regenerating already. This makes it easier to achieve the goal of increased carbon stocks – all forest managers have to do is to assist this process by, for instance, keeping cattle out or creating gaps in vegetation to promote the growth of desirable species, and allow the forest to grow.

2.2.6 Plant different species

Planting the same tree species across large areas (monoculture plantations) often makes short-term economic sense but carries long-term environmental (and hence, economic) risks. If a monoculture

forest plantation is affected by disease or pests, the whole plantation may be lost. So, using a mixture of species contributes to climate change mitigation by guarding against large-scale GHG emissions from diseased plantations. Using local species, instead of exotic or alien varieties, will have the same effect; it will strengthen the health and the resilience of the forest. Mixtures of species also help in climate change adaptation by supporting a greater variety of other plants and wildlife (biodiversity) and by ensuring a more constant forest cover due to each species' different harvesting cycle.

Creating diversity in forest structure

2.2.7 Plant and protect vulnerable places

In areas with steep slopes, poor soils or narrow river banks, it is often not possible to get any financial benefits from forest management. These kinds of areas are too expensive or difficult to manage, and yield too little financial returns, and are therefore often cleared or neglected. However, forests in such areas are very important for controlling soil erosion, water quality and for maintaining local livelihoods and wildlife, all of which are important to climate change adaptation and sustaining livelihoods. By protecting or establishing forests in these areas, managers also maintain carbon stocks and contribute to climate change mitigation.

2.2.8 Prevent forest fires

Forest fires release the carbon stored in living trees, and in other carbon pools, straight back into the atmosphere. Forest managers can therefore reduce GHG emissions and contribute to climate change mitigation by reducing the risk of forest fire. For example, this can be done by creating fire breaks, building fire towers and conducting regular forest patrols. This makes sense on all counts: it protects future income from forest products; it protects biodiversity; and it mitigates climate change.

2.2.9 Follow management plans

Most forest managers follow plans, but often they are not very detailed, they may be based on unreliable or inaccurate information, or are simply out of date. Often the old style 'management plans' are better labeled 'harvesting plans' as they do not say much about managing forests between thinning and final felling.

One of the most important aspects of a forest management plan is dividing the forest into separate areas (compartments). This helps to decide what activities should be done in each area over several years, making sure that activities in one part of the forest do not cause problems elsewhere – for example by making sure that two areas next to each other are not harvested at the same time. It also helps to identify which areas need more protection. A good forest management plan will contribute to climate change mitigation by reducing the risk of GHG emissions from fire, disease, pests and over-harvesting. It is important to clearly define and carry out practices such as thinning, pruning, drainage, pest management and other necessary measures to maintain a healthy forest environment.

2.2.10 Make the most of forest products

Many forest products, particularly wood products, last a long time. Until they are burned or decayed, they continue to store carbon and prevent GHG emissions. Forest managers can contribute to climate change mitigation by ensuring that, when trees are harvested, as much of the wood and other materials as possible is used. They can reduce GHG emissions further by ensuring that the waste products from timber processing are not burned, but recycled in other processes such as paper, board or bio-energy.

2.2.11 Improve efficiency in the use of fuelwood

As in forest fires, the burning of fuelwood releases stored carbon straight back to the atmosphere. Forest managers can therefore contribute to climate change mitigation by improving the efficiency of fuelwood use. Open fires, as used by local communities in many developing countries, are quite inefficient and result in large amounts of waste, contributing to forest degradation and sometimes to deforestation, air pollution and soil erosion. Fuel-efficient cooking stoves reduce the pressure placed on local forests by reducing the amount of wood consumed by up to 60 percent. They are designed to burn wood much more efficiently than an open fire, and they can even be fueled by compressed agricultural residues (e.g. nut shells, straw) or animal dung.

2.3 When should you consider developing a forestry VCM project?

Once a forest manager has identified the activities that should be implemented in the area concerned, the next decision is whether to make these activities the basis of a forest carbon project. There are many circumstances under which it does not make sense to do so. For instance, if a forest area is very small, or scattered over an enormous area, the costs will hardly ever outweigh any financial or reputational benefit that can be gained from entering the VCM.

The VCM can only be used to generate income if it can be proven to local stakeholders that all these costs are outweighed by the benefits that a forestry VCM project may bring. Not everybody is in a position to benefit from a forestry VCM project. It is important to emphasize that **financial rewards will only be realized if forestry VCM projects are designed carefully, and well-suited to the local situation**.

Providing general estimates of costs for verification and certification under the VCM or providing estimates of carbon revenues of forestry VCM projects is not realistic because these costs and benefits are very different for every individual project. Therefore, general information is provided later in this chapter to assist potential project developers in conducting a self-assessment. This information includes:

- Pros and cons of the Forestry VCM;
- What you can realistically expect from the VCM; and
- Social and environmental benefits of responsible forest and carbon stewardship.

It is clear that forest carbon markets need forest people, but do forest people need forest carbon markets? The answer is not straightforward. Box 2 outlines the results of a research program that ran for five years in

eight countries, which suggests that sometimes it can be very beneficial for local communities to engage in the forestry VCM.

Box 2: Linking CFM with VCM

The Kyoto – Think Global Act Local (KTGAL) project conducted a study to see if community forest management was able to increase the biomass (and carbon) stored in forests, and if local people were able to measure the results. The study took place in eight countries around the world, and found that:

1. Community forest management is often more effective at reducing forest degradation than centralized forest management programs.
2. Biomass increased in most of the community managed forest areas, and local people were able to measure the changes simply and accurately (Karky, 2009)

But would local communities benefit from selling additional carbon stored in their forests?

A cost-benefit analysis based on KTGAL's data for community forest groups in Nepal found that local people were more likely to receive a net income increase from VCM if:

1. They were able to continue using forest products; and
2. They had clear tenure arrangements and use rights (Karky, 2009).

Forestry VCM projects may only be worthwhile if they do not restrict forest product extraction. In some cases, it may not be worth pursing forestry VCM projects when the costs of losing access to such products and services are taken into account.

Sources: see also www.communitycarbonforestry.org
Karky, B. & Skutsch, M. 2009. The Cost of Carbon Abatement Through Community Forest Management in Nepal Himalaya. Ecological Economics, 69 (3). pp. 666-672
Skutsch, M. & S. Solis. 2010. How much carbon does community forest management save? The results of K:TGAL's field measurements. K:TGAL Project.

2.4 What can the forestry VCM deliver?

Table 1: Strengths and drawbacks of the voluntary carbon market

VCM strengths	VCM drawbacks
Flexibility: A variety of approved standards exist, and project developers can choose the standards and methods most appropriate for their situation. **Less rules to comply with:** Easier and faster to register a project and sell carbon credits compared to the compliance carbon market. **Cheaper:** Lower transaction costs.	**Lack of credibility:** Some standards lack credibility, meaning credits may be more difficult to sell. **Greater risk:** Higher potential to fall victim to unreliable buyers or sellers. Enforcement of rules is often weak. **Low price:** Unless associated with a credible standard, VCM carbon credits are worth less than those on the compliance market.

The voluntary carbon market is 'voluntary' because the investors in this market have decided, of their own accord, to pay for carbon credits. They are not legally required by any government or international institution to reduce their carbon emissions. Instead they are motivated by a sense of Corporate Social Responsibility (CSR). This means, in theory, that the voluntary carbon market should have fewer barriers to setting up projects than the compliance market. Table 1 above presents some of the strengths and drawbacks of the Forestry VCM.

The market for forest carbon credits has been steadily increasing over the past ten years. The volume of forest carbon credits traded on the VCM **nearly doubled** between 2008 and 2009 alone[11]. In 2010, forest carbon credits constituted 42 percent of the total volume of carbon credits traded on the VCM. This increase happened during the global economic crisis, a period when the total volume of carbon credits traded over the VCM (not just forestry projects) declined from 127 $MtC0_2e$ to 94 $MtC0_2e$. However, the average price for carbon in 2010 was US$6/ $tC0_2e$, down from US$6.50/ $tC0_2e$ in 2009, while the average price for land-use carbon credits (including forestry) has increased (see Table 2). Figure 5 below illustrates the significant increase in the volume of forestry carbon credits of different types of activities in recent years. The steep rise over the last three years is mainly due to a boom in the number of REDD projects.

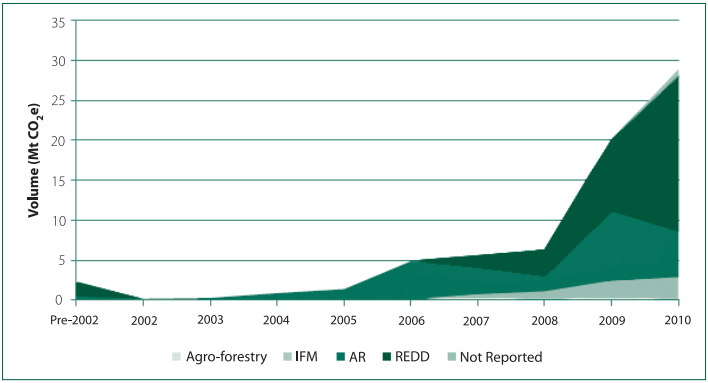


Figure 5: Historical volumes of land-use credits traded by project activity

Source: Forest Trends & Ecosystem Marketplace. State of the Forest Carbon Markets 2011: From Canopy to Currency. September 2011, p. 34

11 Peters-Stanley. 2011. *Back to the Future: State of the Voluntary Carbon Markets 2011.* Forest Trends, Ecosystem Marketplace.

The recent trend of steep growth in credits traded may continue, but some stakeholders are concerned that the VCM in forestry credits might collapse or stall because the deal for a future inter-governmental climate agreement is not expected until about 2020.[12] So it is important to ask why private sector investors are still engaged in this market and what makes forestry projects so interesting (see Box 3).

Box 3: Why would anyone invest in the forestry VCM?

Investors choose forestry VCM projects for many reasons. A 2009 survey of 141 corporate buyers of forestry offsets found that the top reasons for choosing forestry credits were:

- They address two major global problems – deforestation and climate change – at the same time.
- Forestry projects can help to enhance a company's public image, because forested ecosystems provide visually appealing images.
- They result in tangible land-use changes, and have a more visible impact than other kinds of carbon offset projects.
- They appeal to a wide variety of audiences, because they also offer co-benefits, such as biodiversity, conservation, poverty alleviation and human rights advancement.

Individual empowerment: The biggest reason to go for forestry VCM projects?

"The voluntary carbon markets provide individuals — not just corporations and large organizations — with a means of participating in the fight against climate change in a way that the compliance markets do not. In particular, some environmentalists view the voluntary carbon markets as an important tool for educating the

12 See "Forests and Climate Change after Durban: An Asia-Pacific Perspective' (FAO/RECOFTC, 2012)

public about climate change and their potential role in addressing the problem."

Source: "Investing in Forest Carbon: Lessons from the First 20 Years". January 2011, Forest Trends, The Katoomba Group, Ecosystem Marketplace, and Bio-Logical Capital.

The forestry VCM is a diverse and dynamic system that is changing all the time, so it is wise to keep the following points in mind:

Expect the price of carbon to be low, and volatile

The value of a carbon credit changes all the time. It can change based on general trends in the market, but its value also depends on the kind of standard used to certify the carbon credits generated through the project. Forest carbon credits are generally worth less than carbon credits from other kinds of VCM projects, such as renewable energy projects. One reason is because forest carbon that has been sequestered can be re-emitted into the atmosphere, i.e. it has less ***permanence*** (see Glossary).

Project developers should expect the price of carbon to change between the time they begin the project and the time they are ready to start selling carbon credits.

As Table 2 shows, the value of forestry VCM carbon credits has increased recently, while the price paid for energy-based credits has dropped.

Table 2: Average market prices for tCO_2e, 2009-2010

Type of project	2009 Average price (USD)	2010 Average price (USD)
Solar	34	16
Biomass	12	10
Wind	9	9
Improved forest management	7	6
Agroforestry	5	10
Afforestation & reforestation	5	9
Avoided deforestation	3	5

Source: Peters-Stanley. 2011. Back to the Future: State of the Voluntary Carbon Markets 2011. Forest Trends, Ecosystem Marketplace.

Bigger projects do not always mean more carbon credits

The amount of carbon credits generated by a project is not always directly related to the total project area. In fact, it is possible for a small area to generate more carbon credits than a large area. The three most important factors influencing the potential volume of carbon credits from a project are:

1. **The baseline:** What would happen in the business as usual (BAU) scenario? A carbon credit is based on the project results compared with the BAU scenario, or baseline. If the baseline is not significantly different from the project scenario, the amount of carbon benefits is low. If the difference is big, the amount of carbon benefits is large.
2. **Vegetation type:** Some vegetation types store carbon at faster rates than others.

3. **Environmental context:** Other aspects of the local environment that influence forest growth (such as climate, soil, drainage, risk of natural hazards, etc.) also affect carbon sequestration rates. These factors also limit the management strategies that foresters may use, and thus the VCM project types available to a potential project developer.

2.5 Choosing the project type

Forest managers considering the forestry VCM should seek the answers to a number of questions to decide whether the benefits will outweigh the costs. For each of the three main types of forestry VCM project, a different set of questions should be asked.

2.5.1 Afforestation, reforestation & re-vegetation (ARR)

- **Is the size and location of land appropriate?**

  Small areas will have higher start-up costs per unit area and may not be economically feasible unless they are grouped together with other areas under one project (see Box 1 in the Introduction section for an example of a Grouped Project).

- **Is it easily accessible?**

  People and vehicles will need to be able to reach the area. Appropriate road access may reduce costs and simplify operations.

- **How will the forestry activity affect plants and animals in the area?**

  Keep the impact on biodiversity in mind. In order to be verified for the VCM, a forestry VCM project must prove that negative impacts are minimized and are properly addressed.

- **What equipment and services will be needed?**

  Think about what equipment will be needed for planting, cultivating and managing the project area and how to acquire it.

- **What goods and services will need to be provided by the project area, to meet the needs of local people and other stakeholders?**

  Assess the needs of local people for forest products and services and the potential of the project area to deliver them.

Box 4: ARR case study: CO_2OL biodiversity reforestation Kon Tum, Viet Nam

This project aims to re-create a mixed species native forest on 1 500 ha of remote uplands in the Central Highlands of Viet Nam; an area which suffered severe ecological damage during conflict in the 1960s and 70s. Because the area has been classified as forest within the last fifty years, the project is classified as reforestation, not afforestation.

Planting began in 2009, creating about fifty jobs for the local community. The plantations will be managed purely for conservation, not for commercial production, and will serve important environmental functions as biodiversity corridors and watershed protection.

CO_2OL is a German company that manages the project in partnership with the local State Forest Enterprise (SFE). Technical support is

provided by German International Cooperation (GIZ) and the project is registered under the CarbonFix Standard. The project is expected to sequester about 400 000 tCO_2e over about thirty years.

The land is wholly owned by the SFE, which allows the project clarity over rights and tenure, crucial to generating carbon credits under the VCM. However, with local involvement limited to part-time, seasonal employment, the project may require quite intensive oversight by the SFE and their German partners. Depending entirely on the sale of carbon credits to finance project management entails a financial risk. ARR projects that can also generate income from other forest products or services are more stable in the long term.

For more information, visit the Viet Nam country page at www.theredddesk.org and download the project brochure from www.carbonfix.info/COB

2.5.2 Improved forest management (IFM)

- **Are the current forest management practices unsustainable?**

  If there are transparent and reliable records of forest management activities, and regular forest inventories, this will be quite easy to answer. However, the absence of such records, in itself, is an indicator of unsustainable practice.

- **In what way are they unsustainable?**

  It is essential that a manager is able to readily identify what current practices are unsustainable, in order to identify potential improvements.

- **Can these management activities be improved?**
  - Change the current logging practices that lead to degradation
  - Improve roads and extraction routes
  - Change how trees are managed and harvested
  - Conserve (more) areas of natural authenticity and protect biodiversity
  - Reduce the impact of logging on the forest environment

- **What will the improvement of the forest management yield?**
  - In terms of carbon
  - In terms of co-benefits

Box 5: IFM case study: INFAPRO, Rehabilitation of logged-over Dipterocarp forest Sabah, Malaysia

This project is taking place in an area of 25 000 ha of native forest which was heavily logged in the 1970s and 80s. Even 30 years after logging operations ceased, the forest has hardly recovered because no thought was given to this during harvesting operations. The Yayasan Sabah Foundation, together with the Dutch company FACE the Future, has therefore started an IFM project which takes the area out of production and implements management techniques designed to restore the mature native forest ecosystem.

INFAPRO is the first IFM project in the world to be registered under the Verified Carbon Standards (VCS). The project has been in operation since 1992, but has only recently registered under the VCS so that it can finance ongoing operations through the VCM. The methodology is based around enrichment planting of indigenous dipterocarps and fast-growing pioneers to kick-start ecosystem recovery and achieve quick gains in biomass. Extensive planting of native fruit trees is also an important aspect of the project, to encourage native animals, including orang-utans, to move back into the area. The project is located next to the Danum Valley Conservation Area, an important biodiversity hotspot in Borneo.

Yayasan Sabah Foundation is the holder of the logging concession in the project area, and therefore has the right to benefit financially from the VCM project. There are no significant conflicts over the project's impacts or benefits because the population density is very low. The project managers expect a total of 1 million tCO_2e net emission reductions over the thirty-year lifetime of the project, of which 660 000 have already been credited.

IFM projects in Sabah may in the future involve reduced impact logging (RIL) methods, in areas that are still under productive management. The environmental impacts of RIL methods are more complex than rehabilitation. INFAPRO is a relatively low-risk project, suitable for testing the new IFM methods under the VCM.

For more information, visit www.face-thefuture.com.

2.5.3 Reducing emissions from deforestation and forest degradation (REDD)

- **Who and what is causing the deforestation or degradation?**

  The agents or drivers of deforestation and degradation must be clearly identified before strategies to address those drivers can be elaborated.

- **How will the ongoing deforestation and degradation affect local livelihoods and traditional activities?**

  If forest loss and degradation continues, it will have impacts on local livelihoods, some of which will be positive and some negative. Analyse these impacts before deciding on whether a REDD project will be beneficial for local communities.

- **Will a REDD forestry project be able to stop the deforestation or degradation?**

  Some drivers can be readily addressed, while others have complex root causes and it will therefore be difficult to predict the impact of particular activities. Be realistic about what can be achieved through a REDD project.

- **Will the activities really be avoided or will they simply move to another area?**

  Leakage is a particularly important issue for REDD projects.

Box 6: REDD case study: Umiam sub-watershed REDD project Meghalaya, India

This project builds on six years of support by Community Forestry International (CFI) and the U.S. Agency for International Development (USAID) to the communities in the traditional kingdom of Mawphlang in the East Khasi Hills of Northeast India, one of the wettest places on Earth.

CFI has been working with the Khasi indigenous communities to build the capacity of their traditional institutions to manage their forest resources both for sustainable production and for environmental services. The communities identified four key activities which they need to implement in order to reduce degradation of the forest environment: fire control, controlled grazing, sustainable fuelwood collection, and controlled quarrying. They drew up a contract among themselves, witnessed by CFI, committing to implement these activities, provided that CFI and the Indian government assist them in securing financial and technical assistance.

This contract then formed the basis of a Project Idea Note (PIN) submitted to Plan Vivo Foundation in May 2011, which was approved in July, becoming the first REDD project in India. The emission

reductions generated through community-based forest management on 8 349 ha, specifically the four activities identified, will save over 400 000 tCO_2e over a thirty-year period. The sale of the carbon credits, verified according to Plan Vivo Standards, will cover the opportunity costs and implementation costs of the project for the communities involved. The communities thus receive the finance that they need to implement the activities that they identified themselves. Any surplus resources can be spent on general community development activities.

The Plan Vivo Standards are known for their particular attention to social safeguards, and can thus command premium prices for carbon credits on the VCM. About 95 percent of the land in the project area is officially community forest land under the direct ownership and control of the indigenous Khasi peoples, so all benefits of the project will accrue directly to them.

The project is first and foremost a community forestry and livelihoods security venture, with REDD carbon credits as a means of financing these objectives. However, the existing carbon stocks (and the baseline for emission reductions) have not yet been accurately calculated, so the true income-generating potential of the project through the VCM is unclear.

For more information, visit www.planvivo.org and download the Project Idea Note.

Some of the answers to the above questions will be clear-cut, and starting a project will evidently be beneficial. However, if the answer to one or more of the questions is “It depends…”, then a more in-depth understanding of the various standards comes into play. The carbon standards that have emerged as the leading tools for project certification in the forestry VCM are discussed in section 2.7.

2.6 Social and environmental co-benefits

A forestry VCM project may bring long-term social and environmental benefits to the project area and the local stakeholders. It may also undermine existing benefits unless appropriate safeguards are followed. Compared to the potential financial benefits of a forestry VCM project, these social and environmental co-benefits may be even more significant, for the following reasons:

1. More reliable, less risk

The value of carbon credits depends on finding a buyer in the VCM. However, social and environmental co-benefits do not depend on market conditions. A well-designed and well-executed project may have difficulty selling carbon credits if the market is unfavorable, but it will still yield co-benefits. Having said that, without carbon finance, the project may not be feasible.

2. No verification required

Unlike carbon credits, which need to be verified according to agreed standards and methods before they can be sold, most co-benefits can be enjoyed directly, without the need to prove their existence through the VCM.

3. Greater long-term value

If a forestry VCM project yields environmental benefits such as improved watershed protection and stable soils, local people may benefit from improved crop productivity and income stability, with more sustainable long-term benefits to local livelihoods than the income from carbon credits.

2.6.1 Environmental benefits

Losing forests means losing environmental services. A damaged forest will not be able to support the following essential functions:

- Watershed protection and improved water quality;
- Biodiversity conservation;
- Nutrient cycling;
- Soil conservation and stabilization;
- Reducing the risk of natural disasters;
- Protecting coastal areas; and
- Creating habitats for wildlife and plants.

Climate change will affect many of these functions with potentially devastating impacts on the environment, and the lives and livelihoods of people who depend on forests.

All of these ecosystem functions are important for a wide range of people, not just to those who manage the forests that provide them. In recognition of this, interest in Payment for Ecosystem Services (PES) is growing. PES schemes depend on finding people or organizations that are willing to pay, on a regular basis, for receiving these services. It is also challenging for PES schemes to succeed in delivering financial benefits to (the right) local forest managers and communities. The forestry VCM is essentially a form of PES – in which the ecosystem service is climate change mitigation – and the experiences of existing PES schemes hold valuable lessons for the forestry VCM. In the not too distant future it may become possible to 'bundle' several ecosystem and environmental services together (such as climate change mitigation, biodiversity conservation and watershed management, for example) where appropriate. This would also reduce the risk of double accounting – where two or more PES schemes overlap on the same area.

2.6.2 Social benefits

Forestry VCM projects may well result in enhanced livelihoods, as a result of both income from carbon credits, and diversification of income sources through improved environmental conditions, as noted above. However, certain social conditions regarding rights, governance and benefits need to be in place for a forestry VCM project to succeed. The process of meeting these conditions may yield additional non-monetary benefits for local people, such as:

- Clarifying land tenure and access rights. Forestry VCM projects need maps and clarification of boundaries in order to accurately account for carbon and determine what laws and policies govern the project area. This can help clarify outstanding tenure disputes for rural communities who lack legal tenure but are instrumental in managing and maintaining the forest area. The emerging issue of 'carbon rights' will bring these rights issues into sharper focus. See box 7 below.
- Gaining new knowledge and training in new skills. Local forest managers may have opportunities to receive training in carbon accounting methods, including forest mapping, forest inventory and plot sampling, GPS usage, and computer-based skills like remote sensing, GIS, and interpreting aerial images.
- Building local participation and democratic processes. No project can take place without widespread consultation of multiple stakeholders. Creating a venue for participation can enhance transparency and social equity.
- Receiving global recognition as responsible forest managers. Undertaking a successful forestry VCM project provides proof that the project developers, staff, and local partners are capable forest managers. This can be used to leverage funds for other projects from other companies and international donors.

Box 7: Carbon rights

Carbon rights have become a key cause of concern for many of the civil society organizations that follow the development of forest carbon projects.

Very few countries have attempted to define what is meant by a 'right to carbon', nor what benefits such rights give to the right-holder. In Australia and New Zealand, it is understood as a new form of *property right*. **The carbon in forests is therefore seen as a commodity that can be traded separately from the forest itself.**

This only really makes sense where a forest is clearly and legally owned by a single party, who can divide up the property in whatever manner they like. But in most of the Asia-Pacific region, where forest use rights, if not forest tenure, are traditionally held in common, **treating carbon as a separate property is at best confusing and at worst a source of misunderstanding and conflict.**

If carbon rights cannot be considered separately from the forest as a whole, project developers for the VCM should instead turn directly to forest use rights and ownership. 'Carbon rights' derive directly from existing traditional and legal forest use rights. VCM projects must resolve any outstanding disputes over these use rights before proceeding with the project.

The holder of a 'carbon right' has the right to benefit financially from the trade in environmental services, where the service is climate change mitigation, and the unit of trade is a carbon credit.

For more information, see REDD-net Asia-Pacific Bulletin 3: Carbon Rights and REDD+ available from http://redd-net.org/resource-library/

2.7 Forest carbon market standards

Compliance versus voluntary market

In terms of carbon markets, as stated before, there are basically two markets: the compliance (or regulated) market and the voluntary market. Among environmental services, carbon is unique in having a regulated market at the global level. There is no equivalent (yet!) for watershed services, biodiversity conservation or any other class of environmental service.

2.7.1 Compliance market

The only scheme under the compliance market for forestry projects in developing countries is the **Clean Development Mechanism (CDM)** under the Kyoto Protocol (KP) to the UNFCCC. The CDM only accepts A/R project activities: afforestation and reforestation, not IFM or REDD projects. Under the CDM, if an area has not been covered by forest for fifty years or more, the relevant activity is afforestation; if the forest was covered by forest in the last fifty years, but was deforested before 1990, the activity is called reforestation.

Two aspects are important here: the cut-off date of 1990 and the term 'forest'. The 1990 rule disqualifies many areas from A/R CDM because in many cases, particularly in the tropics, deforestation has occurred since that date. None of these areas can be used to generate carbon credits under the CDM.

The term 'forest' is also important. Most land has some kind of vegetation. Whether or not this vegetation is called forest (and whether or not it is therefore eligible for A/R CDM) depends on how a forest is defined. The countries that negotiated the agreement under the KP decided to use three parameters for this definition:

1. tree height;
2. crown cover; and
3. area.

For each of these parameters a range was determined within which each individual country was allowed to choose a value. These three values, chosen by the country, together determine when vegetation qualifies as forest. The ranges from which a country can select a value are as follows:

1. Tree height: between 2 and 5 metres at maturity (so, a specimen of a particular species must have the capacity to grow to that potential height at maturity);
2. Crown cover: between 10 and 30 percent (the proportion of ground obscured by foliage, when viewed from above, as a percentage of total area); and
3. Area of forest: between 0.05 and 1 hectare.

Each country can have its own set of parameter values, but they are known to the UNFCCC and can be accessed from the CDM website at http://cdm.unfccc.int/DNA/index.html. Any CDM project in the country must use the national definition.

Where countries have not made a choice on their forest parameters, the designated national authority (DNA) of a country, which approves all CDM projects, may require project developers to use any internationally acceptable definition for a forest (see Box 8).

Box 8: FAO forest definition

Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 ha. The trees should be able to reach a minimum height of 5 m at maturity ***in situ***. The area may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground; or open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent. Young natural stands and all plantations established for forestry purposes which have yet to reach a crown density of 10 percent or tree height of 5 m are considered forests, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention or natural causes, but which are expected to revert to forest.

Includes: forest nurseries and seed orchards that constitute an integral part of the forest; forest roads, cleared tracts, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest; windbreaks and shelterbelts of trees with an area of more than 0.5 ha and width of more than 20 m; plantations primarily used for forestry purposes, including rubberwood plantations and cork oak stands.

Excludes: Land predominantly used for agricultural practices

Source: FAO http://www.fao.org/docrep/006/ad665e/ad665e06.htm

2.7.2 Voluntary market

The voluntary market has multiple standards to choose from. Professional help and advice may be needed to learn about the various standards of

the VCM, and decide which ones apply best to each specific situation. **The Verified Carbon Standard (VCS) and the Climate, Community, and Biodiversity (CCB) standards are the standards most often used for forestry and land-use projects.**

The VCS was the standard of choice for most forestry VCM projects in 2010, accounting for a projected volume of 15.6 MtCO2e of carbon credits, which was more than half of the total volume that project developers committed to deliver that year. Furthermore, 25 projects reported using the CCB Standards in 2010, covering well over half of that year's total market volume (see Figures 6 and 7).

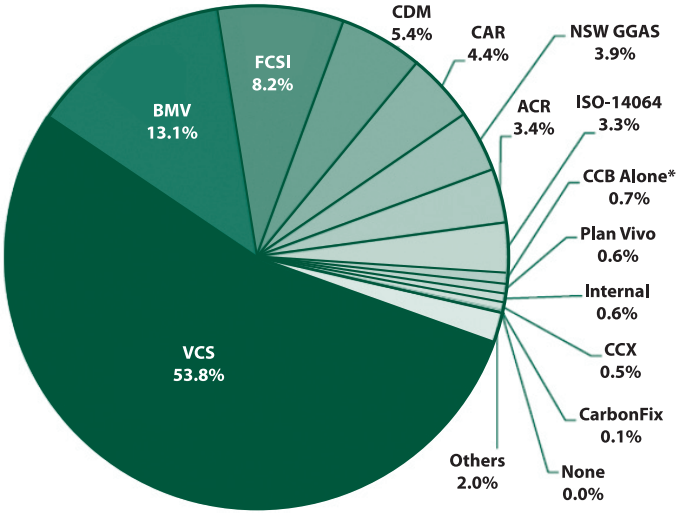


Figure 6: Verification standards market share 2010

Note: Projects must be verified under a carbon quantification standard in order to be issues verified offset credits.

*Several projects reported contracting offsets and only applying the CCB Standards. CCB certification alone will not result in credit issuance. The label "CCB Alone" is solely intended to distinguish these transactions from those that have applied no standards at all.

Source: Ecosystem Maketplace

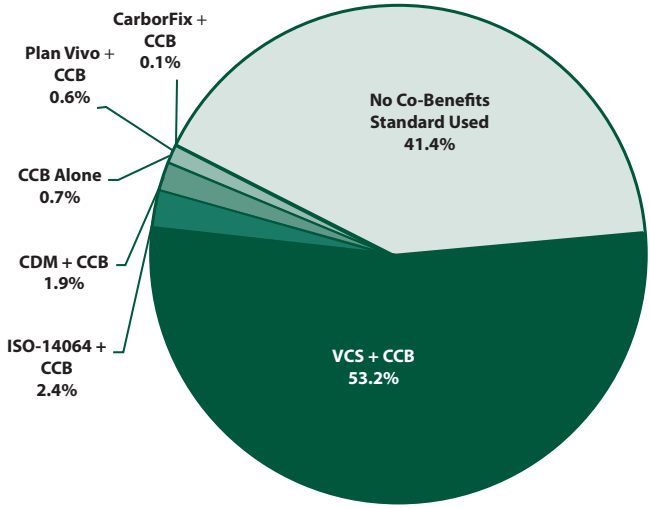


Figure 7: CCB standards market share 2010[13]

Note: Projects must be verified under a carbon quantification standard in order to be issued verified offset credits.

Source: Ecosystem Maketplace

The requirements for forestry VCM project developers may differ depending on the standard they follow, but the goal is ultimately the same: the standards ensure that carbon credits or verified emission reductions (VERs) are **'real, additional, measurable, permanent, independently verified, and unique'**. Each standard has its own methodological approach, but they all determine and quantify the baseline, net emissions of the project againt this baseline, and leakage.

Some standards do not accept all types of activities; however, they do all limit project eligibility according to the three core tests of both the voluntary and compliance carbon markets:

13 Source: "State of the Forest Carbon Markets 2011; from Canopy to Currency" http://www.forest-trends.org/~foresttr/publication_details.php?publicationID=2975

1. Additionality

The forestry VCM does not reward activities that have already started or have already been planned. The test of additionality is satisfied if these activities, and the resulting emission reductions, will ***only happen*** as a result of participation in the forestry VCM. There are tools available to test the additionality of a project, for instance on http://cdmrulebook.org/658.

2. Leakage

A forestry VCM project must demonstrate that it has minimized leakage, and has accurately quantified any leakage that does occur. Leakage may cancel out the benefits from a forestry VCM project, or even result in a net increase in emissions. In this case, a project cannot be credited, even if the source of leakage is beyond the direct control of the project manager.

3. Permanence

Carbon stored in forests can be released again. This has always been a great concern for negotiators under the KP. Under the CDM, this issue was addressed by issuing credits that have a validity of only five years, after which they expire and the project must go through a verification process again. The VCS, by contrast, uses a 'buffer tool', whereby credits that are at risk due to permanence-related issues, are placed in a buffer and cannot be traded. As time moves on, and as risks do not occur, credits are released from the buffer and can be sold.

Guidance for the VCS buffer tool is available at: http://www.v-c-s.org/sites/v-c-s.org/files/AFOLU%20Non-Permanence%20Risk%20Tool%2C%20v3.1.pdf

2.8 Choosing the right forestry VCM standard

The decision on whether or not to engage in the carbon market depends on the answers to many questions, as outlined in section 2.5. But once this decision has been made, and the appropriate type of project has been confirmed, the next question is: which forestry VCM standard should a forest manager choose?

There are four main standards currently used by forestry VCM project developers in order to advertise their credibility to investors. They have varying levels of stringency and some focus more on social and environmental co-benefits, while others concentrate on accuracy of carbon accounting.

This section explains more about the four main standards in the VCM:

- Verified Carbon Standard (VCS);
- Climate, Community and Biodiversity (CCB) Standard;
- Carbon Fix; and
- Plan Vivo.

2.8.1 VCS – verified carbon standard

The Verified Carbon Standard (VCS) is the most commonly used system in the VCM for ensuring accurate calculation of GHG emission reductions. It is already used by more than 600 projects worldwide.[14] Forestry projects only make up a small percentage of the total number, but their share is growing all the time.

14 VCS Project Database. Project and VCU Summary (Available at http://.vcsprojectdatabase.org/)

The VCS currently has about fifteen approved methodologies for measuring GHG emission reductions from 'Agriculture, Forestry and Other Land Use' (AFOLU) projects. Project developers can choose the methodologies most appropriate to them, for different types of project under the categories of ARR, REDD, IFM and more.[15] The system also lets project developers propose and develop new methodologies if the existing ones do not meet their needs.

The VCS system makes sure that all projects meet a high standard of quality; all project plans must be validated by an independent third party. An organization that has no stake in the success of the project checks that the plans make sense – and confirms that the project should achieve its objectives.

When the time comes for a VCS project to claim its carbon credits, the project manager's own calculations of actual emission reductions must also be verified by an independent third party. This organization (again, with no stake in the success of the project) checks that the project manager has done the calculations correctly and confirms how many carbon credits it can claim.

These independent third parties are known as validation/verification bodies (VVBs). They must be approved by the VCS and be properly qualified to carry out these tasks.

When GHG emission reductions have been verified, the project manager can request the VCS to issue carbon credits. In the VCS system, carbon credits are known as verified carbon units (VCUs), and whenever they are traded as carbon offsets on the VCM they are tracked through a registry system.

VCUs can be linked with other standards such as the Climate, Community and Biodiversity (CCB) Standard. Investors in the VCM like this, because it gives them extra assurance that the carbon credits have delivered

15 http://www.v-c-s.org/methodologies/find-a-methodology?title=&tid=14

environmental and social co-benefits. They may pay more for VCUs which achieve this double standard, than for those which are VCS only.

Grouped projects are an option for project developers working with an area that is too small to result in enough net GHG emission reductions to be sold as carbon credits (see Box 1). Several activities, in different areas and at different times, can be brought together to lower the transaction costs. Grouped projects can bring managers of small forest areas together in order to share the start-up and certification costs through the formation of project cooperatives.[16]

Because the VCS is currently the leading standard in the VCM, it will be used as a source of examples throughout these Guidelines.

2.8.2 Climate, community and biodiversity (CCB) standard

The CCBA[17] is a partnership of research institutions, corporations and NGOs. It was formed to develop and promote rigorous standards for evaluation of land-based carbon projects. The CCB Standard has been developed to help in the design of land management projects that simultaneously mitigate climate change, support sustainable development and conserve biodiversity. The CCB Standard does not verify emission reductions; it must be used in conjunction with the CDM, VCS or other carbon accounting standards.

As of May 2011, a total of 37 projects have completed validation, 14 projects have initiated the validation process, and two projects have achieved verification. Of these 51 projects, 41 are in developing countries.

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16 Full guidance for grouped projects can be found in the VCS Version 3. See Section 3.4 of: VCS. 2011. *VCS Standard: VCS Version 3*. (Available at http://www.v-c-s.org/sites/v-c-s.org/files/VCS%20Standard%2C%20v3.1.pdf)

17 More information provided at CCBA web site: www.climate-standards.org

At least 100 projects are planning to use the standards, representing over 9 million ha of protected areas and over 450 000 ha of native forest restoration with total estimated annual emissions reductions of over 17 million tons. Figure 8 shows the geographic distribution of projects using the CCB Standard (source: CCB Standards factsheet from http://www.climate-standards.org/).

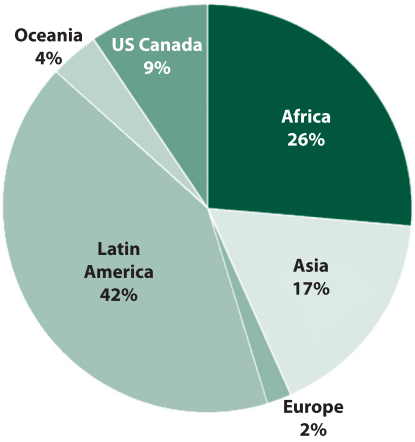


Figure 8: Geographic distribution of projects using the CCB Standard

The CCB Standard has become a requirement demanded by many brokers and investors in the forestry VCM. A recent survey confirmed that quality standards and multiple benefits are very important for buyers of forest carbon credits (see Box 3). The CCB Standard was rated the most 'highly desirable' standard by 67 percent of respondents globally and 79 percent of VCM investors in Europe would be willing to pay a premium of at least one dollar per ton for carbon credits which have CCB verification in addition to a carbon accounting standard. These results indicate that VCM investors are indeed sensitive to the social and environmental risks and opportunities of forest carbon projects.

The CCB Standard comprises 5 sections, four of which contain mandatory requirements and one optional section. The first section covers general project design issues. This is followed by three sections devoted, in turn, to climate, community and biodiversity issues. The 5th and optional section gives project developers the opportunity to achieve a Gold CCB Standard.

Procedures

The CCBA itself does not conduct certification against the CCB Standard; a third-party evaluator has to determine if individual criteria have been satisfied. A project validated as meeting the CCB Standard will be awarded a statement of compliance that is valid for five years. After this period, in order to maintain CCB certification, the project proponent must demonstrate that the project has been implemented in accordance with its original design.

During this on-site verification, which may be carried out by the original auditor or a new VVB, the project proponent must demonstrate that the project continues to yield net positive climate, community and biodiversity benefits compared to the business as usual (BAU) scenario, taking both on-site and off-site impacts into consideration.

Pros and cons

A key advantage of the CCB Standard is that, once obtained, it provides investors and other interested parties, such as NGOs and local communities, with assurance that this project is not only mitigating climate change, but also meets stringent social and environmental requirements. According to the CCBA itself, projects using the CCB Standard are unlikely to become mired in controversy; projects which deliver multiple benefits also generate valuable goodwill.

The disadvantage of the CCB Standard is that it does not certify the quantity of carbon credits that are generated by the project. Combination with a carbon accounting standard remains necessary, which can lead to increased work load, and therefore increased costs, for the project developer.

2.8.3 CarbonFix standard

This standard[18], which emphasizes sustainable forest management, is for afforestation and reforestation (A/R) activities only, and is not applicable for IFM or REDD. CarbonFix deals with projects located anywhere in the world, and supports projects with demonstrated commitment to social and economic responsibility. CarbonFix aims to deliver real and traceable certification for carbon credits entering the forestry VCM, but uses companies accredited by the CDM, VCS or Accreditation Services International (ASI) to verify the carbon claims of the project:

The CarbonFix Standard (CFS) is an initiative supported by organizations which aim to promote the development of A/R projects. The CFS is administered by CarbonFix, a non-profit association based in Germany, which developed the Standard in 2007 in cooperation with experts in the fields of forestry, climate change and development aid. The organization itself was founded in 1999, to follow the UNFCCC negotiations and promote the potential of A/R projects for climate change mitigation through the VCM.

CFS also offers the option to register emission reductions that are likely to be accrued by the project in the future. Those credits are recognizable in their registry with an identifier. CFS helps project proponents to invite investors to acquire 'futures' in the project, before the emission reductions have been achieved.

18 See www.carbonfix.info for more information

Structure-wise, the CarbonFix Standard consists of three parts: Terms; Criteria & Methodology; and Procedures. The core of the standard is the requirements described under the Criteria & Methodology. This section lists the criteria that a project has to meet to become certified, including the characteristics of the land where tree planting can take place.

The CFS provides criteria which ensure that the projects provide for social and ecological benefits. The bottom line is that projects must illustrate benefits to the community, apart from the reduced emissions. These should range from job creation, to water, soil stability and biodiversity protection.

Pros and cons

A positive aspect of the CFS is that its documentation and calculation processes are simplified, while its methodology is quite short and includes all parameters of the A/R CDM framework (CO_2-fixation, baseline development, leakage and emissions calculation) as well as the selection of carbon pools. It encourages dual certification with the CCB Standard or the Forest Stewardship Council (FSC). Additionally, the documentation provides assistance and templates for each section of the methodology, which is a great benefit for smallholders and community groups. However, not all types of A/R projects are accepted by CarbonFix. For example, afforestation on wetlands, agricultural land, and permafrost are all non-certifiable.

Procedures

To become registered under CFS, the project developer has to register at the CFS website and download the templates. These documents will guide the project developer through every step of the standard, thus making the CFS quite user friendly.

The templates will be uploaded on completion, including calculations of actual and projected carbon stocks, maps (including GPS coordinates), additional photos from the field and other background data.

After uploading all necessary information the project developer can request for validation online, which is conducted by the technical board of CarbonFix. Upon successful validation the project can apply for the verification process, which is carried out by an accredited third party.

The frequency of the field verification process can vary from two to five years, depending on the duration of the project.

2.8.4 Plan Vivo systems and standards

Plan Vivo is a Scottish registered charity and represents a system for developing community-based PES projects and programmes. Plan Vivo is an ethical standard and system that "puts people at the heart of the solution."[19]

Plan Vivo projects and programmes aim to:

1. Empower communities to take control of their resources through better land management;
2. Reduce poverty and improve rural livelihoods and food security;
3. Generate long term, verifiable carbon services backed up by a shared carbon buffer; and
4. Enhance ecosystem services such as biodiversity and watersheds by planting and protecting natural forests.

To date, Plan Vivo has issued certificates covering over 1 million tCO_2e.

19 www.planvivo.org

Certified projects cover over 5 000 smallholders and community groups, a total of 22 771 ha and have resulted in over USD 5 million of funds being channeled to the forest owners.

Forest managers may consider using Plan Vivo when they operate in developing countries to promote sustainable rural livelihoods; plan to work with small-scale producers to deliver ecosystem services, specifically long-term carbon sequestration; and wish to promote the protection and/or planting of native tree species.

According to Plan Vivo, land-use change initiatives will only succeed and have permanent impacts where they meet local needs. The Plan Vivo System ensures livelihood needs are built into the project design, and that local income sources are diversified to reduce poverty and tackle the root causes of deforestation and degradation. Supporters of the projects can be confident that funds will reach the grassroots level. Projects are monitored to check that an equitable proportion of project finance reaches communities, and that funds being held in trust are secure.

The Plan Vivo System and Standard are designed to be simple where possible, in order to ensure that they are accessible to developing country organizations. It is important for the system to achieve a balance between robust technical requirements and flexible, minimum standards that ensure projects can improve as they develop and scale-up. Plan Vivo projects also promote the restoration of native ecosystems, improve biodiversity and protect watersheds.

Procedures

The steps towards accreditation under Plan Vivo are as follows:

1. Submit the Project Idea Note (PIN) to the Plan Vivo organization for review. The PIN defines the main elements of a proposed project and how it will contribute to sustainable livelihoods.

2. Submission of technical specifications for peer review: The carbon benefits of each Plan Vivo project are calculated using technical specifications (see chapter 3 in the standard at http://www.planvivo.org/documents/standards.pdf. The Plan Vivo Foundation coordinates peer reviews of technical specifications through its Technical Advisory Panel).

3. Submission of Project Design Document (PDD) and request for field visit. Projects compile information on the project area and location, participants, activities and other information using the Plan Vivo PDD template.

4. Validation – field visit. To become registered as a Plan Vivo project, a project is visited and assessed to ensure it is implementing systems according to its approved documents and the requirements of the Plan Vivo Standard.

5. Registration. Following approval of technical specifications and approval of the project by the reviewer, projects are entered into the Plan Vivo Projects Register. Once registered, projects can enter into sales contracts with purchasers for Plan Vivo Certificates.

Pros and cons

This standard is specifically geared towards communities. In contrast to the CCB Standard, Plan Vivo does offer an entire package, including carbon certificates.

The main drawback is that it is a long process. In addition, it is not as robust as VCS or CDM in terms of quantifying carbon benefits. It is more geared towards community and biodiversity benefits.

2.9 Comparing standards of the forestry VCM

Not all project types are eligible under all standards. Table 3 indicates which standards accept which project type.

Ex-ante refers to an estimate of carbon credits that will be accrued by the project in future. **Ex-post** means that carbon credits are only certified once they have been accrued.

In practice this means that the CarbonFix standard registers carbon credits that have not yet materialized. The advantage of this is that potential investors have assurance from the standard that these carbon credits will eventually be accrued. The credits have a specific identifier attached to their serial number that identifies them as 'futures'. These are carbon benefits that may occur in future if the project is implemented according to the validated Project Description.

Table 4 shows the numbers and types of projects that have been certified against the various standards.

Table 3: Comparative 'use' breakdown of forestry VCM standards.[20]

Standard	Afforestation/ reforestation	IFM	Agroforestry	REDD	Carbon credits
CDM	Yes	No	Yes*	No	Ex-post
VCS	Yes	Yes	Yes	Yes	Ex-post
CarbonFix	Yes	No	Yes*	No	Ex-ante and Ex-post
CCBS	Yes	Yes	Yes	Yes	N/A**
Plan Vivo	Yes	Yes	Yes	Yes	Ex-post

* Under certain conditions; only if it also qualifies as afforestation or reforestation
** The CCB Standard does not certify carbon credits

Table 4: Forestry VCM projects registered with the main standards[21]

Standard	Number of forest carbon projects	Number of ARR projects	Number of IFM projects	Number of REDD projects	Combination projects
CDM	37	37	-	-	-
VCS[22]	22	13	5	4	-
CCBS[23]	69	30	9	18	12
Carbon Fix	9[24]	9	-	-	-
Plan Vivo	15	5	-	3	7

20 FAO. 2010. *First Regional Workshop: Setting the Foundation. Linking Communities in Southeast Asia to Forest Voluntary Carbon Markets.* Chiang Mai, Thailand (Available at http://www.carbon2markets.org/uploads/news/FAO_RAP_Agenda_Chiang_Mai_Sept_2010.pdf)

21 As of 18th March 2012

22 VCS Project Database. List of AFOLU Projects. (Accessed January 15, 2012).

23 CCBA. 2011. CCBA Fact Sheet.(Available at https://s3.amazonaws.com/CCBA/CCBStandards_FactSheet.pdf)

24 Carbon Fix Standard. Projects. (Available at http://www.carbonfix.info/Project.html)

3

Getting started

Chapter 3: Getting started

This chapter takes the reader through the early decision-making processes that are needed before any practical steps can be taken towards implementing a forestry VCM project.

This chapter's objectives are to:

- Provide a sample feasibility assessment for potential project developers, which will also identify problem areas that need to be addressed;
- Describe the roles and responsibilities of the different stakeholders that will be involved and the specialists that will be needed to build a project team;
- List the types of information that project developers should try to collect upfront to help with decision-making and project design, such as forest inventory data and land tenure information.

3.1 Feasibility assessment: checklist for forestry VCM projects[25]

Quite apart from the practical possibilities of changing forest management practices and sequestering carbon, there are many other factors which a project developer must consider before deciding that developing a

25 Adopted from: Investing in Forest Carbon: Lessons from the First twenty Years, The Katoomba Group, Ecosystem Marketplace and Forest Trends with input and support from Bio-Logical Capital, January 2011

forestry VCM project is a viable option. Project developers must take stock of the resources available, determine the costs of the project, and identify the risks and challenges likely to arise. Such questions can be answered by conducting a feasibility assessment, taking account of the local circumstances using, for example, the following criteria.

3.1.1 Site screening

A potential forestry VCM project developer should ask the following questions about the area being considered:

☐	Does the area have a high population density?
☐	Is the land tenure situation insecure (either *de jure* or *de facto)*?
☐	Is the area too small to provide food for the land owners through subsistence farming?
☐	Is there a recent history of declining agricultural yields due to land degradation and/or soil loss?
☐	Is there a lack of cohesion or coordination among community members, making negotiation processes complicated?
☐	Are education levels unusually low?
☐	Is there a low rate of employment and few formal job opportunities?

☐	Is the area subject to ongoing in-migration, driving up pressure on natural resources?
☐	Does fuelwood demand for domestic use contribute to pressure on forest ecosystems?
☐	Is the community openly opposed to carbon trading and/or specific investors?
☐	Are there any active land disputes?
☐	Is there a history of local government corruption?
☐	Is there a history of illegal logging?

On government-owned lands:

☐	Is there a history of encroachment/illegal settlement on public land?
☐	Are farmers operating on government land *without* recognized long-term land-use rights?

The more questions to which the answer is “yes”, the more challenging it will be to successfully implement a forestry VCM project. It is important to remember that the determining factor of a VCM project is the generation of carbon credits. While it is all but certain that some of the issues on the checklist above will arise, and indeed help give the project additionality, if a developer has to address too many of them at once the generation of carbon credits may be at risk. The result of the site screening checklist, therefore, may be used to indicate the following course of action:

a) 1-5 ticks: The site will probably not be a limiting factor for project success.

b) 6-9 ticks: Site may be a limiting factor; pay particular attention to the costs of addressing all these issues through project implementation.

c) 10-15 ticks: The site is likely to be a serious limiting factor on project success, in terms of cost and practical feasibility. Project developers should seriously consider alternative strategies for addressing these issues, such as conventional development aid for forest conservation and rural livelihoods, either instead of or in parallel with a forestry VCM project.

3.1.2 Technical prospects

The next aspect to assess is related to technical issues, whether the areas being considered (or the stakeholders involved) have any of the following attributes:

☐	Is there a low risk of natural disaster, such as drought, flooding and pests/diseases?
☐	Is there local experience of the type of forestry activities under consideration?
☐	Are there accurate data on tree growth rates and other key biological data for the tree species that will be involved in the project?
☐	Are key materials and inputs freely available in sufficient quantity and of sufficient quality (for instance, seedlings of the appropriate species)?

☐	Do the land owners have the ability to generate project documentation and to manage funds?
☐	Has a methodology for quantifying the carbon benefits of the project area been approved for the standard that you wish to use, and is that methodology applicable for the project currently being considered?
☐	Is there the potential to verify the project's emissions reductions and/or removals?
☐	Do the involved stakeholders have the ability to monitor the project implementation and carbon benefits that are being accrued, and can they access remote sensing data?

If the answer to many of these questions is 'NO', project developers must be prepared to invest for the long-term and to train and build capacity for locals as well as affiliated organizations, in order to undertake key tasks needed for proper project implementation and management.

3.1.3 National policy context

In some countries, the national or local government have their own ideas on forestry VCM projects. It is therefore good practice to assess whether the government has clear and supportive policies related to:

☐	Forest carbon transactions, including foreign ownership of carbon credits generated domestically, and rules governing the rights and benefit distribution between central, local/district government and the communities
☐	Carbon rights
☐	Timber rights

☐	Land ownership rights/land tenure
☐	National taxes on carbon transactions
☐	Contract law

If the government does NOT have clear and supportive policies regarding the above, the policy context may not be conducive to implementing a forestry VCM project. Likewise, if there is significant political instability, then investors may be unwilling to accept the risks of supporting projects in the country. To ascertain whether such risks are manageable, additional questions may be asked, including:

☐	Do government officials have sufficient authority, and technical capability, to promptly clarify legal and policy questions relating to carbon transactions?
☐	Is the current government inclined to provide such clarity?
☐	Is current (and likely future) policy and legislation on environmental services and/or the role of forests conducive to the development of forestry VCM projects?

Depending on the answers to these questions, the risk of national policy and legislation undermining the viability of the project may be either acceptable or unacceptable to investors.

3.1.4 On-the-ground partners

A forestry VCM project cannot be implemented successfully without reliable local partners. It is therefore wise to assess whether prospective partners have the necessary institutional capacity to oversee complex projects. Such an assessment should cover the following issues:

☐	Alignment of interests, goals, and land management strategy, i.e. will local partners and land owners agree to manage land according to a projected plan or will they conduct practices that could undermine the project?
☐	Record-keeping skills
☐	Financial management systems: are they transparent and have they been in operation for several years?
☐	Have recent flows of funds into the community yielded visible, material results (e.g., schools/clinics built, people trained, businesses expanded through loans, etc.)?
☐	Evidence of constructive and cordial inter- and intra-community relations
☐	Strong landowner outreach programs
☐	Well-established stakeholder engagement skills
☐	Experience with ecological monitoring and tracking systems
☐	Constructive relations with government agencies and experience of negotiating project establishment and implementation with public authorities
☐	Legal rights of local partners to work in the field of forestry VCM and PES

Prospective local partners must demonstrate these competencies if they are to be expected to take on a major role in development of a forestry VCM project. Lack of such a suitable partner will be a serious barrier to success because external agencies (whether national or international, government or non-government) will struggle to build the long-term, strong relationships with local people that are essential for the success of community-oriented projects.

3.1.5 Prospects for Agreement

The proposed project should also be assessed against the likelihood of local stakeholders agreeing to the terms and design, including the projected benefits and their distribution, long-term sustainability and suitability for local circumstances. This assessment should consider the following:

☐	Will the proposed forest carbon project compensate all natural resource users who are being requested to change current practices? If so, how and by how much? Are these figures meaningful in the local economic context?
☐	Are there migrants coming into the area who could be future natural resource users? If so, how will they be engaged in project design and can this additional pressure be mitigated?
☐	Does the project offer income-generating opportunities throughout its duration (e.g. beyond paid labour during plantation establishment)? Are these ongoing benefits significant in the local economic context?
☐	Is it possible to ensure equitable outcomes and the free, prior and informed consent of all rights holders?
☐	Will economic returns and other benefits from forest-based activities be sufficient to withstand other social and economic pressures in the medium to long-term?
☐	Are there other benefits (e.g., agricultural yield increases, timber availability, etc.) that will be valued by local stakeholders?
☐	What are the traditional or customary distribution systems for these benefits and how well do they work?

☐	Are these distribution systems perceived as equitable by local stakeholders?
☐	Do local stakeholders have prior experience with agreements or contracts regarding distribution of benefits from natural resource-based projects?

VCM project developers and investors both need to have confidence in the contractual arrangements reached with local stakeholders, including community and government representatives. They also require reasonable assurance that their interests will be protected in case these arrangements break down. Forestry officials across the Asia-Pacific region are largely unused to providing such assurances to project developers and investors in the forestry sector. The growing interest in the forestry VCM may focus their attention on the importance of this issue, if these project developers and investors develop common cause at the regional level.

3.1.6 Cost – benefit analysis

After screening the project against all the above criteria, and any other locally-relevant parameters, project developers must begin a full and proper cost-benefit analysis. This is not only about financial costs and benefits, but must also include social and environmental issues.

On the benefit side of the equation, it will not be possible to have 100 percent accuracy, due to the risks outlined in section 2.3.1 (and discussed further in chapter 6). Instead, preliminary quantitative and objective estimates must be made for:

- Changes in carbon stock and GHG emissions in the baseline situation;

- Changes in carbon stock and GHG emissions in the project case; and
- Carbon benefits negated due to leakage.

The project developer can then calculate the net carbon benefits of the project according to the formula:

$$C_{ForestryProject} = \Delta C_{ACTUAL} - \Delta C_{BSL} - LK$$

where:

$C_{ForestryProject}$	Net GHG removals; normally expressed as tCO_2-e
ΔC_{ACTUAL}	Actual net GHG removals, or carbon stock in the project case (the net carbon benefits achieved by the project)
ΔC_{BSL}	Baseline net GHG removals;
LK	Total GHG emissions due to leakage

Once the project developer has a preliminary estimate of the carbon benefits, the emissions resulting from project implementation must be deducted and the net balance can be expressed as tCO_2e. By multiplying this figure with a range of potential carbon prices, a project developer can provide a range of estimates for the potential financial benefits of the project. As noted in previous sections, these financial benefits must outweigh the costs that are required to actually implement the project, plus the transaction costs and the cost of certification, validation and verification of results. This is the concept of ***financial viability***, discussed again in chapter 6.

3.2 Assembling the resources

Once a decision is made to move forward with a forestry VCM project, the forest manager must assemble the resources that are needed to begin. The steps involved in getting to the starting line are set out below.

3.2.1 1st step: find a reliable guide

Identify public agencies or NGOs that can serve as "information brokers." These are the organizations that can help with capacity building, dissemination of information and training services related to project design and implementation. Readers of these Guidelines should find themselves equipped for this role. Smallholders and local communities may also need the services of research bodies or organizations that can provide assistance on issues such as establishing tree nurseries and small-scale plantations, carbon stock assessments and monitoring.

Guidance will also be needed in legal matters, concerning, for example, 'carbon rights' (see Box 7) and resource distribution (or 'benefit sharing'). Two useful resources are freely available online:

- "Payments for Ecosystem Services (PES) Contract Clauses Library", from the Katoomba Group[26]
- "Payments for Ecosystem Services - Legal and Institutional Readiness", from Forest Trends.[27]

(See Chapter 7 for more guidance on where to seek external help. Smallholders and local communities should not be encouraged to move

26 http://www.katoombagroup.org/regions/international/clauses/
27 http://www.forest-trends.org/publication_details.php?publicationID=3014

ahead with a forestry VCM project without a reliable and accessible source of guidance.)

3.2.2 2nd step: assemble financial resources

As with any forestry project, financial resources will be needed upfront. Project developers must be fully aware of all the transaction costs and ensure that they will not run out of funds before the project gets off the ground.

Types of transaction costs

Although some initial tasks may be undertaken by the project developers themselves, it is likely that smallholders and local communities will need to bring in outside experts for some or all of the jobs listed below, all of which will incur costs in terms of time and money:

1. Feasibility assessment;
2. Legal advice;
3. Development of a Business Plan (including projected income and expenditure);
4. Development of a methodology (when no relevant approved methodology for the planned activities exists);
5. Elaboration of the project design document (PDD) or project description (PD);
6. Hiring and supervising local staff;
7. Development of project emissions baseline scenario;
8. Baseline biodiversity survey;
9. Environmental and Socio-Economic Impact Assessments;
10. Consultation process, including participatory rural appraisal and FPIC;

11. Analysis of remote sensing imagery and geo-referencing of sites;
12. Conducting a forest inventory (including sample plot establishment);
13. Engaging third party validators; and
14. Project registration fees (depending on the standard used).

At later stages of the project, when it is time to verify carbon credits or deliver them to investors, another set of costs will occur for the following:

- Verification of all aspects that require certification, carbon stocks, social and biodiversity indicators. Costs can be reduced if verification against different standards are combined in one audit, e.g. VCS and CCBA together.
- Brokerage fees (normally between 1-3 percent of the traded value).
- Registration and issuance fees. These depend on the size of the project in terms of volume of carbon credits.

It is impossible to provide cost estimates for these activities because it depends on the complexity of the project, as well as whether it is located in a country where reliable, good quality services can be acquired from local experts. This can lower the costs quite significantly compared to hiring consultants from abroad.

Types of finance

Financing projects through civil society organizations, including environmental and religious NGOs, is the most common source of finance. But in the case of forestry VCM projects, private sector financing is becoming increasingly common. This is often driven by Corporate Social Responsibility (CSR), in particular, the desire to be seen to do business in a carbon neutral fashion.

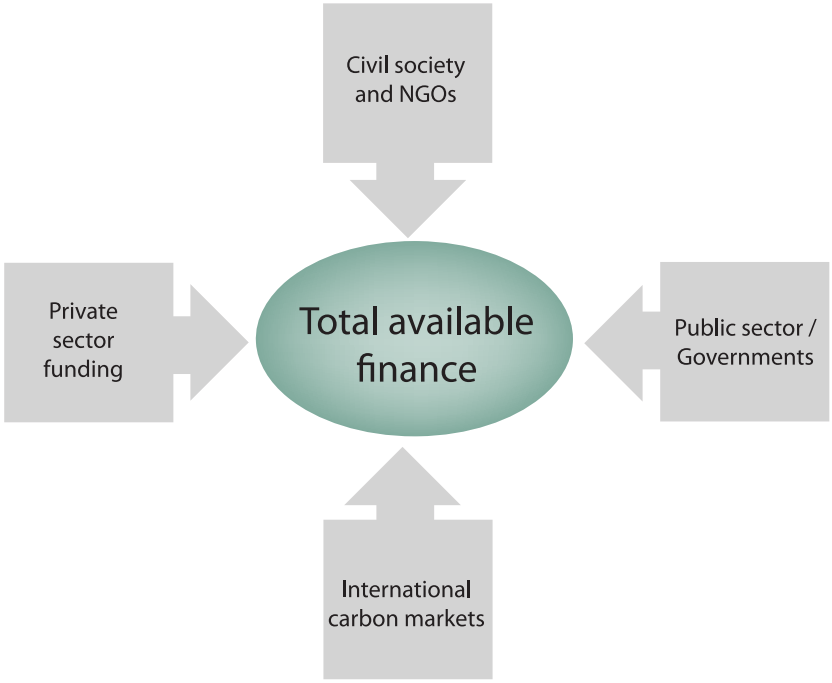


Figure 9: Possible sources of funding

In principle, four main categories of funding sources can be identified (see figure 9 above), but they can be broken down further, for example:

- **Domestic budget allocation**. Some governments may be interested in providing funding from the domestic budget in exchange for emission reductions. This could be part of national REDD programs currently being developed in several developing countries.
- **Official development assistance (ODA)**. Bilateral deals between industrialized countries and developing countries as programmes or geographically-defined projects. For example, the Global Climate Change Alliance of the European

Community (http://www.gcca.eu/pages/1_2-Home.html) provides significant support through governments of Least Developed Countries (LDC) and Small Island Development States (SIDS).[28]

- **Debt for nature swaps**. Some nature conservation organizations, such as WWF, and also the World Bank, offer financial support in exchange for nature conservation.
- **Philanthropy.** Charities such as the Ford Foundation and commercial entities such as Google, fund programs for nature conservation and reducing deforestation. Philanthropic funds are also sometimes invested in social causes such as poverty alleviation or uplifting livelihoods.
- **Direct ecosystem service fee** (e.g. watershed services): in some cases it may be feasible to acquire funding locally, for instance from local industries (mining companies, breweries or other water-intensive industry) interested in watershed management. It may also be in the interest of (local) governments to protect upstream watersheds where the forestry VCM project takes place to secure water supplies for downstream residential or agricultural areas.
- **Direct biodiversity fee** (tourism/entrance fees): One of the most direct income generating sectors for forest-dependent communities is tourism. This will rarely be sufficient to cover the large sums of upfront finance that are required to start a forestry VCM project, but there are often possibilities to work with local entrepreneurs to organize home stays or locally-guided nature tours, for example.
- **Bioprospecting (commercially valuable biodiversity or ecosystems).** This is particularly interesting for REDD projects through which biodiversity is conserved in existing natural

28 Please note that the use of ODA is not allowed for generating carbon credits under the CDM. It can be used for capacity building and other aspects of wise project development, but not for the actual activities that lead to the accrual of carbon credits.

forests. Read also http://www.iadb.org/idbamerica/index.cfm?thisid=2705 for an example from Costa Rica.

- **Greening commodities**: This is a relatively new category of income-generating opportunity, whereby companies aim to 'green' their image and their commodities through their investment in a local project. For instance, Danone, one of the world's largest dairy producers, is investing in mangrove restoration and sustainable agriculture, to offset impacts that they cause with the production of their commodities.
- **Payments for ecosystem services (PES)**: Payments are made for an ecosystem service (or environmental service – see glossary) that is provided by a forest. A very good read on PES systems is the community-benefit driven, or "pro-poor" PES primer from Forest Trends that can be downloaded at: http://www.unep.org/pdf/PaymentsForEcosystemServices_en.pdf

Aside from these possible sources of finance, the project may also draw on the resources of the community itself, as well as some other creative potential sources, including:

- **Volunteer labor –** Community members, students and local youth may be willing to set aside some time for volunteer work in exchange for gaining knowledge and skills, for instance to plant trees, grow seedlings, measure and monitor tree growth, etc.
- **Donation of equipment** – Private companies or local NGOs may be able to help gather the necessary equipment through their projects/activities. Some NGOs may even lend equipment for a certain amount of time.
- **Community fundraising** – The community may be willing to commit and contribute time and labour in exchange for future employment opportunities.
- **Harvesting revenues** –It may be possible to get an advance on timber sales. Timber brokers may loan money as an advance

on guaranteed log sale prices.

- **Grants** from national and international agencies and organizations.

Finally, there are 'traditional' sources of income from forest management, which may help to fund forestry VCM project establishment:

- Sale of timber products;
- Sale of non-timber forest products (nuts, herbs, rubber, lianas, fishing, hunting, fruits, essential oils, etc.);
- Potential employment from forest inventory work, nursery work or tree planting, etc.; and
- Tourism.

Securing financial assistance might be a significant barrier. This is why consultation with potential local and external project partners is crucial – new opportunities may be identified by seeking guidance and discussing financial issues with project stakeholders.

Additional good sources of information on this topic are:

- "Business Guidance: Forest Carbon Marketing and Finance". By Phil Covell in "Building Forest Carbon Projects". http://www.forest-trends.org/documents/files/doc_2869.pdf.
- "The Little Biodiversity Finance Book" from Charlie Parker and Matthew Cranford, October 2010. The Global Canopy Program. http://www.globalcanopy.org/materials/little-biodiversity-finance-book

3.2.3 3rd step: build a team

A forestry VCM project requires a team of individuals with a range of different skills who complement each other, work well together and help

each other to learn. Some forest managers have the resources to build such a team as part of their business, by identifying members of their existing staff who have the necessary skills, and by hiring new people to fill in the gaps. But many smallholders and rural communities who manage forests do not run their forest operations as a business, and do not hire staff. They must rely on their family and community networks for help with both technical and management issues.

Whether the forest in the proposed project area is being managed as a business or as a community venture, there are many specific roles that need to be filled in order to build a team for forestry VCM project development. These roles include:

Management capacity is one of the general evaluation criteria for CCB Standards

- **Project manager:** To take responsibility for decisions relating to project development and implementation, and assign roles within the project team.
- **Accountant**: In the case of a community-managed project, both this and the management role may be taken up by members of an elected committee.
- **Communications officer:** To liaise with external contacts, including business and legal experts.
- **Technical coordinator:** To lead implementation of forest management activities.
- **Administrator:** To design, implement and control reporting procedures.
- **Monitoring officer:** To ensure the project is on target to meet its goals and objectives, to manage data and carry out internal project verification.

Sometimes, one person can take on more than one role, or one role

can be split between several different people. This all depends on the scale of the project, and the human and financial resources that are available. As activities progress and operational activities increase, the responsibilities and workload will become greater.

3.2.4 4th step: Identify the required specialist help

Many of the specialized skills required for starting a forestry VCM project are still confined to a few professionals. It is unlikely that these skills will be found within local communities. The next question then is how to secure and pay for professional help to help design and carry out the project.

The following professionals will be able to provide help:

- **Foresters:** Professional forestry services may already be available from the government or the private sector. But not all foresters have adapted their skills for the forestry VCM. To be of use to a forestry VCM project, a professional forester must be able to advise on how to adapt forest inventory procedures to take account of carbon stocks.
- **Project designers:** Designing and writing documents for forestry VCM projects is a complicated process. A whole new profession has developed to serve it. Forestry VCM project designers must combine knowledge of carbon project methods with monitoring and evaluation of social and environmental impacts. More likely than not, help from more than one professional will be needed to complete the project design documents.
- **Remote sensing engineers:** Forestry VCM projects need to use sophisticated monitoring techniques to keep track of changes in carbon stocks over time. 'Remotely sensed' data from Geographic Information Systems (GIS) will likely be needed

in order to meet the standards of accuracy required for the VCM. Government offices may be able to help with this, but in some areas these services are only available through the private sector.

Take the opportunity for local capacity building

Make sure that all project partners take the opportunity to learn new skills from these professionals. This may save on future costs and increase local engagement and ownership of the project.

To ensure social and environmental co-benefits through forestry VCM projects, some studies and analyses that may call for expert input include:

1. Determining additionality: This involves the collection of data and information related to:
    a) Alternative land-use scenarios;
    b) Required investment for the project: to compare the economic and financial profile of the proposed project activity with and without carbon credits, and against other identified land use scenarios;
    c) Identification of existing and potential barriers that need to be overcome in order to implement the project;
    d) Assessment of prevailing land-use practices and other relevant practices in the region.
2. Conducting Socio-Economic and Environmental Impact Assessments (SIAs and EIAs). This may include a Participatory Rural Appraisal (PRA) to determine the land-use and removal of timber and non-timber products by the local communities from the project area at the start of the project. SIAs and EIAs may be mandatory during the project as well, both before a

particular phase of implementation (ex-ante) or afterwards (ex-post).

3. Quantifying the baseline: Collection and validation of pre-existing inventory data.
4. Depending on the type of project, a reference area, usually in the area surrounding the project, may need to be identified, from which a lot of baseline information can be collected. Demonstrating that the reference area is indeed representative may require specialist skills.
5. Mapping: Preparation of a forest map to record situation and activities for at least ten years prior to the start of the project, including reference areas and surrounding forest zones.
6. Baseline inventory of biomass and biodiversity, in particular the identification and mapping of areas with High Conservation Value (HCV).
7. Stratification of the project area: Dividing the project area into categories based on forest type or land use type or by management activity/objective.
8. Identification and quantification of leakage.
9. Stakeholder consultation: this involves a wider range of people and organizations than in a regular SIA.
10. Collection of information for a risk assessment. A risk assessment is an integral part of the validation procedure under the VCS and a lot of general information is required to assess and quantify these risks. More about the risk assessment can be found in Chapter 6.

4

Project implementation: office work

Chapter 4: Project implementation: office work

This chapter's objectives are to:

- Outline the documentation process for forestry VCM project development (PIN, PD/PDD);
- Describe the information that must be covered in the different documents.

These guidelines provide practical advice for generating financial benefits through forestry VCM projects. Twenty years of experience have shown that, in order to succeed, such projects must meet **three key challenges**:

1. Achieve reductions in carbon emissions or enhance removals by sinks which are:

- measurable, and can be reported and verified;
- real and permanent.

This is the most basic measure of success. A forestry VCM project will not generate revenue from the VCM unless it actually stores carbon and/or reduces greenhouse gas emissions! This has to be proven by measuring how many tons of carbon dioxide a forestry VCM project has taken out of the atmosphere, or has prevented from being emitted. This measurement must be done using a reliable and *widely-recognized* method (according to the standards outlined in chapter 2).

2. Keep transaction costs to the minimum

Starting an individual project can be expensive (see section 3.2 for the list of likely expenses in setting up a project). These costs alone may outweigh the eventual financial rewards. It is good practice to explore all possibilities to lower costs by using strategies such as linking a forestry VCM project with other similar projects, or by forming partnerships with other organizations.

3. Provide social and environmental benefits at the local level

Projects are most sustainable when they provide other services beyond carbon, such as watershed protection or soil stabilization. They must also provide social benefits such as land tenure security, access to natural and cultural resources, improved livelihoods, and increased resilience to climate change or natural disasters. A forestry VCM project must prove that it will also deliver these 'co-benefits' in order to meet most forestry VCM standards.

4.1 Project development steps

The usual steps that need to be undertaken in the preparation and implementation of a successful forestry VCM project are as follows:

1. Development of a **Project Idea Note** (PIN);
2. Selection and application, or development, of a **methodology;**
3. **Validation of the methodology** (in the case of developing a new methodology);
4. Development of a **project description** (PD) or a project design

document (PDD);

5. **Validation** of project design, leading to the **registration** of the project;
6. Project implementation and **monitoring;**
7. **Verification** of carbon credits; and
8. Issuance and sale of carbon credits, as **verified carbon units** (VCU).

The duration of the whole cycle is highly variable and depends to a large degree on the complexity of the project and the availability of human and financial resources. After registration of the project as an approved project with a forestry VCM standard, if all goes well, the first claim for carbon credits can be made within five years, and usually sooner than this. Monitoring of the project's impact on carbon stocks and emission reductions is often done at least one year prior to the external verification. Verifications and carbon claims may be made as often as once a year, but more often they are less frequent than this; the income generated by the sale of VCUs must be worth the expenditure of conducting a pre-verification monitoring exercise and going through a full verification audit.

At the beginning of the project cycle, the project developer's main focus should be the development of initial documents that will enable them to access the market and attract investors. These documents include the **Project Idea Note (PIN), a methodology, a project description (PD) or project design document (PDD) – and maybe an emission reduction purchase agreement (ERPA)**. Selection of an existing project methodology, or the development of a new one, is crucial to meeting project objectives in the most efficient and cost-effective way. Then it must be ensured that the method is applied correctly. Each of these steps is described below.

4.1.1 PIN (Project Idea Note)

A good PIN is important to attract the interest of investors. It represents the first step in the process of generating income from the forestry VCM. This is a summary document, usually not more than 5-6 pages long, often generated before detailed information on the project design and potential impacts is available. A PIN is not usually a formal request, unless the project developers are applying for funds from large organizations (such as the World Bank or European Commission), but it always helps to give investors an idea of what the project developer seeks to achieve and what kind of financial support is being pursued. The bottom line is that it needs to cover all the basics of the project and clearly set out how it will generate carbon credits.

An example of a completed PIN is provided in Annex 1.

General description and information	Carbon calculations	Environmental and social benefits	Finance
● Location ● Narrative of activities ● Participants and Stackholders ● Schedule of activities ● Status of project development	● Type of carbon credits ● Status in the project-development cycle ● Baseline Scenario ● Pre-project vegetation and land-use history ● Amount of emissions reduced / carbon removed	● How communities are involved and impacts on their welfare ● Significant impacts on biodiversity ● Impacts on other environmental services ● Non-carbon certification	● Costs of activities ● Funding sources: How much is covered and by whom? ● Expected carbon price and indicative income from carbon component ● Financial analysis

** See Annex 1 for a sample PIN template.*

Figure 10: Summary of key components of a PIN

A sample outline of a PIN is provided in Annex 1. Figure 10 summarizes the four parts, which include the following:

Part 1, General description: Clearly state the project objectives and activities (ARR, IFM, REDD, etc.) and define what the project will do to establish, enhance or maintain forest cover and biomass (summarise how it will address leakage, additionality and permanence). Include the information on location and schedule of planned activities, as well as the information on project participants and stakeholders.

Part 2, Carbon calculations: Give a concise outline of why this project is eligible for the forestry VCM. Explain what would happen without the project – *the baseline scenario*, and an estimate of the benefits that the project could potentially provide, in terms of carbon sinks and removals.

Part 3, Social and environmental benefits: Describe all the potential social and environmental benefits of the project. Explain why these benefits would not occur in the absence of the project.

Part 4, Finance: Include a review of key drivers, risks and uncertainties. Try to include as much financial information as possible (including project cost estimates, potential and current sources of funding).

Tips:

1. Adapt the PIN to the target audience. The text may differ depending on the type of investor the project wants to attract.
2. Be accurate and realistic; make conservative estimates and claims.

Make your calculations and assumptions as clear and precise as possible

4.1.2 Business plan

A business plan outlines costs and benefits to determine a project's financial feasibility. It is important to assess this before getting too far advanced in project preparation. A business plan is a very important document that should take into account all costs and benefits of the project. Producing a business plan also creates more options for funding. Potential investors will certainly wish to see the business plan of a forestry VCM project in order to assess if the project idea is potentially viable beyond the start-up activities.

Apart from the basic details of the project, it must include the following sections:

1. Operating results

This section should describe the project's concept, summarize the objectives, and identify the resources (human and financial) needed. It should also include a description of the milestones and projected timeframes and an explanation of how the project will generate revenue from carbon credits.

2. Cash flow data and projections (models)

This section needs to describe the project's strategy for obtaining working capital (such as grants, loans, investments, and sales) and how it will be spent (salaries, operating expenses, equipment, etc.).

3. Sensitivity and risk analysis

This section should provide information on trends or events that might affect the project (such as natural disasters, local conflicts, leakage or operational risks) and a strategy on handling potential threats or weaknesses in the marketplace. There are several templates of business

plans available that can provide valuable tips. Moreover, many NGOs or consultants may be able to assist in this process (see Chapter 7).

4.1.3 Project cycle

The steps outlined above are generic and are valid for any forestry project (although the term PIN is used mainly in the forest carbon sector, similar 'concept notes' are required for any other type of forestry project). Further steps required for forestry VCM projects in particular are outlined in Figure 11. Several of the steps are described below, and some are addressed in chapter 5 (e.g. monitoring).

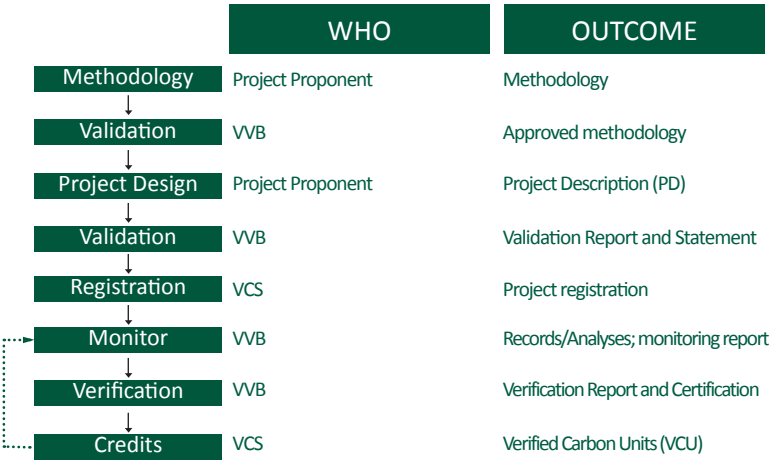


Figure 11: Steps of the forestry VCM project cycle, tailored to the VCS [29]

29 The steps in the project cycle for other standards are the same; the only difference is the terminology. For instance, in the case of the CDM the project document is called a Project Design Document (PDD), and the credits are called Certified Emission Reductions (CERs).

4.1.4 Methodology application

Once the decision has been made to go ahead with the project, a suitable methodology has to be found or (if one is not available) be developed. Methodologies give exact procedures for quantifying the real GHG benefits of a forestry VCM project, including descriptions and instructions on:

- How to establish project boundaries both on the ground and in time;
- Which carbon pools and greenhouse gases should be included in calculating the benefits of the project;
- Assessment of additionality and selection procedures for the most likely baseline scenario;
- Procedures to quantify the baseline scenario, the project scenario and leakage;
- Calculation of the net reduction/removal of GHG emissions; and
- The monitoring approach.

Due to new developments, methodologies can often be revised or even withdrawn. Ensure that you are always up-to-date with the latest information: consult the website of the standard you wish to use!

The methodology describes how net carbon benefits are to be determined; implementing the methodology for a specific location leads to the actual, quantified net carbon benefits.

Existing templates, such as those from the VCS, are helpful because they help to ensure that project developers provide all required information. If a project developer wants to register a new methodology with a

particular standard organization, the standard body usually requires that the methodology is presented in the prescribed template.

A methodology typically has the following attributes:

- Not site specific, but is developed to facilitate the estimation of emissions/removals of certain activities in certain circumstances;
- Developed with a particular situation in mind;
- Describes how estimates should be made of emissions/removals with respect to
  - The baseline
  - The project case
  - Leakage
  - How the project activity should be monitored;
- Once it has been developed and approved, it can be used by anyone thereafter;
- Can be amended, pending a new validation of the methodology
- Is registered, e.g. with the CDM or the VCS.

Methodologies may include references to 'tools' that can be used, which give detailed explanations on how to execute particular activities (e.g. assessing additionality, the significance of particular carbon pools, the number of sample plots, soil and site conditions).

If no existing methodology is applicable to a proposed forestry VCM project, a new methodology must be developed, otherwise a project cannot be approved under the forestry VCM. To get a methodology approved by a standard organization such as the VCS, it must be validated according to the Methodology Approval Process (MAP) which is available from the each standard organization. The validation can

take some time, depending on the quality of submission, but a fast track process takes about 3 – 4 months and may cost up to 25 000 USD.

4.1.5 Project description

The project description (PD) is an essential part of the VCS standard. The equivalent document under some other standards (e.g. CarbonFix and CDM) is called a project design document (PDD). Once an approved methodology is available, a PD or PDD can be prepared. This document – among other things – describes how the chosen methodology is applied in a particular project. Each standard issues PD/PDD templates, which are available online.

Currently, the majority of new forestry VCM projects use the VCS PD template. This template is therefore used in these guidelines as the main reference (an outline of the VCS PD template is presented in Annex 2).

A PD or PDD should include:

- **Background details**: What the project is, including project duration, location, project proponents and other essential information.
- **Methodology definition**: Which methodology it uses and why, its application to the project activities, baseline scenario data and additionality assessment.
- **Monitoring outline**: How monitoring will be done, including a review of the monitoring process and how the project area will be divided up.
- **GHG emission reductions**: How GHG emission reductions and removals are calculated, and estimates of these reductions and removals under different scenarios.

- **Social and environmental impacts**: A summary of the potential impacts, including results of Environmental and Social Impact Assessments.
- **Account of the stakeholder consultation:** A summary of comments and contributions received during the stakeholder consultation process, as well as the mechanism for continuing communication
- **Review of timelines and schedule**: Steps in the project cycle and reporting procedures.
- **Ownership of the project**: Who owns the project, and who has the right to benefit from it. Clear details on land tenure, land use rights and the delineation of the project boundary.

4.1.6 Validation & registration

Validation is the term used for the assessment of the methodology and the PD/PDD.

Regarding the methodology:

There are very stringent rules governing how the validation must be done. This validation process is governed by the standard body itself, in the sense that they only 'accredit' (authorize) experts or companies to conduct the validation assessment if they have the right credentials in the relevant technical fields. Once the validation process is completed and the methodology is approved and registered, it is made available for use by any suitable projects, not only by the developer. Approved methodologies are uploaded onto the websites of the CDM and the VCS.

Regarding the PD/PDD:

The validation of a methodology is a paper exercise but the validation of a PD/PDD typically involves an on-site visit by an audit team. This is necessary to check the assumptions and parameter values that the PD/PDD uses to quantify the carbon benefits of the project. The audit team must also review the potential environmental impacts and stakeholder comments. This cannot be done from behind a desk. The cost of an audit is quite variable but is usually at least USD 25 000.

Once the PD/PDD receives a favourable validation report, the project is officially approved and can then be registered. The list of approved projects can be found on the websites of each standard body. Only after a project is registered can it begin to generate carbon credits. Validation of PDs and PDDs is conducted by a Validation/Verification Body (VVB).

In the case of the VCS, the validation of the PD can be combined with verification of carbon sequestration (see Chapter 5).

When inviting a VVB to validate the PD, the following issues must be kept in mind:

a) Information on stakeholder consultations must be compiled and incorporated into the PD. The PD must also clearly indicate how the concerns raised during this consultation have been (or will be) addressed.

b) The auditors from the VVB will review all relevant documents and visit the project site. They will issue Corrective Action Requests (CARs) or New Information Requests (NIRs) to reflect any deficiencies or inaccuracies in the PD.

c) Following the auditors' report, it is very likely that a significant number of changes to the PD will be necessary. The project developer must address all of the CARs and NIRs and submit again to the VVB.

d) Auditors will then issue a final Validation Report, which will include their recommendation to the standard organization regarding whether or not to approve the PD/PDD.

e) The standard organization itself may conduct a Technical Review of the auditors' work to make sure that the auditors have followed the correct procedures. These internal quality assurance and quality control (QA/QC) exercises will be followed by the organization's final Validation Opinion for the project.

5

Project implementation: field work

Chapter 5:
Project implementation: field work

This chapter's objectives are to:

- Describe the practical activities that a forestry VCM project manager must implement;
- Distinguish between the requirements of the different standard systems;
- Provide practical guidance on stakeholder consultation, including Free, Prior, Informed Consent; and
- Outline monitoring procedures during the project implementation phase.

5.1 Management plan and standard operating procedures

As highlighted in the previous chapter, documentation is an extremely important part of the project cycle: all validation and verification processes are dependent on the demonstration of good practice in the field. The auditors from a VVB need to be able to compare the project's recorded performance with the activities implemented by the forest managers.

All field operations need to be described in a management plan, implemented accordingly, transparently monitored and documented to demonstrate compliance.

All issues related to carbon management will be reflected in the PD or PDD. However, these documents may not include all activities related to forest management. These should be clearly described within a **management plan**. The management plan must define and standardize how each activity should be implemented, and set out a number of steps, if appropriate. These steps should be followed and recorded by all those involved in field activities.

Developing standard operating procedures (SOPs) is common practice, particularly when the project is large-scale or when forest management activities will be implemented by many different land owners and forest managers. SOPs help to ensure that fieldwork is implemented consistently and should include, at least, the following:

- Guidelines for all field-level operations;
- Procedures for reliable measurements;
- Basic information analysis and recording procedures; and
- Quality assurance and quality control for carbon stock measurement and reporting.

The SOPs should ensure that all activities are conducted in the same manner regardless of the time, location or implementing team. SOPs need to be up-to-date and cost-effective in order to achieve efficiency and accuracy in the field.

5.2 Defining the project area

It is essential to define and record key physical aspects of the project area in order to accurately measure changes in carbon stock and to monitor forest management activities. These aspects include:

1. The size and shape of the project area; determined by boundary demarcation and mapping .

2. The variety of land use and management strategies in the project area; determined by stratification.

5.2.1 Boundary demarcation and mapping

In order to ensure correct monitoring and verification, the boundaries of the project area must be clearly determined. It is very easy to make mistakes when translating information from the ground onto a map. The implications of these mistakes can be serious and long-lasting. Discrepancies between boundaries on the ground and on the map make it very difficult to ensure comparability between successive forest inventories, and therefore to accurately calculate changes in biomass and carbon stocks. They can also create tensions between land owners and exacerbate conflicts over land rights.

Figure 12: Handheld GPS and CyberTracker used by Kalahari Bushmen

A handheld Global Positioning System (GPS)[30] can be used to record boundaries and the exact positions of permanent landmarks such as mountain ridges and rivers. Data collected through a GPS can be stored until it is ready to be transferred reliably to a computerized mapping software such as CyberTracker (http://cybertracker.org/).

30 Detailed instructions on how to use a GPS can be found within Forest Carbon Stock Measurement Guidelines for measuring carbon stocks in community-managed forests, Asia Network for Sustainable Agriculture and Bioresources (ANSAB), July 2010.

GPS devices are as easy to use as a mobile phone. They do not, of course, eliminate human error, but mistakes in data entry are usually very obvious and therefore easy to address. With a short introductory training programme, a handheld GPS can be used as a reliable mapping device by smallholders and local communities. It is particularly suited for use in combination with CyberTracker, which was initially designed as a tool for monitoring game by Bushmen in Namibia, many of whom are illiterate (see Figure 12). The software is now used much more widely and has therefore been adjusted to meet the needs of other communities, including community forest management groups.

The **CyberTracker** PC Version 3 downloads data from a handheld GPS device onto a computer, where it can be viewed in tables and maps and exported for analysis. The unique icon and text interface design makes data capture very efficient (Zorpette, G. 2006; "Call of the Wild", IEEE Spectrum). However, although as user-friendly as touching icons on a screen, it is still an expensive piece of equipment and external assistance is essential to ensure that data is transferred accurately and converted into maps that communities can recognize and use.

If the project area is owned by multiple smallholders, or community management groups, all mapping activities, including boundary delineation, must be done in a participatory way. Local communities should be involved in all stages of the process, as they are probably most familiar not only with the specifics of the local forest and the boundaries, but often also with the forest products, tree species distribution, age class distributions, plant associations, potential threats and traditional management systems. In addition, involving local people in boundary mapping results in substantial cost savings, in comparison with using external professionals, and will transfer skills and knowledge to the local communities involved in the project.

According to studies and trials carried out with local communities during the K-TGAL project (see Box 2),[31] project teams can easily be trained in the combined use of the GPS and CyberTracker mentioned above, as well as with other similar user-friendly tools such as Google Earth. Besides K-TGAL itself, one of the best examples of this is the Scolel Té project in Mexico, which demonstrated that farmers can make their own measurements of stock increases in forests under their protection, for which they could then receive payments under the VCM.[32] Box 9 outlines the procedures that these communities followed in the mapping stage of the projects.

Box 9: Three community-based mapping activities

1. Identification of forest inventory team members. These need to be people who are familiar with the forest and are active in its management. At least some must be literate/numerate.

2. Creation of a base map, database and carbon calculator programme through a handheld GPS device. Access to the internet will be needed to reference this information and transfer to a computer to create a useful map.

31 Peters-Guarin, G. & McCall, M.K. 2010. Community Carbon Forestry for REDD: Using CyberTracker for Mapping and Visualizing of Community Forest Management in the Context of REDD. K:TGAL Report, University of Twente, Enschede, the Netherlands, and CIGA UNAM, Morelia, Mexico. (Available at http://www.iapad.org/publications/ppgis/CyberTracker_MMM_forest_carbon_REDD.pdf)

32 Corbera, E.; C. González Soberanis; and K. Brown. 2009. Institutional dimensions of payments for ecosystem services: an analysis of Mexico's carbon forestry programme. Ecological Economics 68, 743-761; Bey, A. 2009. Using Technology to Enable Community-Based Forest Monitoring: From theory to implementation challenges and opportunities. November December 3, 2009 http://international.helveta.com/assets/Downloadablefile/WhitePaper_CIEarth_AdiaBey_091203-16122.pdf

3. Rough sketch mapping of the forest area and its key characteristics, before the actual field work. These sketches should include key spatial categories such as forest degradation, areas of deforestation, invasion, zones of conflict with other stakeholders, historical land cover and land use changes.

Detailed steps are provided in:
Peters-Guarin, G. & McCall, M.K. 2010. C*ommunity Carbon Forestry for REDD: Using CyberTracker for Mapping and Visualizing of Community Forest Management in the Context of REDD*. K:TGAL Report, University of Twente, the Netherlands, and CIGA UNAM, Morelia, Mexico. (Available at http://www.iapad.org/publications/ppgis/CyberTracker_MMM_forest_carbon_REDD.pdf)

5.2.2 Stratification of the area

After identifying project boundaries, different categories of forest types and forest management strategies need to be identified. This information is required in order to divide the area into compartments according to their common characteristics. This is important to achieve the level of accuracy in carbon accounting demanded by the forestry VCM.

In the field, it is possible to distinguish areas from each other based on common characteristics. These different areas will have different carbon storage capacities. The process of dividing the project area up in this way is called stratification (see glossary). Forest type is often used as the parameter to identify different strata, but project developers can also use differences in soil type, slope or hydrology. For instance, some soil types are associated with specific plant communities and forest types. Technical forestry expertise can be of great assistance during this process, in order to also match categories with other site characteristics and risks. Strata can also be defined according to forest

management objectives or activities implemented. Figure 13 illustrates how the number of strata can multiply quickly, especially once project implementation gets underway.

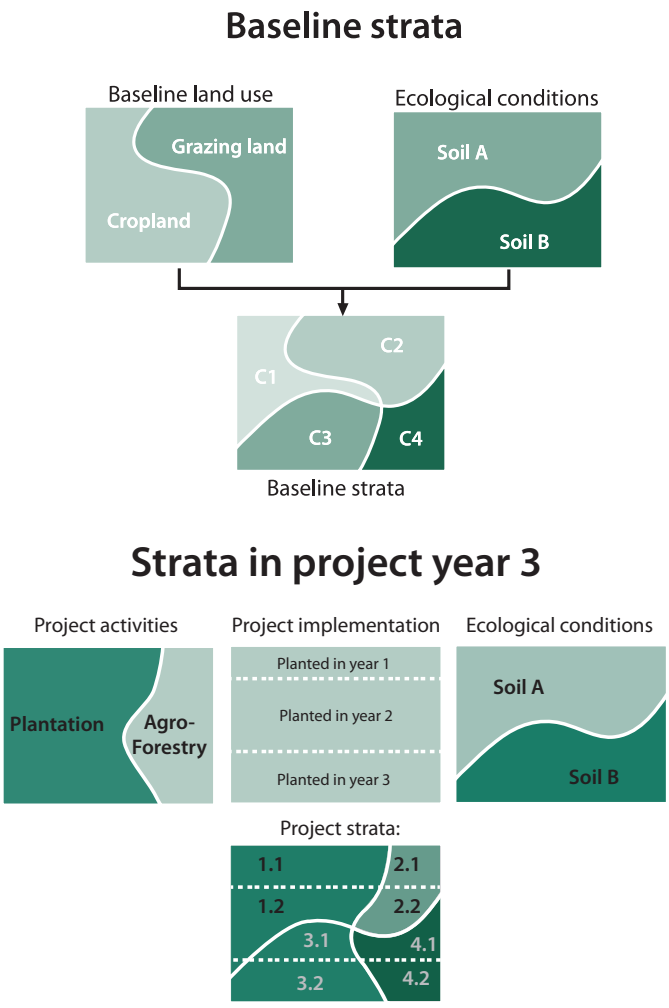


Figure 13: Project Stratification

After identifying the baseline strata by visual characteristics and local knowledge, the project team will need to conduct a baseline inventory to calculate carbon stocks in 10-15 sample plots in each stratum. On the basis of these samples, the project developers can check if there is significant variation in carbon stock values between the plots within the same stratum. If so, then that stratum is not useful in the context of carbon stock measurement and the project developer must look for a different basis for stratification.

A tool has been developed for A/R CDM to help project developers with the process of checking stratification. It is just as viable for forestry VCM projects and can be downloaded from the CDM website.[33] The Good Practice Guidelines (2003) provided by the Inter-Governmental Panel on Climate Change (IPCC)[34] also provide good insights into the stratification processes. Involving local communities in this work is a great opportunity to train a field team on data collection methods, as demonstrated in the "Field guide for assessing and monitoring reduced forest degradation and carbon sequestration by local communities", available from www.communitycarbonforestry.org,

The number of sample plots required for accurate monitoring of carbon stock is dependent on the extent and type of forest categories. Permanent sample plots, established for such monitoring, must be of the same size and shape as those used in the pilot survey. Plots should be generated randomly using a basic outline map of the project area and strata. A tool has been developed for the determination of the appropriate number of sample plots: see http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-03-v2.1.0.pdf

33 http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-03-v2.1.0.pdf

34 More details are available within IPCC methodologies, GPG (Good Practice Guidelines) including Uncertainty Information and how to use it and Quality Assurance and Control and CDM tools. UNFCCC also provides methodological tools for calculating number of sample plots.

5.2.3 Using default values

Most VCM standards accept the use of default values. This can be quite a useful approach, especially when starting up a project: default values can be used to begin with, and more accurate, project-specific assessments can be made over time, as the project developers secure the necessary resources for the fieldwork. In some cases, however, the additional carbon benefits may not be sufficient to cover the costs of this fieldwork, and default values remain the benchmark for carbon stock estimates throughout the project's duration. This will reduce the accuracy of predictions of carbon credit outputs from the project, and thus will affect the level of investment it will attract, but default values are particularly useful for community-based projects, where human resources and skill limitations increase the expense of the fieldwork required for carbon accounting.

VCM standards will accept default values that are obtained from guidelines produced by the Intergovernmental Panel on Climate Change (IPCC). These are available from the IPCC's own website (www.ipcc.ch) or from the Institute for Global Environmental Strategies (IGES) in Japan:

IPCC Inventory Guidelines (http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html)

IPCC Good Practice Guidance (http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html).

Alternatively, default values from peer-reviewed literature, appropriate to the project's situation, are also considered acceptable. This will require the assistance of experienced, professional carbon project developers or academics (see section 7).

5.3 Measuring carbon pools

Some carbon pools have to be measured directly, while others can be estimated indirectly, for example by using conversion factors to calculate above ground biomass from basic inventory data. The following carbon pools are normally the ones taken into consideration, as described in Chapter 1, but most of the time not all of them need to be measured:

1. Above-ground woody biomass (AGB) – sometimes divided into 'woody' and 'non-woody';
2. Below-ground biomass (BGB);
3. Dead wood;
4. Litter;
5. Soil organic carbon (SOC); and
6. Harvested wood products.

Litter is usually of minor importance and is often not measured. The sixth carbon pool, **harvested wood products (HWP)** may serve as an effective store of carbon for several decades, but is currently not included in most VCM methodologies.

A number of modules have been developed that describe how these pools can be quantified. See

1. http://www.v-c-s.org/methodologies/VMD0001 for above and below ground biomass in live tree and non-tree pools. This methodology is based on a plot-based forest inventory, the establishment of root:shoot ratios for below-ground data, and species- or forest type-specific allometric equations.

2. http://www.v-c-s.org/methodologies/VMD0002 for dead wood. This methodology uses two systems. For 'standing' dead wood, a simple adaptation of plot-based forest inventory with adjustments based

on visual estimates of degree of decomposition is used. For 'lying' dead wood, a line-transect method is used, along with estimates of the density of dead wood.

3. http://www.v-c-s.org/methodologies/VMD0003 for litter. This is done by litter sample collection, and comparison of green and dry weight of the samples.

4. http://www.v-c-s.org/methodologies/VMD0004 for soil organic carbon. This is done through random point sampling and laboratory-based drying and analysis. This cannot be done without access to the required laboratory equipment.

5. http://www.v-c-s.org/methodologies/VMD0005 for carbon stocks in the long-term wood products pool. This involves recording information on product assortments at the time of harvesting and initial processing and Biomass Conversion and Expansion Factors (BCEF), which are available for commercially-viable tree species. To allow for degradation of forest products, Oxidation Factors (OFs) are also used, allowing for different rates of decay between tropical and non-tropical climates.

6. In addition, under the CDM, a tool has been approved to determine when a carbon pool has such little impact on the grand total of a project that it can be omitted from the quantification exercise: "Tool for testing significance of GHG emissions in A/R CDM project activities." See http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf

The VCS provides the clearest guidance on which carbon pools should be included when carbon is quantified. This guidance is different for each project type (see Table 5). This also serves as good guidance for other project methodologies.

Table 5: Which carbon pools should be monitored in VCS projects?[35]

Project Type	Project methodologies	AGWB	AGNWB	BGB	Dead wood	SOC	Litter	Wood Products
ARR	All	Y	S	S	S	S	S	O
ALM	All	S	N	O	N	Y	N	O
IFM	Reduced impact logging (RIL) with minimal effect on harvest volume	Y	N	O	Y	N	N	N
	RIL with at least 25 percent reduction in harvest volume	Y	N	O	Y	N	N	Y
	Logged to Protected Forest	Y	N	O	Y	N	N	Y
	Extended rotation age	Y	N	O	O	N	N	O
	Increased productivity	Y	N	O	O	N	N	O
REDD	Non-project (baseline) scenario is arable land	Y	O	O	O	O	N	S
	Baseline scenario is pasture or grassland	Y	O	O	O	N	N	S
	Baseline scenario is tree plantation	Y	Y	O	O	N	N	S

KEY

Y: **Yes,** always include this carbon pool
S: **Sometimes** include this carbon pool (depending on the specific project activities)
N: **No**, not necessary to include this carbon pool
O: **Optional**, this carbon pool may be included at the discretion of the project manager

PROJECT TYPE

ARR: Afforestation, reforestation and re-vegetation;
ALM: Agricultural Land Management; IFM: Improved Forest Management;
REDD: Reducing Emissions from Deforestation and forest Degradation.

CARBON POOLS

AGWB: Above-ground woody biomass;
AGNWB: Above-ground non-woody biomass;
BGB: Below-ground biomass;
SOC: Soil organic carbon

35 VCS. 2011. *Agriculture, Forestry and Other Land Use (AFOLU) Requirements*. VCS Version 3 Requirements Document. (Available at http://www.v-c-s.org/sites/v-c-s.org/files/AFOLU%20Requirements%2C%20v3.1_1.pdf)

Other key points to remember for measuring carbon include the following:

1. **Above-ground woody biomass must *always* be measured.**
2. **Any other carbon pool may be left out, depending on project type and activities.** Essentially, a carbon pool can be safely left out if it is unlikely to change in size as a direct result of the project activities, or if these changes are insignificant to the overall impact of the project. Also, if leaving a particular carbon pool out of carbon calculations results in a slight under-estimate of emission reductions, then it is safe to omit it. If it would result in an over-estimate, however, it is better to include it. It is not always easy to know how a forestry VCM project activity will affect a particular carbon pool. As stated above, there is a tool developed for CDM projects that can help decide whether or not to include a particular pool for afforestation or reforestation projects. It can be downloaded from the CDM website and is equally relevant for forestry VCM projects.[36]
3. **Some carbon pools can nearly always be left out,** such as leaf litter, herbs and grasses. For more guidance on this, see the latest version of the VCS document 'Agriculture, Forestry and Other Land Use (AFOLU) Requirements.' Version 3.2 was issued in 2012 and it is updated regularly. It is a good idea to check both the VCS website (www.v-c-s.org) and the CDM section of the UNFCCC website (cdm.unfccc.int) on a regular basis.
4. **Symmetry is very important in carbon accounting**. This means that if a particular carbon pool is included in calculations of a project's baseline, that pool must also be accounted for when measuring total emission reductions from the project.
5. **Non-forestry GHG emissions may result from a forestry VCM project**, for instance fossil fuel combustion**.** If so, these emissions need to be tracked as well if they are a significant

36 UNFCCC. 2007. *Tool for testing significance of GHG emissions in AR/CDM project activities* CDM Executive Board. (Available at http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf)

source of emissions. The use of fossil fuels in project activities is particularly important, so any additional travel, extra haulage equipment or harvesting machinery must be carefully recorded. These emissions will be subtracted from the project outcome to give net emission reductions.

In some forestry VCM projects, only the AGWB carbon pool needs to be measured. In this case, the skills used for forest inventory (measuring tree height, diameter, stocking density, volume etc.) will probably be sufficient to carry out the fieldwork, provided that the inventory techniques used can yield a high level of accuracy. Forest inventory techniques will also be useful for measuring some of the other carbon pools. However, measuring SOC and BGB pools will require specialized skills that will need to be obtained either through training or by hiring external help.

5.4 Identifying and quantifying leakage

Leakage (see Glossary and Chapter 2) is an increase in GHG emissions outside of the project area due to the activities implemented inside of the project area. Project managers, staff and partners are not directly responsible for leakage and may not be able to do much about it. However, every forestry VCM standard will expect the PD or PDD to describe how leakage will be minimized, and how leakage that cannot be avoided is quantified.

One of the most common forms of leakage in forestry VCM projects is the displacement of activities such as fuel wood collection or shifting cultivation from the project area to other forests. As forest-dependent people near the project site generally carry out these activities, one of the most important strategies to minimize leakage is local consultation. This process facilitates appropriate project design and careful site

selection and gives the project developer an early start in detecting and avoiding potential leakage.

It will also be necessary to demonstrate how the project plans to monitor the extent of leakage, or displacement of emissions. Most methods for monitoring leakage concentrate on a 'buffer zone' around the project boundary where the majority of leakage activities take place. See section 5.6 for further guidance on quantifying leakage, as well as the emissions that result directly from project implementation activities (sometimes referred to as 'project-based leakage').

5.5 Stakeholder consultation

There is a moral and practical obligation for forestry VCM project developers to consult as widely and as transparently as possible before they undertake any project activity. Furthermore, stakeholder consultation and participation should be a constant and integral part of the forestry VCM project's activities.

A stakeholder can be one person, a group or organization that can affect the forestry VCM project, or can be affected by its implementation. It can also be a person or a group with an expressed interest in the project. The consultations need to initiate and sustain constructive relationships and dialogue throughout all project activities and plans. This can bring benefits to the project developers and facilitate the success of the project.

Stakeholders must be identified before they can be consulted. The project developer must therefore carry out a stakeholder mapping process. This is just as important for projects where smallholders or local communities are the forest managers as where they are managed by private companies or government agencies. The stakeholder

mapping process begins by identification of a few broad categories of stakeholder (e.g. government agencies, civil society, local communities, private sector). This helps to ensure that all potential stakeholders are identified. As a rule, it is better to assume that a particular group is a relevant stakeholder than to rule them out before thorough checks have been carried out.

All stakeholders affected by, or interested in, the project should be assigned to a particular category. For each specific stakeholder, the project developer should identify the level of influence over success of the project, as compared to other stakeholders, the level of interest in the project and the priority issues for each of these groups. This is important in order to decide what is the appropriate engagement strategy for each stakeholder.

Stakeholder consultation should be integrated throughout the whole project management cycle. It is not cheap or easy. However, it can both increase benefits and reduce risk in the long run. Moreover, by ensuring that all local stakeholders have been effectively included in the development of the project, the risk of facing conflict at a later stage is reduced.

Local stakeholders can be an important source of knowledge, information, and labour for activities including participatory mapping, impact assessment and inventory. Other stakeholders, such as NGOs and government agencies, may also be important sources of knowledge. The stakeholder consultation process provides an opportunity to identify how each stakeholder can contribute to the project, their motivation for doing so and how to ensure support for the project. However, the project developer should always bear in mind that each stakeholder group will have concerns about project design or implementation and will want reassurance, through the consultation process, that the project appreciates these concerns and makes efforts to address them. Figure 14 summarizes some common stakeholder categories, priority issues and engagement strategies.

STAKEHOLDER CONSULTATION PROCESS

Stakeholders	Priority issues	Engagement tools
Local communities	• Employment opportunities • Participatory mapping • Forest boundary delineation • Land use allocation and use rights • Training and capacity building • Empowerment	• Participatory workshops • Historic timelines and trends • Participatory rural appraisal (PRA) • Mass media
Private sector organizations	• Employment opportunities • Specific skills and knowledge sharing	• Trade fairs • Promotional material • Conferences
Non-governmental organizations	• Project design consultation • Land use allocation and use rights • Training and capacity building	• Focus group meetings and workshops • Conferences
Government agencies	• Project design consultation • Employment opportunities • Mapping • Forest boundary delineation • Land use allocation and use rights	• Focus group meetings and workshops • Promotional material

	• Training and capacity building	
Academic institutions	• Mapping • Training and capacity building • Specific skills and knowledge sharing	• Focus group meetings and workshops • Conferences

Figure 14: Examples of potential approaches to a stakeholder consultation process

There is also a very practical reason to be thorough when consulting local communities. Communities have the right to give or withhold consent to project proposals that may affect the lands they customarily own, occupy or otherwise use. This concept has become a key principle within international law, and is of particular concern to indigenous peoples. This principle is known as **free, prior and informed consent (FPIC)** and is described in more detail in Box 10.

A few tips on stakeholder consultations:

- Consultation must start at the very beginning of the project process and continue throughout.
- Do not exclude any groups or individuals, let everyone voice their opinion or provide information that might be useful.
- Ensure a balance of gender, age and ethnicity in all consultation processes.
- Listen to the concerns and opinions and try to address them in the best possible way.

Box 10: What is free, prior and informed consent (FPIC)?

Several forest management standards now stipulate that the principles of Free, Prior and Informed Consent (FPIC) be upheld for all consultations with local stakeholders.

FPIC originated as a guideline for negotiations with Indigenous Peoples when development projects such as mining or oil palm plantations affected their territories. It has since been recognized as a right under international law through the UN Declaration on the Rights of Indigenous Peoples (UNDRIP).

Whether or not it is an obligation, FPIC represents the best practice for consultations with local and indigenous communities as it represents a continuous process, based on the establishment of a trusting relationship between project developers and local communities. Under these principles, the locals have the final say over key decisions that affect them or their territories and they determine the methods of consultation themselves, according to their traditional practices. This does not amount to an individual veto for each member of the community, but it does oblige project developers to make every effort to address individual concerns in a constructive manner.

For more information:

RECOFTC and GIZ. 2010. *Free, Prior and Informed Consent in REDD+: Principles and Approaches for Policy and Project Development*. Bangkok, Thailand (Available at http://www.recoftc.org/site/uploads/content/pdf/FPICinREDDManual_127.pdf)

5.6 Monitoring and verification

Monitoring and verification are largely field-based activities. In order for the project developer to achieve the ultimate objective of generating revenue from carbon credits, the project must be verified and certified by an independent third party once again. In practical terms this means:

1. The project must be implemented as described in the PD or PDD. The approaches set out in this document have already been validated by the certifiers.
2. Quantify net carbon benefits by calculating:
    a) net emissions and removals in the baseline case;
    b) net emissions and removals as a result of project implementation; and
    c) leakage

If verification is done against the VCS standard, the credits are called Verified Carbon Units (VCUs). If the project is an afforestation or reforestation (A/R) project under the CDM, they are called Certified Emission Reductions (CERs) and if it is against a scheme of another voluntary standard they are labeled Voluntary Emission Reductions (VERs).

While conducting the verification of the project's carbon credit claims, auditors may also verify that the project has been implemented according to the approved methodology and that the monitoring plan set out in the PD/PDD has been followed.

Before a verification audit can take place, a monitoring report needs to be written. For the VCS, this report must follow the prescribed monitoring report template (see http://www.v-c-s.org/program-documents). The auditors will check the findings of the monitoring report to validate the project's carbon benefit claim.

Once carbon credits have been verified and issued, the project cycle is complete, and the process of monitoring and verification continues through further cycles.

5.7 Tools and guidance and useful links

There are many sources of advice and guidance that project developers may use to assist with numerous issues that arise during implementation. Much of this advice is updated on a regular basis as the forestry VCM sector continues to develop.

The most useful and comprehensive resources at present are from the CDM and the VCS. These are currently the only two standards that have generated reliable credits that are traded at significant volumes on the forestry VCM (see also http://www.forestcarbonportal.com/resource/state-forest-carbon-markets-2011-canopy-currency). Other standards generally use these two sources of expertise as guidance for the quantification of carbon benefits, and the CCBA for the verification of environmental and social co-benefits. The CCBA itself recommends using the CDM or VCS rules for the verification of carbon credits in projects which are validated under its standard. CarbonFix uses the CDM rules for carbon quantification. Plan Vivo's certificates relate mainly to poverty reduction, livelihood development, restoration of ecosystems, adaptation, etc. and their approach to quantifying carbon benefits is not as robust as the CDM or VCS.

Project developers can consult the following sites for further guidance:

Details of approved methodologies:

- **CDM**, All projects: http://cdm.unfccc.int/methodologies/documentation/meth_booklet.pdf#III.

- **CDM**, Large scale A/R projects: http://cdm.unfccc.int/methodologies/ARmethodologies/approved
- **CDM**, Small scale A/R projects: http://cdm.unfccc.int/methodologies/SSCAR/approved
- **VCS**: http://www.v-c-s.org/methodologies/find-a-methodology?title=&tid=14

Tools for project development and implementation:

- **CDM**: for both for large and small scale projects: http://cdm.unfccc.int/methodologies/ARmethodologies/approved
- **VCS**: scroll down on the methodology page, beyond the modules http://www.v-c-s.org/methodologies/find-a-methodology?title=&tid=14

Developing a new methodology:

- **CDM**, Large scale projects: http://cdm.unfccc.int/Projects/pac/ar_howto/New_AR_Methodology/index.html
- **CDM**, Small scale projects: http://cdm.unfccc.int/methodologies/SSCAR/index.html
- **VCS**: http://www.v-c-s.org/methodologies/develop-methodology

Developing a new project:

- **CDM**, Large scale projects: http://cdm.unfccc.int/Projects/pac/pac_ar.html
- **CDM**, Small scale projects: http://cdm.unfccc.int/Projects/pac/pac_ssc_ar.html
- **VCS**: http://www.v-c-s.org/develop-project/agriculture-forestry-projects
- **Plan Vivo**: http://www.planvivo.org/projects/developing-a-new-project/

- **CarbonFix**: http://www.carbonfix.info/Developers/List-of-Assistances.html?PHPSESSID=io65bg1ap0ppnqmmm2kitikd11

Additional guidance:

- **CDM:** http://cdm.unfccc.int/Projects/diagram.html

- **VCS**: look for the "AFOLU[37] Requirements", http://www.v-c-s.org/program-documents

37 AFOLU: Agriculture, Forestry and Other Land Use

6

Identifying, managing and quantifying risks

Chapter 6: Identifying, managing and quantifying risks

This chapter focuses on risks that threaten the success of forestry projects; in particular those related to **permanence**, or the risk of reversal of carbon benefits. It aims to help project developers to:

- Identify and address risks as early as possible; and
- Manage and quantify different kinds of risks: technical, financial, legal, political, and natural.

6.1 Identifying risks

All forestry VCM projects have to deal with permanence issues: all carbon benefits achieved by a project can be reversed. International negotiators in the UNFCCC process recognized at an early stage that this is a particular risk of forestry projects. This heightened risk, compared to other climate change mitigation methods such as energy efficiency or changing from non-renewable to renewable energy sources, means that emission reductions from forestry VCM projects cannot be treated as equivalent to those from other projects without making some provisions to address the issue. A number of methods have been suggested.

Within the compliance market, the permanence issue is addressed by issuing a different type of carbon credit to A/R CDM projects compared to other CDM methodologies. These are called temporary Certified Emission Reductions (tCERs). Unlike regular CERs, tCERs have a limited

validity – they expire after five years. After they expire, the holder of the tCERs (usually the registry of an industrialized country with emission reduction commitments under the Kyoto Protocol) has to either buy new credits or reduce its emissions directly. Industrialized countries with emission reduction commitments do not face this issue with non-A/R CERs and this is one of the reasons why the demand for credits from A/R CDM projects is depressed, and why the growth of forestry projects under the CDM has been slow.

The permanence risk is addressed differently under the VCM. Investors in the VCM do not want two different types of credit. They want permanent credits which are fully 'fungible' (inter-exchangeable) with credits from other sectors. VCS therefore developed its "AFOLU non-permanence risk tool". It is the most powerful and widely accepted approach to ensuring fungibility of credits from forestry VCM projects and can be downloaded from: http://www.v-c-s.org/sites/v-c-s.org/files/AFOLU%20Non-Permanence%20Risk%20Tool%2C%20v3.1.pdf

This tool outlines procedures for analyzing the risk of non-permanence (reversal) and determines what proportion of the carbon benefits are exposed to this risk. This proportion of carbon credits are put in a 'buffer' that provides insurance against the risk of reversal. However, if these risks do not occur as the project progresses, some credits will be released from the buffer and can then enter the market. Some risks are permanent and therefore a certain proportion of credits will never be released for sale. The minimum buffer is always 10 percent, regardless of the risk assessment of the project.

Projects can also undertake specific activities to mitigate risk – for instance by putting a good fire detection system in place – which will reduce the proportion of credits that need to be placed in the buffer. The tool helps project proponents, implementing partners and VVBs to assess the risks and determine the appropriate changes to the buffer. The tool sets a very high standard. This is necessary considering the level of investment in the VCM and the importance of the VCM to retain credibility as a valid approach to climate change mitigation. However, it

does add to the complexity of undertaking forestry VCM projects, and therefore adds to the transaction costs for project developers.

There are various types of risk to consider that may affect a forestry VCM project. The VCS has categorized these types as follows:

- Internal risks (Table 6): risks originating from the project design;
- External risks (Table 7): risks relating to social, economic and political factors beyond the control of the project managers; and
- Natural risks (Table 8): environmental hazards.

Internal and external risks are quantified based on risk ratings and possible mitigation measures, while natural risks are assessed by a combination of the likelihood of the hazard occurring and the severity of its impact on carbon credit generation.

The alternative to using the AFOLU non-permanence risk tool of the VCS is to negotiate the price of credits directly with investors. Risk is a major factor in the price that investors are willing to offer. However, if an objective and widely-recognized tool such as the VCS tool is not used, there is increased potential for disputes over liability in case of actual reversals or project failure. It is up to the project developer and investor together to decide how to deal with risk. However, it is clearly in the interest of smallholders and local communities to use the VCS tool[38] to level the playing field in negotiations with investors.

Some risks may lead to permanent destruction of the capacity of the project area to generate carbon credits, for instance, in case of a landslide. Other risks, such as some types of forest fires, may only temporarily reverse carbon uptake as the forest may regenerate over time in the same area. Some trees can even withstand fire and may

38 The version used here is version 3.1 from 1 February 2012. Always verify that that is indeed the most up to date version!

only experience a temporary setback in growth. Therefore, risk must be quantified over a particular period of time. The VCS has set this timeframe at one hundred years.

Table 6: Internal risks

Project management	Risk rating based on: • Inappropriate choice of tree species • Capacity to enforce protection e.g. against encroachment • Lack of experience in the management team • Distance of management team from project area
	Mitigation measures: • Ensure the presence of experienced personnel in the management team • Adaptive management in place
Financial viability	Risk rating based on: • Time before project finances break even • Percentage of required funding that is secured
	Mitigation measure: • Finance is readily available to the project
Opportunity costs	Risk rating based on: • The net present value (NPV) of the most profitable alternative land use activity compared to the NPV of the project activity
	Mitigation measures: • Project is implemented by a not-for-profit organization • Project is supported by a legally-binding commitment to continue project implementation strategy over the length of the project crediting period
Project longevity	Risk rating based on: • Existence of a legal agreement or requirement to continue the management practice • Length of validity of this legal agreement

Table 7: External risks

Land and resource tenure	Risk rating based on: • The number of entities that hold ownership and access/use rights in the area • The proportion of the area that is subject to disputes over land tenure or ownership • The complexity of these disputes
	Mitigation measures: • Documented evidence that the project has implemented activities to resolve the disputes and to clarify overlapping claims
Community engagement	Risk rating based on: • The proportion of forest-dependent households within or near the project area who have been consulted about project activities
	Mitigation measures: • The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area
Political risk	Risk rating based on: • A governance score over the last 5 years, calculated using 6 indicator scores provided on a World Bank website[39]
	Mitigation measures: • The country in which the project takes place is implementing a REDD+ Readiness program or participating in the REDD+ Social and Environmental Standards Initiative (supported by CCBA and CARE),[40]

39 http://info.worldbank.org/governance/wgi/index.asp
40 www.climate-standards.org/redd+/

Table 8: Natural risks

Type of risk	• Fire • Pest and disease outbreaks • Extreme weather • Geological risk • Other natural risk
Likelihood	• Less than every ten years • Every ten – 24 years • Every 25 – 49 years • Every 50 – 99 years • Once every one hunderd yrs or more, or risk not applicable to the project area
Significance	• Catastrophic: 70 percent or more loss of carbon stocks • Devastating: 50 percent to less than 70 percent loss of carbon stocks • Major: 25 percent to less than 50 percent loss of carbon stocks • Minor: 5 percent to less than 25 percent loss of carbon stocks • Insignificant: less than 5 percent loss of carbon stocks • Transient: full recovery of lost carbon stocks expected within ten years of any event • No loss
Mitigation	• Prevention measures implemented • Project proponent has a proven history of effectively containing natural risk • Both of the above • Neither of the above

When the overall risk rating is greater than 60 percent, it is considered unacceptably high and the project fails in the eyes of the VCS. The consequence is that it cannot be certified in this state: it has to work on risk mitigation or where possible address the risks itself.

6.2 Financial viability

The **financial viability of the project** is an issue of critical importance.

Developing and implementing a forestry VCM project is a long and costly process. The risks of market uncertainty are often poorly understood. The project can sometimes turn out to be financially unviable. A good upfront cost–benefit analysis, based on a sound business plan, is therefore essential. The pre-feasibility checklist in Chapter 3 will be useful for this purpose. Transaction costs can be significant and can depend upon the size of the project and on the selection of the carbon standard. Start-up costs can be equally high for small and large projects, while the revenues are bound to be quite different.

Income from a forestry VCM project can take several years after project start-up before it starts to flow (especially with ARR projects). Until that point, other sources will be needed to finance the project implementation.

Income from carbon credits usually starts several years after project implementation begins. Figure 15 indicates the timeline of the main milestones. The first 5 years are front loaded with the bulk of the expenses (for a list of financial start-up costs, in the order that they are likely to arise, see the list in Section 3.2). The first carbon credit sales, however, often do not occur before at least the third year. However, in the meantime, there are co-benefits which can greatly improve the livelihoods of local people, as well as other local stakeholders, including opportunities for employment and skills development.

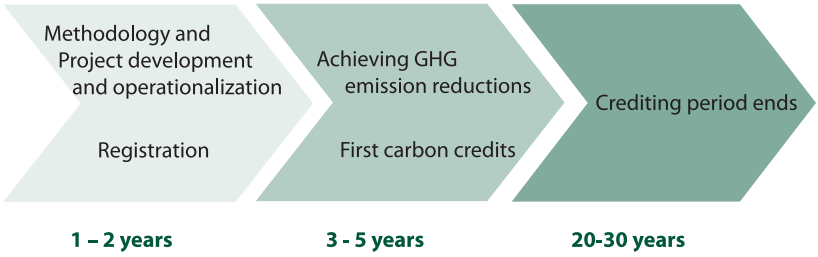


Figure 15: Timeline for forecasting cash flow

6.3 Risks related to property rights, use rights and land tenure

Disputes over ownership and use of land and resources, including contested and overlapping rights, have always been perceived as one of the more significant risk factors in forestry projects, and the new opportunities of the forestry VCM can make these risks more prominent (see Box 7 on 'carbon rights' in section 2.6). Paying very close attention to the issue of land and property rights could significantly minimize the risk of conflict and project failure. In almost all cases in the Asia-Pacific region, local populations will be living in or around the proposed project area and may be affected by the proposed forestry VCM project. The following should therefore be considered:

1. **What are the facts on the ground?** Forestry VCM projects generally involve changes in existing or planned land use. Project developers will therefore have to establish which other communities or stakeholders use or have access to the land on which the project depends. They should look into how existing patterns of land use and potential land use concessions affect the project and local residents. It is not uncommon

for governments to grant concession rights, for instance for logging, in areas under traditional land tenure systems without consulting the local population.

2. **Understand property rights.** It is very important for the project developer to investigate evidence of property rights within the project area, as well as any outstanding conflicting claims to the land and resources. If there are unresolved disputes, the proposed project will be affected and may even aggravate the disputes. Many communities still use customary or traditional systems of resource use and land tenure. Unless these are properly understood and respected, the project will not meet good standards of social responsibility.
3. **Effective communication** with local people is essential in order to discuss rights issues openly and transparently with all concerned parties. Information must not be withheld from communities, nor should they have any reason to suspect that it has been withheld, or that the project has proceeded without their consent. Suspicion of non-transparency can lead to a breakdown in trust and undermine all the hard work that has been done to develop the project. Through FPIC, information sharing can lead to a consensual agreement.
4. **Reach agreement on all rights issues** before proceeding with the project. People living in or around the project area may rely in whole or in part on the resources for food, fuel, medicine, fiber, building materials, religious and cultural purposes. Discuss all relevant issues and establish how the various benefits of the forest can be maintained and shared. If and when a forestry VCM project delivers carbon credits, it must be clear who has the rights to receive financial benefits from their sale, and these rights must also be agreed upon by all stakeholders.
5. **Document everything.** Involve the relevant authorities, legal and customary agencies to witness agreements made between

stakeholders throughout the course of the project. Land administration authorities can offer several approaches to recognizing and recording rights to land and natural resources. Project developers should use whichever approaches are appropriate to ensure accurate recording of agreements and thus reduce the risk of misinterpretation in the future.

6.4 Technical, social issues and political risk

Forestry VCM projects may run into technical difficulties. For instance, a project may fail if the wrong species is used for plantation establishment. Other technical risks include several issues related to the management and implementation of the project, such as:

- Sub-optimal staff recruitment;
- Poor protection from encroachment and illegal forest product collection;
- Poor silvicultural practice (nursery management, site preparation, planting);
- Lack of appropriate materials, infrastructure, or equipment; and
- Lack of adequate monitoring and verification of the carbon credits generated by the project.

Political risks are often harder to assess. As we know from many parts of the world, a politically stable country can change overnight into a hazardous place. The VCS has tried to come up with an approach that should lead to an assessment that is as objective as possible. However, remember that the local reality at the start of a forestry VCM project may be quite different from the local reality at the time the assessment is done.

Participation of countries in programmes such as the REDD+ Social and Environmental Standards initiative (supported by CCBA and CARE International) or similar internationally-recognized programmes concerned with social safeguards is a good indication that the national political conditions are conducive to good practice in forestry projects.

6.5 Carbon brokers and ERPAs

Dishonest behavior of carbon brokers is not part of the VCS risk assessment, but this has proven to be a significant risk to the success of the VCM, and the credibility of forest carbon projects in general. Dishonest brokers, or 'carbon cowboys' who approach communities with questionable carbon deals pose a very serious risk to the project and its financial potential.

Carbon cowboys may target communities or individuals and attempt to persuade them to agree to deals based on false promises of certain and quick financial returns. The carbon credits involved in these deals are often not real, measurable or verifiable, and therefore the fraud is imposed not just on the local people, but also on all other investors in the VCM. However, by becoming involved with these dishonest brokers, the community may sign away other aspects of their rights over the land and resources. It is essential, therefore, to confirm the reputation of any project developers or investors that are alien to the area.

One way of mitigating this risk is to draw up a strong Emission Reduction Purchase Agreement (ERPA). Developing an ERPA is a cautious and meticulous process that allows time to discuss all the checks and balances that may be put in place to protect the rights and livelihoods of local communities. Forestry VCM project developers and the local people involved in the project are often eager to secure funding and this

eagerness can sometimes lead them to be less vigilant than they ought to be when signing these agreements. An ERPA is no guarantee against inequitable outcomes unless local communities receive the necessary advice and support when negotiating these agreements with investors.

An example of an ERPA can be found on www.ieta.org/assets/TradingDocs/cdmerpav.3.0final.doc.

More detailed information on ERPAs and the relevant procedures can be accessed from the Katoomba Group at http://www.katoombagroup.org/regions/international/legal_contracts_cdm.php.

A prerequisite for an ERPA is that the right to benefit from the sale of carbon credits (or 'carbon rights' – see Box 7) has been defined. This simplifies the identification of the rightful seller. Other main characteristics and objectives of an ERPA are that it:

- Identifies and clarifies the relationship between the buyer and the seller;
- Is usually in English, often without translation into the native language of the project developer or investor;
- Identifies the expected quantity of carbon credits and the unit price;
- Usually includes delivery guarantees, enforcement clauses and penalties for breach of contract; and
- Includes the contract validity and provision for cancellation.

Usually, the agreement is made between two parties: a buyer and a seller of carbon credits, even though the purchase transaction may involve several sellers or whole communities and/or multiple buyers. In general, the risks to the rights of the various parties can be mitigated by the use of intermediaries (authorized representatives), who can negotiate on their behalf, have some legal background and authority, and can oversee

the disbursement of revenues on behalf of the sellers, with the prior written agreement and consent of all seller or buyer parties.

Emission reductions can be sold without being validated and verified i.e. without having become the Verified Emission Reductions (VERs) which can be accepted for sale on the VCM. However, the failure to verify carbon credits usually affects the price so seriously that investors often retain all payment until they are verified and the required quality is delivered. In the case of unverified carbon credits, two models for sale are used:

- **Forward sales:** bearing a relatively low price, but an obligation for the seller to perform project activities and ultimately to create verified credits. Project developers, particularly if they are small holders or local communities, may well prefer this sales method, despite the low price, as up-front funding is needed for the implementation of project activities. This is one of the main ways in which dishonest brokers can defraud them.

- **Spot sales:** sales made as and when carbon credits are generated. The price is higher, mainly because there are less risks for the buyer at this stage. The credits may not yet have been verified, but there is sufficient objective evidence of their existence.

In either case, sales agreements made without verification under VCS or another carbon standard, or without an ERPA, carry significant risks for local communities.

Some clauses of an ERPA relate to general good practice e.g. project registration, monitoring, etc. However, the more obligations listed, the higher the chance of the contract being terminated. It is therefore important to avoid including unreasonable obligations for local communities, as well as to reduce opportunities for the investor to withdraw from the agreement or force changes to the project design. The main focus of a good ERPA should be for the investor and the project

developers to work together to find ways to implement the project successfully.

Articles for termination of the agreement are crucial to the ERPA. Sometimes the ERPA can be worded in such a way that the seller would be obliged to pay the investor market damages in case the agreement is terminated due to circumstances beyond the control of either party. Project developers, and those who are supporting them in the case of smallholders and local communities, must ensure that termination clauses are acceptable and balance out the risks of project failure between seller and investor.

The ERPA should contain articles to cover potential transfer of the rights (of either the seller or the buyer) to a third party. These articles should specify whether the permission of both parties is required for such a transfer to take place, in recognition of the fact that the new partner may have less capacity or a weaker commitment to the multiple benefits of forestry VCM projects. Additionally, the ERPA should also specify the distribution of both costs and benefits of the project, including any applicable taxes and duties payable under law.

6.6 Risks of natural hazards

Forests are at risk from natural hazards like storms, fire, pests, and other natural events (earthquakes, hurricanes, etc.) that can damage the vegetation or even cause temporary or permanent land-use and land-cover changes. These natural hazards can result in the stored carbon in the forest being released back into the atmosphere and therefore affect the permanence of a forestry VCM project's carbon claims. The probability of such reversal from natural hazards should be carefully assessed before the project is designed so as to mitigate the chances and the impacts of the event to the maximum degree. Such a risk

assessment will have an impact on the verification process and will pay off by ensuring that the project is well-protected against such events.

Risks are assessed according to a combination of the likelihood that an event will occur, and the severity of its impact. This can be based initially on the historic records of natural hazards in the area concerned (e.g. fire maps, seismic activity) and projections based on these records. The occurrence of such hazards in and around the project area during implementation can subsequently be monitored to provide an up-to-date assessment of risks from natural hazards.

It is important to take action to reduce the risks to the project from natural hazards. For example:

a) **Reducing the risk of fire** by e.g. establishing fire breaks and fire towers, and having access to adequate fire-fighting equipment.

b) **Reducing the risk of pest/disease outbreaks by** planting a wide range of species, favouring those which are resistant to pests and disease, and regular monitoring of the health of tree species in the project area.

c) **Reducing the risk of damage from extreme weather** by planting weather-tolerant species, bearing in mind potential changing temperature and seasonal patterns in coming decades; use of riparian zones, windbreaks, or other buffers for flood or storm control.

All of these mitigation measures will be rewarded by reduced damage in the event of natural hazards. Though it is not essential to perform a risk assessment very early in the project cycle, it is useful to consider the risks of natural hazards sooner rather than later. It is recommended to document all of the steps and results of the risk assessment, as these will be requested by validators/verifiers, depending on the standard used.

7

Further help and advice

Chapter 7: Further help and advice

This chapter provides lists of resources for potential project developers, managers, staff, and partners to access further information on issues relating to forestry VCM projects. It also suggests how to locate the professional assistance discussed in Chapter 6, for legal, financial, and technical matters. By the end of this chapter, you should know where to find:

1. **Up-to-date information** on forest carbon issues;
2. **Legal aid** and advice;
3. **Financial advice** and services; and
4. **Technical assistance** with project development and implementation.

7.1 Guidelines for seeking advice

These guidelines will not provide all the answers to all questions on the forestry VCM. But they may help to work out the right questions to ask. Such as:

- What's the latest news on forest carbon?
- What are my rights to develop and market forest carbon?
- Can I make money out of it? and
- How do I do it?

There is not one person or organization that can answer all these questions. To answer any of them properly, local communities and smallholders need to find help from organisations which are:

- Locally-informed: Understand their situation and needs; and
- Neutral: Do not benefit from any decisions made as a result of their advice.

Independent, unbiased organizations may be hard to find. But there are still steps that local people can take to help them make informed decisions.

7.1.1 Using community networks and joint learning

As far as possible, project developers should work and learn together, rather than independently. Even if 'grouped projects' (see box 1) are not a viable option for practical reasons, smallholders and communities engaged in the VCM should join forces for the purposes of capacity building.

- **Learn together with others interested in forest carbon markets.** Find others who share the same interests and build a local network of interested people. Whenever possible, use existing community groups of which you are already a member.
- **Speak as a group** Whether trying to get the attention of government staff, civil society organizations, environmental NGOs or private sector service providers, everybody will pay more attention to those who speak as a group.

If the necessary services don't exist, or aren't adapted to forest carbon, governments need to know that they are required. Services are not usually created unless there is a demand for them. Project developers must proactively inform the relevant service providers what additional services are required for the forestry VCM, otherwise they will invest

instead in services that they think are required, which may be quite different. Associations of forestry VCM project developers should therefore make efforts to lobby governments and civil society in order to create or improve services and, if necessary, contact international agencies to seek the necessary funds.

7.1.2 Self help

Once formal requests for services have been made, it is not advisable to sit back and wait for help to arrive. Project developers can help themselves in the meantime. Use your local networks to find the advice you need. However, when looking for advice, it is essential to make sure that the advisors are experts on the topic in question. Lobbyists and civil society organizations can assist in finding experts, but should not be confused with the experts themselves.

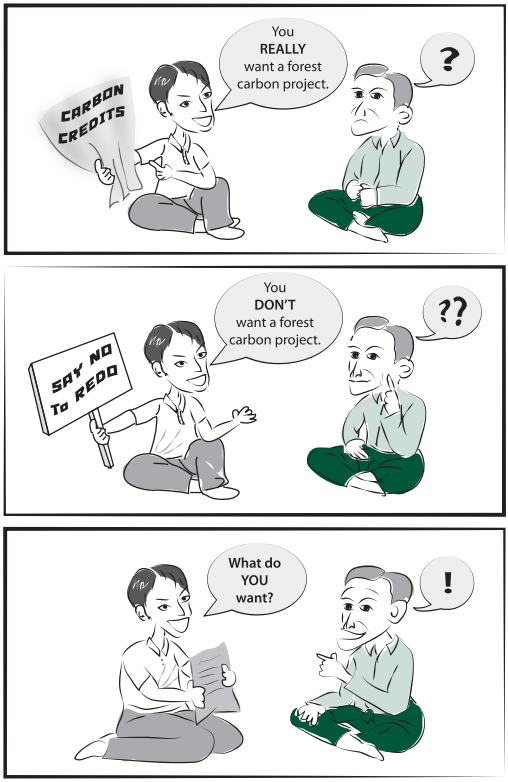
Good advice is professionally neutral

Local communities and smallholders must not be pressured either into adopting or abandoning forest carbon projects. These decisions are theirs alone to make. There are many reasons why particular individuals or organizations will seek to influence these decisions. These reasons may be perfectly legal and justifiable, but they distort the quality of the advice.

To determine the neutrality of an advisor, check:

- If a profit-making organization – do their profits depend on expanding numbers of forest carbon projects?
- If a non-profit-making organization – does their funding depend on maintaining a political or philosophical position for or against carbon markets?
- Do they produce promotional material on (or opposed to) carbon markets?
- Do they offer incentives based on the outcome of the decision-making process?
- Do they prefer to employ or associate themselves with people based on political or intellectual viewpoints?

Three kinds of Advisors:



If the answer to any of the above questions is 'yes', then this person or organization may not be able to give neutral advice.

7.2 Appropriate materials

The first priority for information is to have simple materials in a form that the target audience (in this case, smallholders and local communities), or their representatives, can understand. These guidelines are just the start.

Reliable translations are essential. It is very hard for those who must interpret a document written in a foreign language, for the benefit of someone else, to avoid adding their own views or impressions, however hard they try not to. How, therefore, can project developers separate translation from interpretation?

In order to make independent judgments on forest carbon information, it is necessary to obtain professional, specialist translations of the most relevant documents. To begin with, it is best to focus on documents that provide news, opinion and the basic background on forest carbon science and policy (see the table below for some good sources). Project developers and their supporters should find out if these are available in their own language. If not, it is necessary to use local community groups or civil society representative to make a request for translations, preferably to the organizations responsible for the publications, and prioritize funding if necessary. See table 9 for a list of organizations based in the region, which are key sources of English-language publications on forest carbon, and their availability in regional languages.

Table 9: Sources of information

Organization	Type of information	Style	Languages	Website
CIFOR	Science, Policy	Analysis, Advice	Bahasa Indonesia	www.cifor.org
FAO	Policy, Science, Best Practice	Review, Reports, Analysis	Chinese	www.fao.org/documents
RECOFTC	Policy	News, Analysis, Advice	Bahasa Indonesia, Chinese, Khmer, Lao, Nepali, Thai, Vietnamese	www.recoftc.org
REDD-net	Policy	Analysis, Opinion	Bahasa Indonesia, Chinese, Khmer, Lao, Nepali, Thai, Vietnamese	www.redd-net.org
Forest Trends	Science, Project development	News, Advice		www.forest-trends.org

7.3 Legal advice

All countries have different laws and regulations that affect your rights to use and own land. Even within countries, some states and provinces have different regulations. Forest carbon projects are a new kind of land use. Most legal systems have not been adapted to suit them. Before starting any detailed preparations for forestry VCM projects, therefore, it is necessary to find the answers to a few legal questions, including:

- Are forest carbon projects legal?
- What laws and regulations do I need to know about?
- Am I allowed to use my land for forest carbon projects?
- Do I have the right to sell carbon credits?
- How might my project affect other peoples' land rights?
- If laws are not yet clear on forest carbon, could my rights change in the future, and how would this affect my project?

In many countries in the region, governments are starting to develop national REDD+ programmes. This may help in the development of forestry VCM projects, or make them more difficult, or both. On the positive side, national programmes must clear up any legal uncertainty on forest carbon issues, so project developers in these countries should soon have a much better idea of their rights to start a forestry VCM project and to benefit from the trade in carbon offsets. On the other hand, more rules and regulations may make it more difficult for private individuals or communities to benefit from the VCM. Forestry VCM projects must fit (or 'nest') somehow within a national REDD+ programme, to avoid double accounting, i.e. the VCM project developers and the government cannot both trade the same carbon credits. In most cases, it is still too early to say how REDD+ programmes will affect forestry VCM project developers, but it is vital to keep up to date with the legal implications.

Independent legal advice is very important. In rural areas, it is often one of the hardest services to find. There are few government services that provide legal aid or affordable, accessible support for legal processes to small businesses in rural areas. It will therefore probably be more productive to approach local community groups with requests for legal aid relating to the forestry VCM and to make sure that this message reaches civil society organizations that have access to international funding agencies. Civil society organizations in the Asia-Pacific region, however, often focus their legal aid efforts on human rights and governance reform, but not on business development.

Due to high costs, a legal advisor might not be within reach throughout the whole negotiations process. But it is recommended to obtain legal advice at least at the beginning and toward the closure of the agreement.

The most legally-intensive process that a forestry VCM project developer is likely to experience is an ERPA (see Chapter 6). For further guidance on legal issues associated with ERPAs consult the following:

Legal Issues Guidebook to the Clean Development Mechanism, a guide to legal issues from the UNEP RISO Centre, available from: http://www.uneprisoe.org/reportbooks.htm. Although focused on the CDM, most issues covered in this guidebook are equally relevant to ERPAs and other legal documentation for VCM projects.

The Emission Reduction Purchase Agreements: A seller's perspective, produced by Mitsubishi UFJ Securities and Clean Energy Finance Committee in association with: Department of Environment and Natural Resources (DENR), Republic of the Philippines and Japan International Cooperation Agency (JICA).

Legal advice will cost money. And advice on a new topic like forest carbon requires specialist knowledge. It is therefore more important than ever that project developers do not seek such advice on their own, but use local community groups to find the best value. If good advice is too hard to find, too expensive, or leaves important questions unanswered, the best (free) advice is ***Do Not Invest!***

7.4 Financial advice

As outlined in Chapter 3, a reasonably accurate cost-benefit analysis of the proposed project, followed by confirmation that the necessary

up-front resources are available, are essential parts of a project feasibility assessment. A credible business plan can be created only on the basis of such a financial assessment. The plan should convince potential investors that a potential forestry VCM project is worth taking a financial risk.

To conduct the financial assessment and develop the business plan, project developers will need expert financial advice from people who understand their situation. Some banks provide such services, but local organizations, particularly microcredit schemes, are more likely to consider ***your*** interests ahead of their business interests. However, the novelty of this field means that the necessary expertise is scarce. Local support organizations must develop the necessary skills and knowledge themselves before they will be able to offer financial advice specifically tailored for the forestry VCM.

There are several sources of expert financial advice available at the international level. However, few of them are free. The following websites provide good up-to-date information on the voluntary carbon market, but may require subscription fees for the full service:

World Bank Carbon Finance Unit: www.wbcarbonfinance.org
An open access site with glossary of terms, and (through links to the World Bank Institute) a knowledge exchange forum, information on courses and capacity building events on carbon finance

Point Carbon: www.pointcarbon.com
A selection of up-to-date price information and an introduction to carbon finance terminology are available free of charge. A subscription provides very detailed and regular news on the carbon market and access to courses and online training services.

Carbon Finance: www.carbon-financeonline.com
Environmental Finance: www.environmental-finance.com
Online news magazines, require subscription to access useful information

For additional advice, the private sector organizations involved directly in VCM project development are the best source of financial information and experience (see section 7.4.3 below). However, project developers should bear in mind that these organizations are commercial enterprises and therefore are not often in a position to provide detailed advice unless they have a stake in the project concerned.

7.5 Technical assistance

Once project developers are confident that their legal and financial situation gives a good chance of success, they should seek appropriate technical help. Chapters 2, 4, and 6 in these guidelines are a step in the right direction, but additional specialist help will be required in at least three areas:

- Forest management standards;
- Skills development; and
- Project development.

7.5.1 Assessing existing forest management practice

Forest carbon projects require a change of management strategy. There are international and country-specific organizations that set standards for forest management. They can help project developers to find out how their current management practice compares to national and international 'best practice', and what they need to do differently.

Table 10: Contacts – forest management standards

Organization	Type of organization	Type of help	Website
Forest Stewardship Council	International Forestry Standard	Standards and networking	www.fsc.org
Global Forests and Trade Network	Industry/NGO alliance (organized by WWF)	Training and networking	gftn.panda.org
Indonesian Ecolabel Institute	National Forestry Standard	Standards and auditing	www.lei.or.id
Malaysian Timber Certification Council	National Forestry Standard	Standards and auditing	www.mtcc.com.my
Programme for Endorsement of Forest Certification	International Forestry Standard	Standards and networking	www.pefc.org
Rainforest Alliance & Smartwood	Environmental NGO and Certification body	Training and auditing	www.rainforest-alliance.org
Tropical Forest Foundation	Non-profit forest technical NGO	Training, research and auditing	www.tropicalforestfoundation.org
Tropical Forest Trust	Non-profit forest technical NGO	Training, research and auditing	www.tft-forests.org

7.5.2 Developing new skills for the Forestry VCM

Knowing what you need to do is one thing; learning how to do it is quite another. There are several NGOs in the region which have been involved in the processes of development of successful forest carbon projects. Their experience in project development steps can help project developers to benefit from the lessons they have learned and to avoid making elementary mistakes.

Although NGOs are at greater liberty than private sector organisations to offer assistance without having a direct financial interest in the project, they are constrained by other means. Their advice and assistance is dependent on their having personnel and funding available to meet the request for support. This support must usually correspond to an existing, funded activity in the concerned region, and may also be restricted to a particular target group of beneficiaries, for example groups of a certain poverty status, ethnic background or gender-specific interests. The NGOs listed in table 12 have all been involved in forest carbon issues in some countries in Asia. While some will have more flexibility than others, it is important that smallholders and local communities are not given the impression that the capacity building services that they require will necessarily be available, or free of cost.

Table 11: Contacts – Technical Help from NGOs

Organization	Type of organization	Asian activities	Website
CARE International	International Rural Development NGO	Indonesia, Nepal Viet Nam	www.care.org
Fauna and Flora International	International Environmental NGO	Cambodia, Indonesia, Philippines, Viet Nam	www.fauna-flora.org
Pact International	International Rural Development NGO	Cambodia, Myanmar, Thailand, Viet Nam	www.pactworld.org
PATT Foundation	UK Charitable Foundation	India, Indonesia, Thailand	www.pattfoundation.org
World Wildlife Fund	International Environmental NGO	Malaysia, Nepal, Thailand, Viet Nam	www.panda.org
The Nature Conservancy	International Environmental NGO	China, Indonesia, Mongolia, Thailand, Papua New Guinea	www.nature.org
Community Forests International	US Charitable Foundation	Cambodia, India	www.forestsinternational.org
Wildlife Conservation Society	International Environmental NGO	Cambodia, Lao PDR	www.wcs.org
Winrock International	US Charitable Foundation	Thailand, Viet Nam	www.winrock.org

7.5.3 Professional VCM project development

The actual process of carbon project development is not something that smallholders and local communities, or their advisers from civil society organizations, can do on their own. A new type of organization, known as 'carbon project developers', has emerged to help prepare VCM project documents and get them registered. The number of businesses with offices in Asia is steadily increasing, as more project developers start activities in the region. The table below is adapted from a list maintained by Forest Carbon Asia. To get the latest updated list, including contact names, email addresses and phone numbers, visit their website at www.forestcarbonasia.org/players/project-developers-consultants

Table 12: Contacts – Carbon Project Developers

Organization	Asian offices	Website
Carbon Credit World	India	www.carboncreditworld.net
Carbon Conservation	Singapore	www.carbonpool.com
Climate Bridge	China, India	www.climatebridge.com
CO2OL	Viet Nam	www.co2ol.de
Eco-Carbone	Indonesia, Lao PDR, Viet Nam	www.eco-carbone.com
Emergent Ventures International	India, Indonesia, Thailand	www.emergent-ventures.com
Equitech	Thailand	www.equitech.biz
First Climate	India	www.firstclimate.com
Forest Carbon	Indonesia	www.forest-carbon.org

Organization	Asian offices	Website
General Carbon	India, Philippines, Singapore	www.general-carbon.com
Mekong Carbon	Cambodia	www.mekongcarbon.com
New Forests	Malaysia	www.newforests.com.au
ORBEO	China	www.orbeo.com
South Pole	China, India, Indonesia, Thailand, Viet Nam	www.southpolecarbon.com
Tropical Offsets	Malaysia	www.tropicaloffsets.com

ANNEXES

Annex I: Sample project idea note (PIN)

This PIN was developed in July 2007 for submission to the Community Development Carbon Fund of the World Bank's BioCarbon Fund. The information contained in the PIN therefore conforms to World Bank standards. All VCM standards introduced in these guidelines provide independent advice on PINs through their respective websites. However, the information covered in this PIN is relevant for all standards.

Reference: Woelcke J, 2007, 'PIN LVDP BioCarbon Fund 10 October 2007: Revised Version for East Africa', Unique Forestry Consultants, Freiburg, Germany, downloaded on 5th May 2012 from http://viafp.supremeserver20.com/Intranet/filecabinet/30

Name of Project: Lake Victoria Development Programme

Date submitted: 10 October 2007

Part 1: Project description, type, location and schedule

General description

Project description and proposed activities, including:

i) Objectives of the project

ii) Size of the project area, and of sub-divisions of the project area

iii) Innovations of the project

iv) Economic drivers of the project, apart from carbon finance opportunities

i) The overall objective of the Lake Victoria Development programme is: "To contribute to improved livelihood and empowerment of small scale farmers in the Lake Victoria Basin through sustainable management of natural resources and enterprise development and provision of rural financial services."

ii) Area coverage

Project/district	Sub-location	area (ha)	Population	house-hold
Kisumu Project	Dienya	2 439	7 317	1 463
Siaya District	Wagai	1 491	4 473	895
Yala Division				
Kitale Project	Kabuyefwe	1 721	5 163	1 033
Bungoma District	Milima	6 419	19 257	3 851
Tongaren Division	Mitua	18 097	54 291	10 858
Kitale Project	Namunyiri	970	2 910	582
Lugari District	Milimani	808	2 424	485
Likuyani Division	Vinyenga	1 012	3 036	607
Total		**32 957**	**98 871**	**19 774**

In Dienya East farm sizes range from 2-7 acres while in Wagai it ranges from 0.5 - 5 acres. Ownership is private in both cases. Soil type is sandy loam. Main crops grown are maize, sweet potatoes, beans, sorghum and groundnuts. Average farm size: 4 acre (1.7 hectare).

In Bungoma District average population density is 400 persons/km^2 projected to increase to 700 by 2008. 1997 poverty level was 56 percent ie about 490 000 people. Average land size: 2 ha (4.8 acres) for small scale and 7ha for large scale. Only 400 ha of forest land and population using fuel wood is 83.9 percent.

	In Lugari District average population density is 417 persons/km^2 projected to increase 4.14 percent. In 1997 poverty level was 57.27 percent, i.e. about 124 689 people but local estimates put poverty levels at 65 percent Average land size: 2.5 ha. Assumed adoption rate of promoted sustainable land management practices: Based on previous experience we expect 50-70 percent adoption rate of the supported sustainable land management practices promoted by the Project. iii) The following seven outputs were developed to enable the programme to reach its objectives: - Increased & diversified food supply through application of agroforestry technologies. - Improved nutritional status. - Increased on farm tree cover for firewood & wood products through application of agroforestry technologies. - Improved farmers utilization of agroforestry products. - Increased & diversified production of marketable agroforestry products. - Improved capacity of farmers in accessing market information & developing markets. - Democratic member-based organization strengthened & made functional. iv) The mission is: "To integrate agroforestry practices into smallholdings and make it an engine of economic growth anda means to reduce poverty"
Project category adopted (ARR, IFM, REDD etc), and description of introduced technologies.	**Project category: Sustainable land management (SLM)** The following SLM activities will be promoted: **1. Rehabilitation of degraded lands (e.g. *Imperata grasslands*) to**

Describe the current and alternative land use practices with reference to existing pilot activities	***1a Forest;*** It is expected that some proposed project sites will be converted into woodlots due to the nature of terrain and low soil productivity. This will increase the total biomass per area unit and therefore also an increased sequestration of carbon and soil carbon storage. ***1b. Agroforestry (shade trees, boundary planting)*** This will be the major intervention in the project sites where trees for carbon will be integrated into the existing farming system of intensive cropping of both annual and perennial crops. Agroforestry adds the total number of trees, which contributes to increased soil carbon storage as well as total carbon sequestration. **2. Reforestation of degraded temperate grasslands or arid lands by tree planting** Some of the sites are highly degraded through overgrazing and cutting of savanna woodlands for charcoal production, and reforestation will be the main intervention. Agroforestry uses land more intensively (spatially and temporally) which increases carbon sequestration. Growing trees on farm decreases pressure on common land or natural forests and therefore reducing carbon emissions. **3. Establishing tree/shade crops over existing crops (e.g. coffee)** Some sites are characterized by intensive perennial cash crops such coffee, tea and even improved pastures. Trees will therefore be introduced to provide shade to the crops. Agroforestry technologies like intercropping/alley cropping provides potential carbon sequestration, which would not happen in a mono cropping system.

4. Plantations for wood products (Small scale landholder-driven)

Farmers with slightly larger farm holdings tend to establish plantations for wood products, and this technology will be enhanced so that a viable local market for wood products is established. This technology provides an opportunity for sustainable fuel wood and charcoal production and lower carbon emissions.

5. Alternatives to fuel wood for forest/environmental protection

Wood-saving stoves are promoted, as well as solar cooking facilities that greatly contribute to more efficient use of fuel wood. Technologies potentially decrease the use of fuel wood up to 50-60 percent and therefore increase the sequestration of carbon (negative leakage) at the same time reduces emission of NOx. The social impact on people's health will be important.

6. Other sustainable agriculture interventions

Sustainable agriculture interventions rely on trees and tree extracts for pest management and soil fertility replenishment and these will be enhanced in the proposed project. Practices like conservation agriculture (CA) will be promoted. Green manure for soil fertility management increases carbon soil storage. Massive introduction of nitrogen fixing trees potentially increases the uptake of NOx. Practicing organic soil fertility management reduces dependence/use of artificial fertilizer and consequently energy uses decreases.

7. Improved livestock management leading to vegetation and soil recovery

Upgrading of indigenous livestock breeds, promotion of short term trees as fodder and elimination of grazing.

	Farmyard manure decreases potentially the use of artificial fertilizer which potentially decreases carbon emissions.

Project Proponent(s)

Name of project proponent(s)	SCC-Vi Agroforestry Programme (Swedish Cooperative Centre and Vi Agroforestry)
Organizational category (Government agency, NGO, private sector entity, cooperative etc)	NGO
Other functions of the proponent in the project (operational entity/ intermediary)	Operational entity
Summary of relevant experience	Twenty-five years experience in the field of rural development, agroforestry, community development in East Africa.
Address (include web address, if any)	P.O. Box 3160, 40100 Kisumu, Kenya Web: http://www.viskogen.se/Default.aspx?ID=360
Contact Person	Bo Lager, Programme Director
Telephone/Fax/Email	Tel +254 57 2020386 Mobile +254 733 964568 bo.lager@viafp.org

Project Sponsor(s)/Financier(s)

Name of project sponsor (s)	1. The Foundation Vi Planterar träd (we plant trees) 2. Swedish International Development Agency (Sida), Support to Civil society, Sida SEKA 3. Sida, Lake Victoria Initiative (LVI)
Organizational category	1. Foundation 2. Government agency 3. Government agency
Address (include web address, if any)	1. S:t Göransgatan 160A, P.O. Box 302 27, 104 25 Stockholm, Web: http://www.viskogen.se/Default.aspx?ID=360 2. Sida SEKA, 105 25 Stockholm Web: http://www.sida.se/sida/jsp/sida.jsp?d=121&language=en_US

	3. Sida, Lake Victoria Initiative, 105 25 Stockholm Web: http://www.sida.se/sida/jsp/sida.jsp?d=858&language=en_US
Main activities	For 1) a. Fundraising b. Information to Swedish public on development cooperation
Summary of project finances (assets, revenues, profits etc) in last fiscal year	Revenue 2006, 63 million SEK or 9.3 million US$ (fund raising from Swedish public increased with 20 percent compared to 2005). Approximately divided as follows: 1) 1/3 Vi planterar träd foundation 2) 1/3 Sida/SEKA 3) 1/3 Sida/LVI
Type of project	
Greenhouse gases targeted (CO_2, CH_4, N_2O etc)	CO_2, N_2O
Location of the project	
Country	Kenya (The programme has activities in seven (7) projects in Kenya, Tanzania, Uganda and Rwanda)
Nearest City	1) Kitale; 2) Kisumu
Brief description of location (including GPS coordinates, if possible)	Maps provided in an appendix
Project Timetable	
Earliest project start date (month/year)	April 2008
Estimate of time required before becoming operational after finalization of the PIN	Time required for financial commitments: 5 months Time required for legal matters: 5 months Time required for negotiations: 5 months Time required for establishment: 5 months
Project lifetime	Unspecified
Current status or phase of the project	a. Identification and pre-selection phase The Lake Victoria Development Programme (LVDP) has been implemented since 2006 and the first phase ends Dec 2008. The proposed CDM project is in its identification phase, and will be an integrated part of the LVDP.

Current status of acceptance of host country	The programme has been approved in Kenya and certificate of registration exist; No efforts have been made yet to get acceptance for LVDP as CDM project.
Positioning of host country with regards to Kyoto Protocol	Signatory, non-Annex I

Part 2: Expected environmental and social impacts

Environmental impacts (carbon)

Estimate of carbon sequestered or conserved: *In tCO_2e. Attach a spreadsheet in an annex if possible. If information not available, provide details of:* *i) Site conditions, annual rainfall, altitude, soil type* *ii) Tree species planted per ha* *iii) Tree harvesting intervals* *iv) Above-ground biomass and below-ground biomass in tons of dry matter per ha.*	Up to and including 2012: 61 000 t CO_2e Up to and including 2017: 273 000 t CO_2e Conversion factor C to CO_2e is 3,67 Assumptions: 1. Each tree sequesters 3-5 kg C/year, the calculation is based on the lower level 3 kg C/year. This is the expected average sequestration during 10 years (also considering different ecological conditions and species). 2. The programme contributes to farmer's establishment of approximately 40 long-term trees per household annually. We assume to maintain this number of long-term trees planted annually during the time frame of the proposal. Calculation based on figures from the environmental impact assessment conducted 2007 in Kisumu and Kitale. 3. Assuming a 70 percent adoption rate: 19 774 households × 0.70=13 800 households.

4. Total number of planted trees from 2009 up to and including 2012: 2.2 million (4years×40 trees×13 800 households×3kg) + (3×40×13 800×3) +(2×40×13,800×3) + (1×40×13 800×3)=16,560 tC or 61,000 tCO_2e

5. Total number of planted trees from 2009 up to and including 2017 are 5.0 million. (9years×40 trees×13 800 households×3kg) + (8×40×13 800×3) + (7×40×13 800×3) + (6×40×13 800×3) + (5×40×13 800×3) + (4×40×13 800×3) + (3×40×13 800×3) + (2×40×13 800×3) + (1×40×13 800×3) = 74 520 tC or 273 000 tCO_2e

6. The programme contribution in terms of short term tree/shrub on contours, hedgerows, etc are not included in the calculation. Same applies to potential negative leakage like introduction of energy saving stoves.

Supplementary information:

1. The average rainfall ranges from 700 to 2 000 mm per annum; Altitude ranges from 1 140 masl at lakeshore up to 1 800 masl in the Kenyan highlands; Soil types found in Lake Victoria Basin are nitosols, plinthosols, vertisols and greysols.

2. Intercropping of 200 trees per hectare (6 by 8 meters) in agroforestry system, boundary planting, alley cropping and scattered trees on farm land. Tree seed species distributed in 2006 for Kitale and Kisumu Projects, in an appendix.

3. 20-30 years normally, short term species 2-5 years.

4. Information not available

Baseline scenario *What would the future look like without the proposed project? What would the estimated total carbon sequestration/ conservation be without the project? Explain why the project is additional (e.g. without the carbon finance the project would not be financially viable)*	The future without the extra resources provided by the carbon finance will mean that fewer trees will be planted and the pressure on the already existing vegetation will even be greater. We are missing baseline data to be able to calculate the estimated carbon sequestration without the proposed project. This project is additional given that at the moment the resources that are provided for tree planting are not sufficient to cover large areas in the region which urgently require tree planting for both reforestation and afforestation and other sustainable land management activities.

Other environmental impacts

Existing vegetation and land use *What is the current land cover and land use? Is tree cover more than 30 percent?*	The area is densely populated and the land use is predominantly smallholder agriculture. The lake shore has many wetlands which is valuable for the biodiversity. Forest cover in the Lake Victoria basin is less than 10 percent. In the next phase of project preparation we will use Landsat images to make: 1. Land use analysis; and 2. Vegetation analysis. In addition we will use radar images to determine: 1. Sloping pattern; and 2. Watershed division.
Potential environmental impacts (positive and negative) of the project (Include how to minimize potential negative effects) a) Local impacts b) Global impacts	Local impacts: Climate change adaptation and mitigation through the use of diversified AF-based production systems and the farmers´ organizations will be promoted. Awareness raising of global climate change. Increased biodiversity, conservation of indigenous species, increased tree coverage, improved microclimate. Benefits from AF technique include: increased soil coverage, increased soil fertility, increased land productivity due to efficient use of land/space, erosion control, protection of watersheds, hence increased quantity and quality of water, less toxic smoke from using high caloric value trees for fuel wood supply for cooking, energy provision through increased access to fuel wood and charcoal production from sustainable production on-farm (sold to urban areas).

	Improved nutritional status, water-harvesting techniques, HIV/Aids mitigation through AF intervention, conservation agriculture techniques, improved aesthetical value, shade. Global impacts: Decreased global warming through increased carbon sequestration from the atmosphere through the planting of trees. Protection of river catchments that provide water for Lake Victoria, thus improving environmental status of the whole Nile Basin. Increased public awareness of global climate change, global environmental issues and poverty, and thus increased solidarity between North and South, reducing global economic inequalities
Consistency between the project and the environmental priorities of the host country	The Lake Victoria Basin Commission of EAC (East African Community (Governments of Tanzania, Kenya, Uganda, Rwanda and Burundi) prioritize strategies under Ecosystems, Natural Resources and Environment. The commission lines up several strategies (from Feb 2007) which are consistent with LVDP, the most important are (quoting): - Improve land use and natural resources; - Promote proper land use management practices; - Promote the establishment of community forests and woodlots/afforestation/tree planting schemes/ agroforestry; and. - Promote integrated water resource/water catchment management.
Socio-economic impacts	
How will the project improve the welfare of the community involved in it, or in its vicinity? *What are the direct effects which can be attributed to the project, and which would not have occurred to the same extent without the project (e.g. employment creation,*	Community benefits; - Enhanced nutrition from fruits and vegetables promoted - Access to medicinal plants - Increased land productivity due to efficient use of land/space - Higher economic returns from diversification of products like fruits, medicine, vegetables, bee products - Aesthetic and recreational value of trees to the environment

poverty alleviation, foreign exchange savings)? Indicate number of communities and people that will benefit from the project.	- Increased access to tree products - More forage for livestock and bees. - Self-employment opportunities though farmer enterprise development. **Direct effects attributable to the project** - Job creation. The whole programme currently employs over 750 staff of which Kitale and Kisumu projects employs 215. - Poverty alleviation through capacity building on agricultural production, marketing, village savings and loans, soil and water conservation, tree establishment etc. - Foreign exchange earnings to host countries. **Number of people to benefit:** approx. 100,000 people in approx. 20,000 households in 8 sub-locations in western Kenya.
Any other indirect socio-economic impacts *e.g. training/education benefits due to introduction of new technologies and products, replication of approaches in the country or the region*	- Strengthened staff capacity building. - Strengthened capacity building of the community/ farmers - AF promotion through radio programmes even outside the area of intervention/operation. - Farmer exchange visits leads to copying of interventions being promoted by the programme. - Enhanced social capital through co-operative outreach. - Small groups grow into bigger organizations, e.g. CBOs.

Part 3: Project finance and commercial structure	
Preparation cost *e.g. baseline survey, development and documentation costs of carbon finance component*	US$ 0.05 million annually
Establishment cost *e.g. extension costs to introduce new management practices, tree planting, mulching and cultivation costs etc.*	US$ 0.414 million annually The total cost for extension in eight (8) areas (The cost per household per year is 30 USD, 30×13 800households= 414 000 USD per year). Approximate breakdown of costs (details in an appendix): 1. Salaries, 50 percent 2. Logistics/transport, 20 percent 3. Training/capacity building of staff, 10 percent 4. Seeds and seedlings, 5 percent 5. Other (insurance, office rent, communications, electricity), 15 percent
Other cost *Give explanation e.g. certification against VCM standard, ISO, FSC, organic etc.*	US$ 0.05 million annually Organic production certification, Environmental Impact Assessment (EIA), CDM certification, VER certification.
Total project cost	US$ 0.514 million annually
Source of finance identified (provide details if needed)	
Equity *Give name of the organizations and respective amounts*	None
Debt – Long Term *Give name of the organizations and respective amounts*	None
Debt – Short Term *Give name of the organizations and respective amounts*	None

Grants *Give name of the organizations and respective amounts*	1) Own contribution, 0.214 million USD annually 2) Sida SEKA, 0.15 million USD annually 3) Sida LVI, 0.15 million USD annually 4) Lake Victoria Basin Commission, uncertain
Amount for which funding source not yet identified *Projects with a big financing gap may not be approved*	None
Sources of carbon finance *Has this project been submitted to other carbon buyers? If so, identify them*	None
Indicative CER/ERU/RMU/ VER price for the emission reductions *Give in US$ per tCO_2e, for the first 10 years of the project. Indicate the emission reduction units (CER/ERU/RMU/VER).* *Subject to negotiation and financial due diligence*	Price: 4 USD per t CO_2e Price based on prevalent market price for VERs of 4-6 USD per t CO_2e
Estimated total value of emission reductions from the project *= price per tCO_2e multiplied by estimated total tCO_2e for project period. Leave this field empty if the total estimated tCO_2e has not yet been calculated.*	Until 2012: 61 000tCO_2e ×4 USD= 244 000 USD Until 2017: 273 000tCO_2e ×4 USD= 1 092 000 USD
Financial Analysis Financial Internal Rate of Return (FIRR) with and without the carbon	

finance component. Attach a financial spreadsheet if possible. If not possible to estimate the impact of the carbon finance component on FIRR, then list, rank and qualify the important decision-making parameters for the enterprise to develop a carbon finance project e.g. the carbon finance component should cover or partly cover the costs of new activities or contributes to Corporate Social Responsibility (CSR) targets.	**FIRR without carbon component:** This programme is not profit-making. Money received by the programme is used to build capacity of the communities to improve their livelihoods. It is for this reason that our biggest investment is our staff who are key in ensuring that we are able to reach out to the farmers. An appendix shows an extract from the audited accounts of 2006, showing the money received and how it was used. **FIRR with carbon component:** With the carbon component, we will still be non-profit. We will strengthen our ability to reach out to more farmers through training. Tree establishment, which is one of our strongest components, will be further boosted. **Decision making parameters:** - Carbon component will be integrated into our existing structure. - Carbon finance will support extension service provision. - Necessary infrastructure is already in place (staff, offices, vehicles, motorbikes, seed store etc). - Community will contribute labor and land. They will implement on their own farms, as they are currently doing in the ongoing interventions. - We still don't intend to be a profit-making organization. - The ultimate goal is to make farmers enterprise profitable.

Part 4: Institutional details and revenue distribution

Institutionalization

In-house capacity to develop, implement and monitor project activities *Provide information on:* *i) Extension system, number of extension workers and project area covered by extension workers* *ii) Number of mapping, inventory and monitoring specialists*	1) Participatory extension based on two programme phases; ***Phase 1***: intensive, 2-3 years, one extensionist providing services to approx. 500 farmers ***Phase 2:*** extensive, 2-3 years, one extensionist providing services to approx 1,000-2,000 farmers (annually). Presently the Kitale and Kisumu Projects have 144 extension workers living in the villages (total number of staff in the 2 Projects are 215). 8-10 of the 144 extension workers will be involved in this particular Project. Project area covered is detailed in an Appendix. 2) Each of the 2 project sites has 2-4 monitoring specialists who perform monitoring and evaluation of the project. Each project site is equipped with ArcView 9.2 and a number of GPS units. Programme office is equipped with ArcView 9.2, ARC Spatial Analyst, ARC Publisher and IDRISI Kilimanjaro.
Internal Control System (ICS) Describe your ICS and mention which national and international quality standards are achieved or will be achieved in the future (ISO, organic certification, FSC etc)	1) The Programme is in the process of certification according to PLAN VIVO criteria. This system is developed by Edinburgh Centre for Climate Management (ECCM) and managed by Bioclimate Research & Development (BR&D). We are interacting intensively with 1 000 schools in the region and are thinking of earmarking this work for the voluntary market (VER) because of relatively small quantities of carbon. 2) The Programme is now carrying out an Environmental Impact Assessment (EIA) and Environmental Audit (EA) which will be recognized by National Environment Management Authority (NEMA) in Kenya (completed in September 2007). EA will be reported annually to NEMA.

Preparation cost *e.g. baseline survey, development and documentation costs of carbon finance component*	3) M&E system is operational and baseline, progressive and control baseline surveys are conducted annually. It is basically in this system that the carbon monitoring will be integrated. The extension areas have household lists where the land use changes will be recorded and the increment of number of trees on the farmer's land. This system will provide very accurate and reliable data. 4) Financially, each project is audited annually by KPMG. 5) Occasional external evaluations by Sida and others.
Project participants, institutional structures and partnerships *List project participants, describe existing or envisaged institutional structures and partnerships to develop, implement and monitor carbon finance project component. Indicate sustainable financing mechanisms in place to cover respective organizational costs.*	**Project participants:** **Funders:** - The Foundation Vi Planterar träd ("We plant trees") - Sida - BioCarbon Fund & Community Development Carbon Fund - Lake Victoria Basin Commission **Implementers:** - SCC-Vi Agroforestry Programme - Local Government - Farmer groups and organizations **Monitoring/Research/Technical support:** - ICRAF - KEFRI (Kenya Forest Research Institute)

Carbon revenue distribution and incentive systems

Carbon revenue distribution *Explain what you intend to do with the carbon revenues and in particular how small-scale farmers will benefit from the carbon revenues*	- From the carbon revenue we will provide extension services. - Small-scale farmers will be exposed to technologies that will help them get more out of their farms. - Within the programme we have a component of farmer enterprise development. This looks into issues regarding marketing and resource mobilization. This

	will be key in establishment of own enterprises by the farmers reached. - Support to organization of farmers groups
Incentive systems *List existing and future incentives of the project that will ensure a high adoption rate of new management practices. Also indicate the expected percent rate of adoption*	**To ensure adoption rate;** - Demand driven farmers´ trainings. - Starter tree seeds species will be provided as we also train on local seed collection to ensure continuity. - Farmers taking up tree nurseries as commercial ventures will be trained on how to better increase their revenues and productivity. - Emphasis will be put on food security, diversification on on-farm enterprises, Increased tree cover, Soil and water conservation measures, sustainable farmer utilization of on-farm agroforestry products, access to market and market information, rural financial services and strengthening of farmer organizations. The extension system is basically enterprise driven and generally following the following steps: - Enterprise selection: Appraisal of various potentials and decision making - Enterprise groups: Constituted as per enterprise selected and request for facilitation services - Business planning: Strategies, marketing, production, resources, expenditure and income projections - Learning groups plans: Required capacity building services based on the business plan strategies - Farmer organization strategic plan: Business plan for service provision to members and strategies for OD process **Expected adoption rate;** At minimum we expect the adoption rate to be at 50-70 percent of the households.

PIN appendices:

1. Details of project area of operation and households involved
2. Analysis of expenditure for financial year 2005-6
3. Maps: Administrative boundaries, population and infrastructure, rainfall
4. Seed distribution records

Annex II: VCS PD template

The text below is a summary of the VCS PD template version 3.0, developed in March 2011, and downloadable from the VCS website at http://v-c-s.org/program-documents.

1) Project details, which shall include:

a) The project title, a summary description of the project, the sectoral scope(s) of the project and project type.

b) The names, roles and responsibilities of the project proponent(s) and any other entities involved in the project.

c) The project start date and project crediting period, and the project scale and the estimated net GHG emission reductions or removals created by the project.

d) A description of the project activities, a specification of the project location and geographic boundaries, and a description of conditions prior to project initiation.

e) Identification and demonstration of compliance with relevant laws, statutes and other regulatory frameworks, an indication of whether the project has been registered or rejected under any other GHG program.

f) Additional information relevant to the project, including eligibility criteria for new instances of project activities for grouped projects, a description of any leakage management plan or mitigation measures and any further information which may relate to the eligibility of the project, risks to net GHG emission reductions or removals, and an indication of commercially sensitive information that has been excluded from the public project description.

2) The title and reference of the methodologies applied to the project, a demonstration that the project activities meet the applicability

conditions of these methodologies, a definition of the project boundary and identification of GHG sources, sinks and reservoirs as well as sources of leakage, a description of the baseline scenario, demonstration of additionality, and a description of any deviations from the methodology. With respect to the demonstration of additionality, sufficient information shall be provided so that a reader can reproduce the analysis and obtain the same results.

3) A description of all data and parameters used for measuring, monitoring and calculating net GHG emission reductions or removals, and a description of the monitoring plan.

4) A calculation of baseline emissions, project emissions, leakage emissions (if applicable) and net GHG emission reductions and removals.

5) A summary of any environmental impact assessments conducted.

6) A summary of relevant outcomes from any stakeholder consultations conducted.

7) Evidence of proof of title and a demonstration that net GHG emission reductions or removals generated by the project will not be used for compliance with an emission trading program or to meet binding limits on GHG emissions.

8) For AFOLU projects, where required, the project description shall be accompanied by a non-permanence risk analysis prepared in accordance with VCS document *AFOLU Non-Permanence Risk Tool*.

Annex III: Example outline of a management plan

The outline suggested below is not based on any one particular source or combination of sources, and will vary significantly depending on individual project type and context. It should therefore be used as a very general indication of the information required for a VCM project management plan, and not as a standard template.

1. General description

- 1.1. Legal status
  - 1.1.1. Ownership
  - 1.1.2. Management
- 1.2. Maps
- 1.3. Landform
  - 1.3.1. Topography and soils
  - 1.3.2. Hydrology, watersheds and drainage
- 1.4. Climate and ecosystem
  - 1.4.1. Climate
  - 1.4.2. Natural vegetation cover
- 1.5. Sites of special interest and high conservation value (HCV)
- 1.6. Historic background of the land resource, including traditional use
- 1.7. Socio-economic aspects of communities in surrounding areas
  - 1.7.1. Rights and privileges
  - 1.7.2. Economic activities

1.7.3. Socio-economic impacts and opportunities resulting from the project

1.7.4. Employment opportunities and local livelihood development

2. **National forest policies and sectoral goals**

2.1. National forest policies, strategies and action plans

2.2. International obligations

2.3. Sectoral goals and objectives

3. **Forest management strategy**

3.1. Management objectives

3.2. Certification

3.3. Plantations

3.3.1. Establishment and management

3.3.2. Silvicultural activities

3.3.3. Yield regulations

3.3.4. Growth and yield monitoring

3.3.5. Harvesting

3.3.6. P ersonnel, infrastructure, equipment and maintenance

3.4. Natural forest management

3.4.1. Resource management

3.4.2. Silvicultural activities and monitoring

3.4.3. Management of other natural habitats

3.4.4. Wildlife conservation and management

- 3.4.5. Non-timber forest products
- 3.4.5. Personnel, infrastructure, equipment and maintenance

3.5. Forest protection and conservation

- 3.5.1. Natural and human-induced risks and protection mechanisms
  - 3.5.1.1. Fire, floods, landslides, illegal logging, deforestation, degradation
  - 3.5.1.2. Biodiversity conservation and threats
- 3.5.2. Law enforcement

3.6. Education and Extension Programmes

- 3.6.1. Staff training programmes and capacity building
- 3.6.2. Training and internal career development planning
- 3.6.3. Health and safety practices
- 3.6.4. Social services

3.7. Research and development

- 3.7.1. Special studies and surveys

3.8. Environmental impact assessment (EIA) and mitigation measures

3.9. Social and Socio-Economic Impact Assessment (S/SEIA) and Mitigation Measures

3.10. Finance and accounting

- 3.10.1. Project financing sources
- 3.10.2. Financial mechanisms and sustainability
- 3.10.3. Carbon financing
- 3.10.4. Budgeting procedure and accounting system
- 3.10.5. Programmes and budgets

3.10.6. Overall budget

3.10.7. Implementation of plans and programmes

3.10.8. Revisions and amendments

Suggested appendices:

- Budget summaries
- Expenditure schedules
- Annual work plans
- Annual operations plan (AOP)
- Standard operating procedures (SOPs)
- Organization structure and chary
- Summary of management and development targets
- Monitoring and evaluation
- Responsibilities
- Indicators of success

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