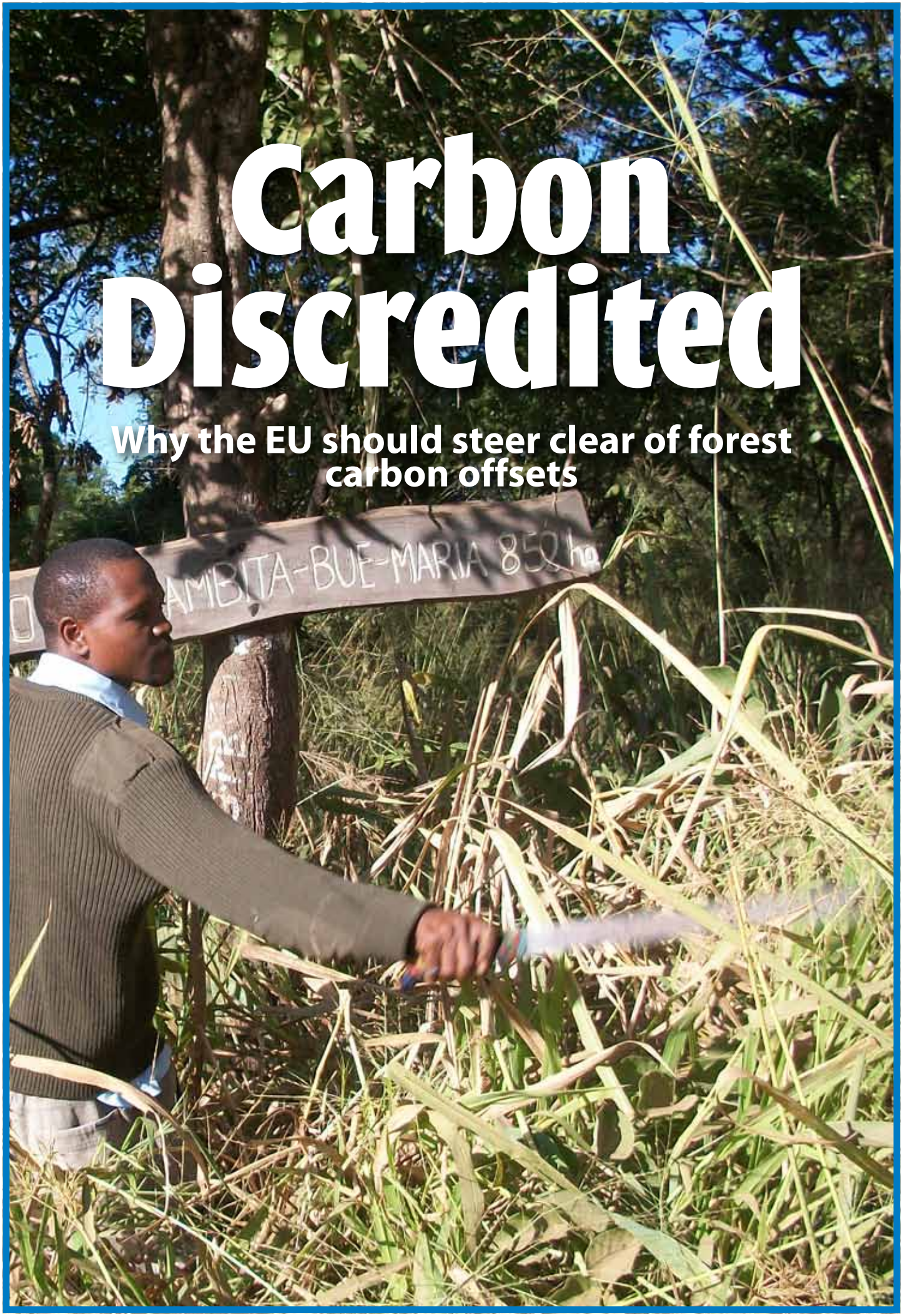
Carbon Discredited

Why the EU should steer clear of forest carbon offsets



Contents

Acronyms 2

1. **Summary** 3

2. **Background and history** 4
   - Why the project is of interest 4
   - Forest carbon offsetting 4
   - Local context: Mozambique 5
   - History of the project 6
   - *Box 1: The Plan Vivo system* 6

3. **Analysis: did the project achieve its goals?** 8
   - Measuring carbon and projecting the future 8
   - Assumptions of equivalence and permanence 10
   - Project monitoring and verification of carbon 12
   - Financial viability 13
   - Development objectives: the experience of the local communities 14
   - Ecological impacts 17

4. **Conclusion** 18

Author: Jutta Kill

ISBN: 978-1-906607-30-2

This publication has been made possible with financial support from the Swedish Society for Nature Conservation (SSNC) who funded the independent field trip, the European Union and the Charles Stewart Mott Foundation. Thanks to Boaventura Monjane, La Via Campesina Mozambique for a prior article and for the kind use of his photos. The views in this report are those of the author and do not necessarily represent those of any of the donors.

Acronyms

CCBA:	Climate, Community and Biodiversity Alliance
CCB:	Climate, Community and Biodiversity standards
CDM:	Clean Development Mechanism
EC:	European Commission
ECCM:	Edinburgh Centre for Carbon Management
EML:	Envirotrade Mozambique Limitada
EU:	European Union
EU ETS:	European Union Emissions Trading Scheme
GHG:	Greenhouse Gas
ha:	hectares
ICRAF:	World Agroforestry Centre
NTFP:	Non-Timber Forest Products
PDD:	Project Design Document
PES:	Payments for Ecosystem Services
REDD:	Reduced Emissions from Deforestation and Degradation
tCO2e:	tonnes of Carbon Dioxide equivalent
UN:	United Nations
VCS:	Voluntary Carbon Standard

A publication by FERN and Les Amis de la Terre

June 2013

www.fern.org

1. Summary

The N'hambita Forest Carbon Offset Pilot Project, run by the company Envirotrade, and initially funded by European Commission (EC) money[1], has failed to deliver most of its climate change, development, financial and learning objectives.

Envirotrade suggest that emissions have been offset against supposed carbon stores in Mozambique, which they cannot calculate because of the problems inherent in baselines and the impossibility of verifying claimed savings.

The EU should urgently reconsider its position on forest carbon offset projects such as these, and divert any resources planned for offset projects to making real reductions in carbon emissions at source within member states.



1 The EC grant was made to the University of Edinburgh School of Geosciences, with Envirotrade participating as the local project implementer. Project management was initially performed by another associated participant in the grant, and was passed to Envirotrade some months after the launch of the project.

2. Background and history

Why the project is of interest

In Sofala province in the central region of Mozambique there is a group of initiatives collectively known as the N'hambita Pilot Project[2] which have been promoted as a flagship initiative for the protection of forests and reduction of greenhouse gas (GHG) emissions. The United Nations (UN) cites it as a model example,[3] and respected actors give it public endorsement. High-profile events and well-known retailers have purchased credits which claim to offset their carbon footprint through the scheme. Environmental organisations such as the Rainforest Alliance and Plan Vivo[4] have certified it. The Climate, Community and Biodiversity Alliance (CCBA) say it meets their Gold Level standard for project design. The EC have funded it to the tune of EUR 1,587,000.

But does the N'hambita project live up to its reputation? Whether this particular project is deemed to be a success or failure is of great importance: not merely because of the public money the EC poured into the project, or because of the immediate impact on the people and forests of Sofala province, but because it will have a long-lasting influence on future EU policy on carbon offsetting and environmental protection. Conclusions about the efficacy of the N'hambita Pilot Project will inform not only decisions about how such projects are designed and managed in future, but even if such projects should exist at all.

In the context of looming catastrophic climate change, these are not points of merely academic or fiscal interest. Mistakes in EU climate change policy will have disastrous consequences for us all. It would seem imperative, therefore, that pilot projects such as N'hambita should:

- be designed and implemented with great care and thoroughness;
- provide detailed, complete, transparent, objective and trustworthy information about their implementation and outcomes;
- demonstrate they have met their environmental and development objectives before they are replicated elsewhere.

FERN's analysis of the project documentation and the information gathered from a field visit in 2012, is that the N'hambita Pilot Project fails to meet these standards. This paper explains why.

Forest carbon offsetting

Carbon offsetting is a mechanism by which carbon emissions in the developed world can be balanced against claimed emission reductions in the developing world. Credits are awarded to those who claim to 'save' or 'reduce' carbon, which can then be sold at market rates to emitters. It is contentious, and much criticised[5] but is a key part of the global carbon trading system. It is typically used by organisations seeking to meet their legal carbon emission targets, or companies and individuals wishing to voluntarily exercise social responsibility.

Carbon offsetting is seen as a potential source of income for communities in the developing world, and so often operates within a development framework, such as the

2 This briefing uses the term 'N'hambita Pilot Project' throughout for the project that elsewhere is also referred to as 'Sofala Community Carbon Project'; 'Miombo community land use and carbon management project'; 'N'hambita Pilot Project'; and 'N'hambita Community Carbon Project'

3 Sofala Community Carbon Project. Project Design Document. According to CCB and Plan Vivo Standards. April 2010. https://s3.amazonaws.com/CCBA/Projects/Sofala_Community_Carbon_Project/2010-18-04-PDD-CCBA-Sofala-post+audit_FINAL.PDF ; http://www.uncsd2012.org/index.php?page=view&nr=32&type=99&menu=20

4 Plan Vivo is a voluntary carbon offset project developer. For more information, see www.planvivo.org/

5 See FERN, Trading Carbon, 2010. http://www.fern.org/tradingcarbon





The N'hambita Pilot Project's promotion as a flagship initiative for the protection of forests and reduction of greenhouse gas emissions does not stand up to scrutiny.

UN's Clean Development Mechanism (CDM).[6] Projects are expected to deliver tangible carbon reductions, and sustainable improvements in the quality of life for the communities involved. Again, such claims are often contested.[7]

Forest carbon offsetting — in which developers create credits by claiming to protect standing forests, or planting trees — is particularly problematic[8] and as such was excluded from the EU's Emissions Trading Scheme (EU ETS). Nonetheless, in 2008, the UN's Reducing Emissions from Deforestation and Degradation (REDD) initiative began the process of bringing forest protection programmes into the carbon trading paradigm, in the face of widespread protests from all quarters — environmental, development, and forest-protection organisations, and even commodity traders — who claimed that the concept was unworkable,[9] and ultimately dangerous for forests, communities, the environment and the global economy.

It is in this context that an honest and transparent appraisal of pilot forest carbon offsetting projects such as N'hambita becomes so important.

Local context: Mozambique

Mozambique is a country experiencing rapid and drastic changes as a result of an influx of aid and international investments that are transforming the landscape. The long-term consequences of the protracted civil war from 1977 to 1992 still affect the country today. Displacement of a large portion of the country's population has been followed by internal migration precipitated by large-scale development projects such as a major dam, mining and large-scale plantations. Traditional agricultural land-use systems were appropriate for regions with much lower and more dispersed populations. Farmers would clear new land when crop productivity fell, and harvest food, medicine, firewood and building material from forests. This method of agriculture is seen as incompatible with Mozambique's new reality of decimated forests, increased logging, mining and infrastructure development and rising population densities in areas not consumed by large-scale industrial developments.

The reality in N'hambita mirrors the movement and transformation of the country as a whole. Local populations fled the area during the civil war, only returning in the early-to-mid 1990s. The population has grown tremendously, as returnees and new migrants relocate to the area. The community, and its collectively-owned forest of around 8,000 hectares (ha), lie adjacent to a national park, an area protected from logging and hunting by park law enforcement. The impact of global, regional and local factors can be seen in satellite images of vegetation cover in the area over the period.

6 See http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php
7 See FERN, Trading Carbon, 2010
8 For more information http://www.fern.org/storyofREDD.
9 For a market perspective on why forest carbon markets will never achieve reduced deforestation see: http://www.mundenproject.com/forestcarbonreport2.pdf

History of the project

Project scope and structure

The N'hambita Pilot Project was funded by the EC from August 2003 to July 2008, receiving EUR 1,587,000 from the EC's *Environment in Developing Countries* budget.[10] A UK-based company, Envirotrade, led the project, in partnership with the University of Edinburgh and another Edinburgh-based consulting firm, the Edinburgh Centre for Carbon Management (ECCM), and the World Agroforestry Centre (ICRAF). The project is managed in-country by a local subsidiary, Envirotrade Mozambique Limitada (EML).[11]

The project makes cash payments to local farmers in small communities in central Mozambique, with these objectives:

- Conservation of a collectively owned forest;
- New plantations in agroforestry schemes on small individual farms;
- Build sustainable livelihoods;
- Development of small-scale local enterprises within the communities;
- Demonstrate the effectiveness of forest carbon trading schemes;
- Learning outcomes: how to design, implement, measure and monitor such projects.

Project activities

The carbon-credit generating activities can be loosely grouped into two categories: *Agroforestry*, the planting and continued care of new forest; and *Avoided Deforestation*, to halt or reduce the felling or degradation of existing forest. Both categories should meet the following aims:

- To sign contracts with individual farmers to plant trees on their smallholdings using the *Plan Vivo*[12] system (see box 1);
- To pay the community as a whole (through a project-initiated community fund) to steward the community forest;
- To encourage the development or expansion of Non-Timber Forest Products (NTFP) (e.g. beekeeping) for consumption or sale;
- To establish micro-enterprises such as a community-owned nursery to supply seedlings, and a sawmill and carpentry shop to process (sustainably harvested) timber into value-added commodities such as furniture;
- To create local systems to monitor carbon sequestration and Avoided Deforestation activities and to allocate monies received from carbon credit sales to the community in the form of, for example, new community buildings;
- To build capacity at the regional and state level, among those agencies that would create or support structures necessary to access the carbon market.

Box 1: The Plan Vivo system

Plan Vivo is a framework designed for developing and managing community-based land-use projects with long-term carbon, livelihood and ecosystem benefits. Development and oversight is by the Plan Vivo Foundation, a Scottish charity. Using this framework, participants in the N'hambita project could choose from a 'menu' of options, including planting fruit trees such as mango or cashew, hardwood timber, or nitrogen-fixing trees interspersed with food crops. Farmers could sign contracts for several menu options, if they owned land sufficient to accommodate multiple contracts. Farmers were to be paid through proceeds from the sale of carbon credits for reforestation, sometimes presented as 'payment for environmental services' (PES).

It is important to note that while the project emphasises its Agroforestry component in the project descriptions, this component actually sequesters very minimal volumes of carbon, and hence should gain little revenue from credits. It is the Avoided Deforestation programme which was projected to provide the bulk of potential income.

The project proposal emphasised that these activities were potential models for future forestry projects linked to carbon markets, and as much effort would be applied to monitoring, measurement and analysis as to the project activities. It also emphasised that the project methodology would be participatory, including community members in design and assessment of the project and would "promote sustainable rural livelihoods as well as

10 Budget Line B7-6200 European Community contract B7/6200/2002/063-241/MZ

11 The scientific and technical aspects of the project design were the remit of the University of Edinburgh, ECCM and the Plan Vivo Standard during the design phase in 2002 and 2003, and through the period of the grant.

12 http://www.planvivo.org/about-plan-vivo/



Many farmers see the tree plantations as a liability, requiring regular regimes to control weeds and fire and replace losses.

generate verifiable carbon emission reductions for the international community."[13]

Project modifications

Since EU funding ceased in 2008, the project has undergone some modifications. The number of communities involved has been extended, and the project included additional communities by the time the desk review and field visit for this briefing were conducted. The Project Design Document (PDD) also underwent revisions, as stated in the final verification report for the CCBA by the Rainforest Alliance.[14]

Documentation provided by the project for assessment against Climate, Community and Biodiversity (CCB) standards in 2010 states that at that time, a total of 1,835 farmers had signed 4,573 contracts and that a REDD system "had been adopted on 9,599 ha at one of the two project sites."[15]

Since September 2008, the project has been financed primarily by carbon credit sales, plus investment from the parent company, Envirotrade. According to the 2011 annual report, carbon sales in 2010 provided 42 per cent of the project costs, with the funding gap being principally filled by cash injections from Envirotrade.[16]

Report, monitoring and evaluation framework

In addition to projects reports from Envirotrade to the EC, several other formal reports and evaluation were produced:

- The Rainforest Alliance carried out a CCB assessment of the project, completed in 2010;[17]
- In 2002, prior to the period of EC funding, Future Forest (Now The Carbon Neutral Company) evaluated the project;
- In 2004 and 2008, surveys of socio-economic impacts were undertaken by a post graduate student, for inclusion in the final project report;

All of these studies provide both information about the project, and an indication of the varying quality and rigour of ongoing project monitoring and assessment.

13 http://www.planvivo.org/about-plan-vivo/endorsement-and-support/

14 *"Envirotrade made considerable changes to their PDD as well as providing additional supporting material in order to meet the corrective action requests that were raised in the draft report by the Rainforest Alliance. The PDD now presents a clear picture of the project's structure. It also better captures the complexity and dynamism of the work undertaken thus far."* Rainforest Alliance Validation Assessment for Sofala Community Carbon Project
In Mozambique. 1 September 2010. Page 3 https://s3.amazonaws.com/CCBA/Projects/Sofala_Community_Carbon_Project/Envirotrade_Sofala_CCB_valid_10.pdf

15 Sofala Community Carbon Project. Project Design Document According to CCB and Plan Vivo Standards. April 2010. Page 1 https://s3.amazonaws.com/CCBA/Projects/Sofala_Community_Carbon_Project/2010-18-04-PDD-CCBA-Sofala-post+audit_FINAL.PDF

16 http://www.planvivo.org/wp-content/uploads/2011_Plan-Vivo-Annual-Report-final_website.pdf

17 http://www.rainforest-alliance.org.uk/sites/default/files/climate_project/Envirotrade-Sofala-CCB-valid-10_0.pdf

3. Analysis: did the project achieve its goals?

The N'hambita pilot project has now been running for a decade. Patchy Information about its design, implementation and effectiveness is available from many hundreds of pages of project documents, and two EC-directed external evaluations. Analysis of these documents has been updated by findings from a field visit to some of the project sites during 2012 and interviews with Envirotrade staff in Mozambique. Together, these enable interested parties to make a judgement about the success of the project.

FERN's central finding is that the project, judged even on its own criteria, has not been a success. Fundamental flaws in the original concept, in its implementation, its monitoring, and its interaction with broader social and economic drivers of deforestation made failure inevitable, as outlined below.

Measuring carbon and projecting the future

All forest carbon trading schemes are handicapped by real challenges in quantifying the carbon held in the existing forest, and predicting how much carbon will be captured or released in future scenarios, and the N'hambita Pilot Project perfectly illustrates the problems faced.

To create a carbon credit that can be sold, a forest carbon offset project must demonstrate that carbon has either been captured (through new planting) or not been released (through protecting existing forests) and crucially, that these benefits are brought about by the project activities and not some other factor.

The project must start with a *baseline* estimate: how much carbon would be released or captured if the project is *not* implemented. Projections need to take into account a number of complex, inter-related factors that drive deforestation and new plantations. A *projection* must then be made: how much estimated carbon would be released or captured if the project is implemented.

The difference between the baseline and the projection gives the number of carbon credits that can be generated. Accuracy in calculating the baseline, and predicting the future, is therefore vital in arriving at the carbon capture value of the project.

The only way to accurately measure the carbon held by a tree involves cutting it down and burning it. Since this is impractical at a forest-wide level, and negates the primary purpose of offset schemes, other methods of putting a carbon value on existing forests and as-yet-unplanted trees are employed. These all involve proxy measures. The accuracy of the carbon calculation depends on the accuracy of the underlying proxy.[18] Proxies used vary from default figures for carbon, based on species averages in the project area; to values cited in the literature; to use of forest inventories where volumes of timber recorded in m3/ha are then converted into tonnes of carbon stored in the forest. A forest inventory is thus in many instances an essential tool in determining a forest carbon baseline.

The impossibility of quantifying forest carbon fluxes was one of the key reasons that forests were not included in the Kyoto Protocol's carbon market mechanisms or in the EU ETS. The N'hambita Pilot Project shows that this situation has not fundamentally changed. Project scientists observed that "a key obstacle to the formation effective

18 See analysis by The Munden Project regarding the accuracy attainable with standard forest carbon measurements in comparison with standard accuracy requirements for goods traded on commodity exchanges. The gap between what is required and what is obtainable makes forest carbon a commodity unsuited for trade on exchanges, as was envisaged by proponents of REDD offset schemes. The Munden Project (2011) 'REDD and Forest Carbon:Market based critique and recommendations' www.mundenproject.com/forestcarbonreport2.pdf



A woman from N'hambita village waiting for money from Envirotrade to finish her house which did not have a roof.

[sic] REDD certification schemes is a lack of consistent and widely accepted methods for baseline setting."[19]

In the case of N'hambita's baseline survey, a study of 7.5 ha of forest, which was intended to list tree species and classify different types of forest, was repurposed as a baseline with an enormous margin of error. Additional data points were added later in the funding period. This, however, failed to address the lack of adequate measurement. The scientists involved in the project themselves describe the limitations of their data: "The large variation in biomass of tropical woodlands is caused by site specific variables such as rainfall, soil and disturbance history. *Hence these values should be used as a rough estimate only, and inventories carried out where possible*"[20] (emphasis in the original). Scientists employed by the project also called for satellite data to be combined with Geographic Information Systems (GIS) and ground truthing (ensuring that satellite data on vegetation density and type is accurate) to make a better estimate of carbon stocks. No inventories or satellite approaches were implemented during the EC funding period. The project carried out a small study of soil carbon, a potentially significant component of forest carbon stocks, but dismissed measurement in general as too expensive. The lack of data about existing carbon stocks calls the sale of offset credits as well as the pilot character of the project into question. In determining likely rates of deforestation, the project similarly failed to establish any robust, credible estimate. The historical deforestation rate was determined from two data points, and an assumption was made that the rate would remain constant and linear. There was no indication that the project understood the various drivers of deforestation in the project areas (including illegal and legal timber harvesting, charcoal production, clearance of land for agricultural purposes, and intentional or natural fires) or how they might interact or change. The authors of the EU final report acknowledged that "if the population continues to grow, this simple approach may not be valid … If this demand [for charcoal] increases, as seems likely, it may be necessary to abandon the baseline derived by extrapolation of current deforestation rates."[21] Migration into the area is elsewhere described as only "the further returns of displaced people and their relatives" without considering other drivers, including, for example, the attraction of project activities themselves due to the jobs and income the project promised to create.[22]

In addition, the project made no attempt to study how possible (and likely) 'leakage' might effectively negate the project's impact: how, for example, protection of community forest in N'hambita might drive timber or charcoal harvesters or community members elsewhere to harvest trees or open new fields to grow the crops they could no longer grow inside the project area. Furthermore, during the period the project received funding from the EC, it did not develop a management plan for the forest as promised in the project proposal. Yet, such a forest management plan was considered a vital requirement in order to sustainably manage the forest and to detail plans for forest protection.

In summary, the Avoided Deforestation component of the project produced no credible, reliable quantifiers of existing vegetation and carbon stocks or future carbon stocks, no plan to manage the forest, and no plan to monitor leakage. Given these failures, the project had no credible data to quantify the effect of the project on defor-

19 EU final report, page 159.
20 EU final report, page 152. MIOMBO COMMUNITY LAND USE & CARBON MANAGEMENT NHAMBITA PILOT PROJECT http://www.envirotrade.co.uk/documents/EU%20Final%20Report%20Part%20(5).pdf
21 EU final report, page 169.
22 EU final report, page 8.



The view from Boe Maria where they have hot springs and an investor plans to build an hotel bringing hope of new jobs in nearby villages.

estation in the area, and therefore would appear to have sold offset credits for supposedly Avoided Deforestation without the necessary data.

Assumptions of equivalence and permanence

All forest carbon offset schemes make an illogical assumption of equivalence between *fossil* carbon, released into the atmosphere where it will remain for lengthy geological cycles, and *biological* stores of carbon, that will last, at best, for a few centuries. The N'hambita Pilot Project attempts to square this circle by making ungrounded assumptions about the permanence of the planting and protection schemes. The Plan Vivo system calculates an average annual carbon sequestration figure based on 100 years of growth (with some options requiring re-planting several times over that period). The growing trees do not reach that average carbon storage until they are 15 to 35 years old.

However, there is simply no way of guaranteeing that carbon storage in trees is safe and can be ensured for a century. Assuming that trees will survive long-term is risky; assuming that they will survive in an impoverished, politically and climatically unstable environment is, as an evaluator of the project eloquently understates, "unlikely to stand up to the rigour of emerging methodologies."[23] Despite this flawed assumption the project continued to sell carbon credits.

Specific aspects of the project design only exacerbate the risk that reforestation will not be permanent. Some of these aspects are explored below.

Unrealistic expectations of long-term engagement by farmers

Farmers are paid upfront, over seven years, for the entire estimated 100-year carbon sequestration of the trees they plant. In the first year they receive 30 per cent of 100 years' worth of the payment. After seven years, the project assumes that "the benefit[s] from the newly planted

23 The cited evaluation was carried out for the Carbon Neutral Company, formerly Future Forests, which bought carbon offset credits from Envirotrade in 2002, before the EC grant period, to add to its portfolio of carbon offsetting projects for re-sale.

trees […] are expected to provide enough incentives to the household for it to protect the trees for the next 93 years."[24] Field research for this report, however, indicates that such expectations are woefully optimistic.

The 2012 site visit showed that farmers who had planted fruit trees around their houses were happy with the fruit that they already harvested and had hopes that they would be able to sell more fruit in the future. The fruit trees seem to have a good chance to long-term survival. More surprising was that the majority of the farmers also seem to see the wood in the other species of trees as a future benefit. The majority said that they will chop down the trees and sell the wood when they were the right dimension for construction, fuel and charcoaling. Depending on the species, that would be 20 to 50 years from now. Some said they would chop the trees as soon as the seven year contracts had finished, and a few answered that they would not chop the trees at all. The future use of the wood is seen as one of the benefits the project brings to the communities. No one had heard anything about an obligation to maintan carbon and thus trees for 100 years.

Some seven-year contracts are already coming to an end, no new ones are becoming available, and payments are being discounted or postponed on existing contracts due to tree loss. Envirotrade, for reasons unknown to the author, had delayed some payments by up to six months beyond the usual due dates. Many farmers were already beginning to see the tree plantations as a liability, requiring regular regimes to control weeds and fire and replace losses, on land that could be used for other crops, and which no longer brought a significant cash income. The mortality rate of the plants is high due to droughts, fires and vermin, and many new plants need to be planted each year to compensate for seedlings that died. In some areas there were signs of a lack of care for the young trees in the fields. Weeds were almost as high as the seedlings – leading to a fire risk. The contracts stipulate that signatories are supposed to clean their fields of weeds to avoid fires. But some openly mentioned that they had lost motivation due to the late payments and discounts. Some spoke of ceasing to tend the trees, or of felling them for timber.

This waning commitment echoes the findings of the 2008 socio-economic survey, included in the final project report. It found a significant minority of farmers would not continue to protect the trees once payments had stopped. Many seemed unaware that they had made a 100 (as opposed to seven) year commitment, with an expectation that another contract would be offered for the same trees, when the first expired. The illiteracy of many farmers exacerbated confusions about the nature of contracts they had signed with a fingerprint. The farmers' own acute need for cash or fuel as well as a raft of potential external pressures including fire, pests, and charcoal or timber producers were all factors that could lead to 'impermanence'.

Envirotrade's country manager Antonio Serra says that their customers are aware of the risk that the trees might be cut down. The main reason for disbursing the full payment for the contract period during the first seven years is that the sum paid each year would be negligible if spread out over 100 years.

Ex-ante payment system

A comparable problem exists with the system of payments for the Avoided Deforestation element of the project. Payments are made ex-ante: ie before the fact. The carbon has not yet been sequestered or conserved, and may still be released long before the fossil carbon released in its stead stops interfering with the climate. Yet investors, consumers, and companies are buying these carbon credits on the understanding they represent carbon captured and stored for a meaningful period of time. Every tonne of carbon dioxide equivalent (CO_2e) claimed but not held by the N'hambita Pilot Project represents an extra tonne released or left uncompensated for by the ultimate buyer of the carbon credit. In each instance, the project is ironically and disastrously facilitating increased carbon emissions.

Project monitoring and verification of carbon

By any measure, the reports and data provided to the EC were profoundly inadequate. The project provided no evidence that it met (or attempted to meet) the proposed plan of including "monitoring systems as an intrinsic part of its design," either for the scientific and technical aspects of the project (as above) or for social factors (as below).[25]

24 EU final report, pages 373-374.

25 Project proposal, page 29.

The comprehensive external evaluation of 2008 detailed a list of monitoring and reporting oversights that seriously undermine the project's legitimacy and demonstrates how the project failed to deliver on many of the project objectives.[26] Unfortunately, other reports assessing the project for the Commission show less scrutiny than could be expected, for example by relying on presumptions and accounts by Envirotrade employees and project beneficiaries rather than financial accounts or data.[27] The 2009 external evaluation report, for example, relies on a narrative from the company owner to report on financial records, and extensive content appears to have been taken without citation from Envirotrade company documents.[28]

The field research conducted for FERN in 2012 suggests that since 2009, Envirotrade has been working with local technicians to develop a system to aid monitoring, reporting and verifying of the outcome of the farmers' work, and documenting plant survival. It is hoped that a database will enable project management to follow each farmer's planting more closely and to monitor plant survival rates in different areas. These steps can be considered an improvement over the abject lack of systematic monitoring and reporting during the period of the EC grant. It remains to be seen however, how these systems will be implemented and maintained in practice, and in particular what the effect on the actual tree survival will be. This is especially true of those areas where contract payments have ended and the project assumes that trees will be maintained by farmers without further payments.

Examination of the Rainforest Alliance's CCB assessment of the project reveals the lack of credibility of the Gold Standard certificate — covering climate benefits, community relations and biodiversity impacts. Four examples illustrate the lack of rigour in approving the project:

- The certification team relied on project technicians as guides, which meant farmers did not feel able to speak freely about their situation and experiences. During the 2012 field visit by independent researchers for FERN, farmers made explicit and unsolicited reference to the advantages of being able to speak without the presence of project employees;
- The assessment indicates (see section CAR 13/10) that Envirotrade had recently added a three-stage grievance procedure to the PDD, guaranteeing a written response to complaints within five to 10 working days. Presumably this was not in place when all previous contracts were signed. The report does not explain if it has retrospectively updated all previous contracts, how the often-illiterate farmers are to be made aware of the process, and what use a written response might be for them;
- The assessment notes that the project uses payments made to farmers as a measure of activity/impact, rather than attempting to actually quantify carbon storage achieved (see section CAR 21/10). It requests that this unreliable measure of climate benefits, which does not conform with CCB standards, be resolved prior to successful certification. Envirotrade's response was that "the monitoring of the agroforestry systems may be revised to enable quantification of the carbon stocks… [and] that trees lost to mortality are replaced, so the planned sequestration should always occur unless complete failure occurs" [emphasis added]. This vague statement by the project owner was sufficient for certification to proceed;
- The assessment report noted that an error had been found in the model used to calculate some emissions reductions (see section CAR 17/10). Envirotrade had not yet implemented a new model, and could not confirm exactly how much less carbon the new model would be likely to indicate, once implemented. Project data showing projections of carbon sequestration was criticised because "it is not clear what assumptions have been used to create the data… or exactly what technical specification have been used". Nonetheless, the Rainforest Alliance was happy to close the issue and give certification, because Envirotrade agreed in principal to make at a future point a deduction from the project's risk buffer in the public registry, which although the "modalities of this process" were still "in development", was estimated to be 60 per cent of the project buffer, or 88,000 tCO2e. The untrustworthy data was removed and passed over, and this was considered enough to resolve the issue.

When we take into account this lack of rigour, and the fact that the Rainforest Alliance overlooked all the other serious project faults identified in this paper, one can only conclude that it is a great shame that the CCB process

26 Schreckenberg et al., see especially pages 6-9.
27 See, for example, Kooistra, pages 4 and 7.
28 Marzoli and Del Lungo, page 40, and for example, pages 11-13.

contains no mechanism to retrospectively remove a certificate, once issued.

Financial viability

The project was assumed to be self-supporting through the sale of carbon credits. Recent statements about the financial difficulties of the project indicate that even with a generous EC start-up grant, it cannot be. In particular, the financial model for the reforestation element appears financially unviable.

This is in part due to the project's size. The EU's final project report itself draws the inevitable conclusion: "Projects with such a small sequestration potential will rarely be viable without external financial assistance",[29] (e.g. EUR 1,587,000 from the EC). The project's own figures indicate the agroforestry component produced an annual sequestration of 1,217 tCO2. Meanwhile, the Avoided Deforestation element, covering 8,000 to 10,000 ha of community forest is (grossly) estimated to produce 24,116 tCO2 annually. Interviews with Envirotrade project management during field research for FERN in 2012, suggest that the project needs to have between 50,000 and 100,000 hectares at least of REDD-areas (as opposed to agroforestry areas) for their business model to become economically viable.

Envirotrade's Antonio Serra expects that for future contracts and project areas, the company will continue the agrofestry components of the project, even though it gives less return per ha, but restrict it to approximately 20 per cent. This is because alongside the intercropping activities to increase fertility in existing machambas (a specific term for fields or agricultural land in Mozambique) the agroforestry payments are what prevented farmers from opening new fields in the conservation areas. Also, buyers of credits have typically been from the voluntary Corporate Social Responsibility market, and prefer projects that can provide a direct connection to participating farmers. Credits from the Avoided Deforestation activities have proved hard to sell.[30]

The project has also suffered from a fall in the carbon price. US$15 per tonne of CO2 was assumed in the projections — a reasonable assumption based on actual as well as projected carbon prices at the time. But according to project managers interviewed during field research, sales of carbon credits in 2010 to 2011 yielded no more than US$5–6 per tonne. This is only slightly more than the contract price paid to participating farmers, leaving nothing for project costs and overheads.

Another financial handicap is the likely obstacles to certification by the Voluntary Carbon Standard (VCS)[31] as the project still lacks a detailed management plan; an adequate baseline; and studies on leakage. The project faces the conundrum familiar to other forest carbon offset projects: VCS certification may increase the number of credits sold, but as long as the project is unable to sell more credits, especially with carbon prices having all but collapsed, projects can ill afford the considerable costs associated with the certification.[32]

With insufficient economies of scale, poor sales of their most carbon-productive activities, a depressed carbon price, and the ending of EC funding, Envirotrade must either default on payments to farmers or pour their own money into the project to keep it running. Field research in 2012 suggests that up to that point, contracts had by and large been honoured although participants in some communities expressed frustration and anger about a rise in delays and curtailment of payments that were considered in breach of the contracts they had signed.

Development objectives: the experience of the local communities

From the beginning of the project, the creation of sustainable livelihoods was a stated goal. But subsequently, and in line with the general trend of poor or non-existent monitoring and evaluation, the only measures of socio-economic factors provided by the project were from a post-graduate study within the final report to the EC. No study about the socio-economic impacts of the project since 2009 is available. However, from such evidence as is available, it is unlikely that the project will result in significant long-term benefits for the communities involved.

29 EU final report, page 401.

30 Personal communication with Envirotrade country manager Antonio Serra during field research conducted for FERN in June 2012. The 2009 annual report also provides a list of how many tonnes specific customers have bought, separated into agroforestry and REDD conservation areas.

31 The VCS is a standard used by many forest carbon projects selling offset credits to verify the carbon calculations on which offset credit generation is based.

32 In FERN's view, these carbon offset certification schemes are unable to address the underlying flaws of carbon offsets and in practice have shown to be lacking in rigor, even when assessed against agreed project standards.

"The name N´hambita has travelled around the world. But what is there to see here? What have we gained? Not much. The families that already had many machambas made a lot of money, but for the rest of the population, the benefits are small. Some don´t even care about the trees anymore. The payment is too small."[33]
Local community leader

The socio-economic study for the final report to the EC states that there is no significant lasting financial benefit for those households with individual carbon contracts. This is not surprising, given that the average monthly payment to farmers for Plan Vivo contracts in 2007–2008 was US$6. The study concludes that only those households employed in micro-enterprises created with the EC grant are actually significantly better off, the average monthly salary being US$61. The study further concluded that the infrastructure improvements and increases in literacy levels, for example, cannot be ascribed to project activities. That is, gains in livelihood and community services were more likely the result of macro trends in Mozambique rather than specific project activities.

Communities not involved in programme design

Although the EC funding proposal commits to involving local communities in project design and evaluation, as well as to monitoring some social indicators, there is mostly only anecdotal evidence (primarily from EC-commissioned reports) of community inclusion in design, and a useful but limited survey of local families. The only hard evidence of community input is the inclusion in the final project report of a participatory mapping and ranking exercise, which fails to indicate when it was conducted or how many people participated. Both project scientists and external evaluators for the EC suggested mechanisms for community involvement; there is no evidence that these recommendations were acted upon.

The Rainforest Alliance certification assessment report of 2010[34] requested the setting up of a grievance mechanism. The absence of what would be considered part of standard good practice for community participation in project design indicates that such practice was not being fully followed.

Free, prior and informed consent

The available evidence gives cause to doubt that participants were in a position to fully understand the nature or scope of the project they were joining, or what they were obliged to do under the contracts they were signing.

The contract states that the peasants are providers of carbon. It does not say anything about how that works and that they more correctly are providers of carbon sequestration. None of the farmers interviewed in 2012 understood the concept of carbon trading. The majority did not even try to explain when asked about the topic; they just said that it was something that the project managers know. Among the rest, the most common perception was that they were helping provide carbon because there was a lack of it in the industrialised world. Some farmers responded that planting trees would help the clouds to stay so it would rain: project staff appear to have explained climate change to them in these very simplified terms. This could, in an area prone to drought, create the risk that the farmers, should the droughts continue, lose faith in planting trees.

Furthermore, as discussed in the section detailing unrealistic expectations of farmers, it seems likely that the project failed to adequately inform community members about the real and enormously long-term implications of the carbon offset contracts which farmers signed individually and to which the community is now subject as a whole. There may be short-term benefits from the very small cash payments in a poor community; but what will the consequence be once they are discontinued, either because the project fails, or because the residents are not aware of their obligations linked to the contract well beyond the period for which they will receive payments?

Farmers may be unclear that payments would cease after seven years. Additionally, the Plan Vivo specifications record annual maintenance costs for various crops between US$10-430. Were farmers made aware of possible future costs?

Limited cash trickle down to communities

An Envirotrade report states that the project delivers a significant proportion of the proceeds from carbon credit

33 Personal communication during field research June 2012.
34 http://www.rainforest-alliance.org.uk/sites/default/files/climate_project/Envirotrade-Sofala-CCB-valid-10_0.pdf



Children from the village of Boe Maria.

sales back into the communities participating in the project. In reality, it appears that less than one third of the revenue made from sales returns to farmers and the community, with the remaining two thirds going towards Envirotrade costs, repayments of loans to the project and the hoped-for profit margin. The lack of relevant financial records during the EC grant period makes it impossible to discern who benefited financially, and to what extent, from the EC grant.

Email communication with Envirotrade has shed light on some more exact figures that further show the financial inviability of the project. These figures do not, however, provide evidence of how much money went to the local communities themselves. Envirotrade have told us that from 1 January 2009 to 30 September 2012, VER sales totalled US$1,750,517 and expenses directly related to the project totalled US$3,301,474. During that same period of time, payments to the project participants and local payroll expenses totalled US$2,367,033 (ie 72% of expenses directly related to the project). Since the pay roll of employees and the payments to communities do not figure separately, this figure does not show how much money went to communities. Undeniably, the N'hambita project provided a limited income stream to the local communities, though this is at the expense of being able to grow fewer crops and incurring expenditures that they would otherwise not have borne.

Initiatives not economically sustainable

The project proposal claimed that the project financing would be carefully controlled, "to avoid subsidising commercial activities which could lead to financial problems once funding has stopped,"[35] and that "given the uncertainty of the carbon market the financial sustainability of project activities will not be based on carbon sales and land use activities will only be promoted if they have the capacity to provide long term social and economic benefits independently of carbon sales."[36] Given the available data, there is no indication that these objectives were met, or could be met. It is hard to avoid the conclusion that initial project funding provided a jump-start for community enterprises with little demonstrable sustainable and positive financial effect in the community.

35 Project Proposal, page 31.
36 Project Proposal, page 16.

The farmers participating in the project received small sums during a limited period of time, and the company is not offering any new contracts in the area covered by the EC grant. Local staff and technicians will thus lose their employment with the project. The only identified secure long-term benefit would be if the trees and especially the fruit trees remain alive. The main medium-term benefits are the tin roofs, bicycles and other goods that families bought with the carbon payments.

Many of the activities planned as part of the EC-funded project, such as: protecting the forests from illegal logging and fires; developing the basis for generation of income streams based on non-timber forest products; developing micro enterprises; and constructing community buildings, have been implemented. The question, however, arises: will the advances made and the benefits generated be lasting? All the micro enterprises created are reported to be struggling with different problems. Four nurseries have been created which operate as independent associations. Since new contracts stopped being offered to the communities in N'hambita, demand for seedlings has already decreased. The only sales are to replace plants that have died. When contracts with Envirotrade in N'hambita have reached the end of the seven-year payment period and Envirotrade shifts focus to areas with new contracts, the nurseries will have to find new customers — or close down. The carpentry shop also faces problems since the saw in the sawmill needs to be replaced and the association does not have enough money to buy a new one. According to the country manager, the association has divided the gains between members instead of saving the money for future needs, which indicates that either financial management capacity building has not been sufficient, or that poverty is still too severe to allow for saving for investment. A bakery opened in 2011 has already closed, due to problems with the oven. According to Envirotrade there are many farmers who are keeping bees, but research conducted for FERN only encountered one person who had beehives. He reported that the bees died during the first year and he has not tried again.

Unintended social impacts

Information found in the socio-economic survey of 2004/8 and EC evaluations, indicates that the project may actually have had negative social impacts:

- Unequal impact on women: employment outside the home expanded from 8.6 per cent of surveyed families in 2004 to 32.2 per cent in 2008. These new jobs went almost exclusively to men, leaving women, who previously shared farming tasks equally with men, to both continue with subsistence farming and to care for newly planted trees. What are the

Another view from Boe Maria.



real consequences for women and girls? The survey reports on the 'relative absence' of women in leadership positions, which cannot help to ensure equitable distribution of benefits and negative impacts;

- Unequal impact on disadvantaged/poor families. Since the general benefits for the communities as a whole are small (see above), the question arises: what's in it for those who have few or no contracts?

How families previously lived and supported themselves has affected what they gain from engaging with the project. EC evaluators expressed concerns that the committees that had been formed around community forestry projects are often dominated by the most powerful in the community. People who already owned more land than others have been able to benefit more. Families that survived on hunting and that did not have many machambas have benefited less since the project model is that the families work the land they have instead of moving around. Farmers who did not initially sign contracts with the EC or who moved to the area after 2009 are now waiting for the possibility to join the project. EML staff mentioned that the project was struggling since the arrival of new families into one of the project areas and the opening of new machambas.

Reduced access to community forest resources

It is not known how limitations on activities in the community-managed forest have affected livelihoods. For instance, the final EC report asserts that charcoal production is a major source of income locally. Yet there is no monitoring or data gathering regarding how households are compensating for any loss in income, or if they are going elsewhere to harvest charcoal.

Food security

The nature of the project design is such that it reduces access to food from commonly owned forests — previously achieved through opening new machambas or other means of forest harvest — while also converting existing farmland to agroforestry. It also requires ongoing maintenance of new plantations to control weeds, pests, fire, and to water new plantings. Less land is therefore available to communities for food production, and less time to grow it or otherwise earn money. In the Plan Vivo model, this is supposedly counterbalanced by agroforestry techniques that will improve crop yield and remove the need to clear new land as crop yields decline, combined with the monthly PES.

Yet there is no data to support the project claim that the new techniques are impacting soil fertility positively and sufficiently and hence increasing crop yield. This raises the possibility that declining fertility may force farmers to move away or open new fields. As discussed above, the monthly PES are small, short-lived and subject to delay and reduction.

During the 2012 site visit for FERN, it was found that farmers were struggling with food security. 2012 was a very dry year and the peasants were suffering from poor harvests. Participants complained that they had spent a lot of time planting trees, cleaning the fields, and opening fire breaks when they could have been generating income in other ways. The money from the project would at least help to buy some food, but many peasants claimed that delayed payments affected their ability to feed their families. Their contracts forbade them to open new machambas in conservation areas. According to project staff, an area for opening of new machambas had been allocated, but there is still a perception among many farmers that they are prohibited from opening new fields in general.

Ecological impacts

The Plan Vivo menu options raise worrying ecological questions about the reforestation component, including, but not limited to, the following:

The guidelines for different planting systems include directions for applying pesticides and fungicides in case of infestation or disease. Who will bear the costs of this input? What will the impact of the toxic chemicals be on human and ecological health?

Planting systems call for regular watering. What are the consequences of the increased demand for water, both in the short term as well as for water table levels? Are any of the species 'thirsty' trees that hog water supplies? The project proposal claimed it would "explore the relationship between deforestation and flood water levels, together with soil erosion and water tables."[37] Were relationships between *reforestation* and water tables assessed?

37 Project proposal, page 4.

4. Conclusion

This analysis of the N'hambita Pilot Project raises issues that are specific to this forest carbon offset project, but also highlights issues that are related to forest carbon offsetting projects as a whole. Despite the failure to meet monitoring and documentation standards demanded of a pilot project, conclusions can still be drawn from the project, indeed, from these very failures themselves. The most basic conclusion is that the EU should not direct any further funding to advance methodologies and pilot projects aimed at site-specific measurement of forest carbon fluxes for the purpose of generating offsets.

The problems encountered in the project are symptomatic of attempts to link financial viability, and social and environmental benefits to trade in ecosystem offsets. The numerous and complex difficulties with 'measuring' forest carbon stocks, let alone fluxes, preclude linking project funding to carbon measurements that are expected to be verifiable and accurate. The project is also based on some unlikely assumptions regarding permanence such as signing a contract with a seven-year payment period and relying on the contracting party to maintain the trees for an additional 93 years after payments have ended. The project failed to identify, measure and monitor social indicators that would guide project design, or to demonstrate significant community involvement or management. It failed to measure the most basic impacts of the project on people and the environment.

The 2012 field visit confirmed that the same issues and failures, which the external evaluations for the EC had drawn attention to, remain largely unresolved. The project continues to suffer from a profound lack of measurement and reporting of its own activities, both of social and environmental factors as well as financial and carbon stock data. The data available demonstrates that the project sold carbon credits to international buyers with no credible measurement of carbon stocks in the project area, that it failed to demonstrate significant benefit to the community, and that it failed to monitor the environmental impact of project activities. It remains unclear how or in what ways members of the community were involved in project design and appears likely that at least in some cases, farmers were not fully aware of the long-term obligations contained in the contracts they signed with the project. The aims of sustainable development, carbon monitoring and storage, and contributing to knowledge on carbon measurement, as stated in the EC-funded grant proposal, remain unmet.

How then should EU money be spent in the context of the debate about reducing deforestation and the emissions related to forest loss?

The project represents an extraordinary investment of money and time both for the EU and for Envirotrade, with no verifiable or demonstrable reduction of GHG emissions. Figures given

by Envirotrade show that over the life of the project, a total of 409,434 Plan Vivo VERs were sold to buyers, generating a total of US$3,264,809 in carbon offset sales revenues. The direct costs of the project, net of the EC grant, were much higher than this sales figure, meaning that Envirotrade lost money in managing this project. Similarly for the EU, it did not make financial sense to invest in a project that is designed to make profit from an unregulated industry, with no lasting positive local impact. If the EU's aim is to reduce emissions then funding should be directed toward immediate measures to reduce emissions at source in the EU: "emissions saved today are far more valuable, in terms of reducing climate change, than emissions saved in ten years' time, yet the trees you plant start absorbing carbon long after your factories release it."[38]

The project also represents an extraordinary investment of money and time with little or no verifiable improvements in the lives of communities: life could even be considered to have got worse. The N'hambita project clearly indicates that forest offset projects in general "do not deal with the real complexities and intricacies of communities and local livelihoods. They use up enormous resources in terms of land, water, time and energy of residents."[39] The UN itself expresses concern that forest carbon markets could "erode culturally rooted not-for-profit values," or "deprive communities of their legitimate land development aspirations."[40] The project demonstrates that a lack of analysis regarding social mechanisms of deforestation, commons regimes, social resistance, development systems and local history can lead to ineffective projects or projects that actually do damage to community social relations as well as community ecology.

Funding carbon offset projects distracts from reducing and restructuring consumption and production of goods at source. As one astute critique observed, "by funding these projects, we are not avoiding deforestation but avoiding *responsibility*, shifting responsibility outside Europe's borders."[41] There is an illusion of action on climate change, but no fundamental movement toward structures and programmes required for a fossil-free future.

The project demonstrates the current improbability of measuring carbon fluxes in forests. How much carbon does a tree really absorb? "The claimed reductions achieved by offsets are routinely based on unprovable hypothetical scenarios and take little account of the negative social and environmental impacts of the development model within which they are embedded."[42]

Perhaps the most serious consideration regarding this project is how the EU will respond if and when Envirotrade is no longer profitable and the project is discontinued. What is the EU's responsibility in this regard, and how could the project be transitioned to a locally-led, sustainable, not-for-profit initiative focusing on improving community livelihood and addressing needs identified by the local population? With more and earlier oversight and monitoring — with more learning before the doing — these questions could have been avoided, and EC funds spent in a way that would have provided better value for money for EU taxpayers, local residents in N'hambita and ultimately, for the climate.

38 Bond, et al, 12, quoting Monbiot. http://www.monbiot.com/2006/01/17/buying-complacency/
39 Gilbertson, page 86. http://www.carbontradewatch.org/downloads/publications/UpsettingtheOffset-ch4.pdf
40 UN REDD framework document, quoted in Gilbertson, page 60.
41 Gilbertson, page 31.
42 Gilbertson, page 41.



FERN office UK, 1C Fosseway Business Centre, Stratford Road, Moreton in Marsh, GL56 9NQ, UK

FERN office Brussels, Rue d'Edimbourg, 26, 1050 Bruxelles, Belgium

www.fern.org

Les Amis de la Terre