Desk Review

Miombo community land use and carbon management – N'hambita pilot project

Final report prepared for the EC Delegation*, Mozambique
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Kate Schreckenberg, Sandra Brown, Cecilia Luttrell, Tim Pearson, Leo Peskett and Sarah Walker

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* Disclaimer: The views presented in this paper are those of the authors and do not necessarily represent the views of the EC

Overseas Development Institute
111 Westminster Bridge Road
London SE1 7JD
UK

Tel: +44 (0)20 7922 0300 Fax: +44 (0)20 7922 0399
www.odi.org.uk

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I. Background

The 'Miombo community land use and carbon management – N'hambita pilot project' is funded by the EC from its 'Environment' budget line. The project runs for five years from July 2003 to July 2008 and is managed by the EC Delegation in Mozambique. The total budget is €1,991,000, of which the EC contribution is €1,587,000, or 79% of the total. In addition to the co-financing, the project was also to give rise to carbon revenues totalling $200,000.

The project is implemented by the University of Edinburgh together with two partners, the Edinburgh Centre for Carbon Management (ECCM) and Envirotrade (a UK-based company with a Mozambican branch, Envirotrade Lda).

The aim of the project is ´to develop forestry and land use practices that promote sustainable rural livelihoods in participation with rural communities in a way that raises living standards and to assess the potential of these activities to generate verifiable carbon emission reductions´. The project works with communities and small-scale farmers in the Gorongosa National Park buffer zone, the initial target group was/ is the N'hambita community and the project aims to extend the activities to other communities in the area. The project has three main components: the promotion of sustainable land use in N'hambita (forest management, agroforestry and non-timber forest products), research into the regional potential for carbon offsets generated through these activities and capacity building of regional organisations including the Provincial Forestry and Wildlife Department to enable the verification of carbon offsets.

Over the course of the project, the EC has several times voiced its concern over the way certain of the project activities were being implemented, both by letter and during site visits with project staff. When the project's fourth annual report[1] was presented in late 2007, the EC task manager judged it seriously wanting on three grounds:

- It did not address the issues raised in the EC's note;
- The quality of the technical work in the inventory, management plan and baseline were considered far below what could reasonably be expected of a pilot project managed by a University; and
- It continued to make positive claims about its impact that could not be substantiated.

The Delegation's view is that a pilot project is only useful when it provides evidence-based lessons-learned to guide decision making in the future. Given the growing interest in and high level of debate about carbon, the Delegation is concerned that the results of this pilot project, which by virtue of its funding could implicitly be seen to carry the EC's stamp of approval, should be able to withstand critical public scrutiny.

Lacking the in-house specialised expertise to assess the results, the Delegation has contracted the Overseas Development Institute to carry out an independent assessment of the project's activities.

II. Requested Services

The terms of reference (see Appendix 1) request the consultants to carry out a desk review of project documentation (proposal, reports, evaluations, EC comments and notes) to assess whether in their opinion:

[1] File named 'Final Report 2007.pdf'

1. The reports provide sufficient evidence that the project is implementing in full its proposal, with particular regard to the monitoring framework outlined on page 19, and the arrangements for sustainability in Section 2.2.
2. The EC's requests for additional information are consistent with the outputs defined in the proposal.
3. The reports are using sufficiently robust evidence to substantiate the project's impact, with particularly reference to the agro-forestry systems, reduction in shifting cultivation, increased yields, improved soil fertility, and the financial benefits of NTFPs.
4. The technical quality of the forest inventory, biomass survey, management plan and carbon baseline are consistent with i) the proposal; and ii) the norms and standards for the industry, including the Guidelines for LULUCF prepared by the IPCC.
5. The institutional framework established by the project is consistent with the proposal, and likely to provide a sustainable and transparent platform for the management of carbon revenues and the delivery of offsets (both on-farm and avoided de-forestation).

III. Required Outputs

The report should provide the EC with a clear and concise analysis that should:

a) Enable the Delegation to form a view whether the project is delivering robust results.

b) Express a technical opinion on the quality of project interventions; and

c) Identify areas where the project might need to take further action to achieve the planned results.

IV. Methodological Approach

The EC provided the reviewers with a number of different documents (see full list in Appendix 2), including the original project proposal, all four annual reports to-date, additional research reports submitted by the University, two external reviews and correspondence between the EC Delegation and the University on specific issues of concern. In addition, the review team consulted the project's website and that of its partners, Envirotrade and ECCM.

To properly assess the wide-ranging activities of the project, ODI has collaborated with Winrock International, which is a leader in carbon programmes designed for land use management for carbon sequestration. The review team included people with expertise in methods of forest inventory, design of carbon monitoring systems to a variety of standards (including CDM), development of baselines for deforestation and afforestation/reforestation, community forestry, non-timber forest products (NTFPs), institutions and good governance, and knowledge both of the miombo generally and specifically of the Gorongosa National Park (GNP) area.

A spreadsheet (see appendix 3) was drawn up listing the six main activities and their sub-activities as outlined in the project proposal. Each of these was assessed by two or more members of the review team to respond to the 'required outputs' above as follows:

- *Reported achievements:* In this column we extracted all the information on relevant achievements as reported in the documents reviewed.

- *Source of evidence:* This column lists the file names of the documents with useful evidence for the activity
- *Summary assessment:* This column gives a rapid overview of which activities have been fully, partially or not achieved and those for which it is difficult to make an assessment because of lack of information.
- *Technical opinion on the quality of project intervention:* In this column we present our thoughts on how well the activity has been achieved relative to what was indicated in the proposal, and – in some cases – relative to what we know to be current best practice.
- *What further action might be needed for the project to achieve planned results?* This column suggests further action required, ideally before the end of the project.

Note that for ease of reference, the final column of the excel spreadsheet is reproduced as Appendix 4 of this document. On the basis of the spreadsheet, we respond below to each of the 'Requested Services' outlined above.

V. Results

1. Do the reports provide sufficient evidence that the project is implementing in full its proposal, with particular regard to the monitoring framework outlined on page 19, and the arrangements for sustainability in Section 2.2[2]?

1.1 Monitoring Framework

The project proposal set out its procedure for monitoring and evaluation as follows (proposal section 1.9d, pp18-19):

> "The project will employ systems to monitor and evaluate the development of land use systems in the community, specifically looking at the area of land used, the people involved and the flow of benefits to the community. The Plan Vivo System incorporates a number of procedures for monitoring land management and the social impact of these activities.
>
> - All land use plans are recorded by the trust fund and the implementation of these plans monitored by trust fund technicians. This will provide data on what activities are being carried out, whether they are being maintained and who is involved.
> - Social impact monitoring in the Plan Vivo System analyses experiences with land use systems, skills learnt by individuals in the communities, financial costs and benefits and community organisation."

While the reports frequently mention monitoring, the analysed results of the monitoring are difficult to find in the reports. It appears that the Plan Vivo system is in place and that community members together with project employees are capable of monitoring certain aspects of the individual land use plans (e.g. numbers of trees planted on plots and numbers surviving). However, see below for a more detailed discussion of whether this level of monitoring is sufficient.

As discussed in point 4 below, there is a major gap in the project in relation to monitoring the area for forest management planning and for activities related to avoided deforestation. In consequence the reports provide no evidence as yet of regular monitoring of this form of land use against a baseline.

[2] Note that the sustainability arrangements are actually in Section 2.4 of the proposal.

With respect to social impact monitoring, there has been none so far. However, a repeat of the useful baseline study carried out by Jindal in 2004 is due to be carried out before the end of the project and it is to be hoped that this will provide a strong analysis of the social impact of project activities. The Jindal study was relatively thorough and outlined some simple indicators for repeat monitoring. However, it did not carry out a participatory well-being ranking of the community and this would be a good addition to the repeat study. The justification for this is the great concern in the community forestry literature that community forestry activities tend to benefit the less poor in communities because they are more able to afford start-up capital (e.g. for beehives), can spare the time to attend meetings, and have a little more buffer enabling them to undertake new (and potentially risky) activities. Although this project did not set out to assist the poorest of the poor, it does aim to raise living standards. Participatory well-being ranking combined with the Jindal survey would provide an indication of whether activities (including training and employment opportunities) are reaching households in all well-being categories or are primarily being taken up by the less poor, with possible adverse effects on the poorest (e.g. if some people produce better quality honey from improved hives, where does this leave the poorest who may still rely on low-cost traditional hives?).

According to the proposal, the social impact monitoring in the Plan Vivo system also considers community organisation. This is typically a very difficult aspect of any development project, particularly if sharing of benefits is required, and the almost complete silence on this issue in the reports is therefore very surprising. Indeed, it has been impossible to understand the exact relationships between the various new and existing community institutions (see also point 5 below). A new community association was set up by the project but it is not clear whether all community members (how defined?) are automatically members or a membership fee is required. One document mentions that democratic elections are held for committee posts. However, the community forestry literature abounds with committees dominated by the powerful and active measures need to be taken to avoid this. These include ensuring that there are places on the committee for certain less powerful groups (including, for example, women and the very poor) and putting a strong emphasis on accountable and transparent processes that do not rely on high literacy levels. None of these issues have been touched upon in the reports. They will become increasingly critical if the incomes derived from carbon sales increase – as forecast by the project – to levels previously unheard of in this kind of community.

As part of the social impact monitoring, we would also expect some discussion about the relationship between the new community association and the traditional chief, the *regulo*. Given that the *regulo* is responsible for allocating land to new arrivals, he will play a key role in either supporting or possibly undermining the activities of the project. In 2002 the community was granted the rights over its land by the Ministry of Agriculture but it is not clear what rights this confers on the community (and on whom in the community). Do the community now have the rights to exclude newcomers from their land and, if so, how is this right enforced? This highlights a further gap in the reporting concerning how the community association relates to provincial government institutions.

Table 1 outlines the specific indicators that were to be monitored for each land use type and the extent to which this has been achieved in the reports reviewed. The results show that, while there has clearly been activity in all the areas concerned, there has been no systematic reporting, particularly not of a quantitative nature, of the majority of the indicators.

Table 1. Monitoring of some proposed indicators

According to the proposal, each land use component was to be evaluated according to the following criteria:		**Extent to which this has been achieved in the documents reviewed**
Forest management	Tree stocking density	Information available from Mushove 2004 inventory and 15 PSPs
	Indigenous tree species frequency	Species lists and frequencies reported in Mushove 2004 inventory
	Frequency of forest burns	Msc study by Casey
	Seedling mortality	No information found
Timber utilisation	Volume of sawn timber	Volumes have not been reported nor any information on volume growth
	Quality of sawn timber	No information on quality of planks
	Quality and price of timber products	Prices of timber products provided in Envirotrade Accounts for 06/07. Various comments indicate that quality of products is improving – but no objective indicator (e.g. comparison with other locally produced goods, or trends in prices obtained)
	Markets accessed	Some information provided. No systematic assessment.
	Income generated	Accounts of carpentry and sawmill provided but these do not take into account start-up costs. Not clear to whom this 'income' accrues (individual employees or community fund).
Agroforestry	Soil nutrient concentration	No information
	Yield of crops and length of fallow	No systematic reporting. Some information on yields of maize and sorghum intercropped with pigeonpea from 6 fields in the Envirotrade Accounts for 06/07.
	Area of forest cleared for new agricultural fields	No information
NTFPs	Quantity of products	No systematic reporting in annual reports but information for 06/07 is in the Envirotrade Accounts.
	Quality and price of products sold	Qualitative comments on honey quality but no analysis of price trends to provide a more objective indicator of quality.
	Markets accessed	No systematic reporting.
	Income generated	Information provided in Envirotrade Accounts for 06/07 enables calculation of average income per beehive. But no information on incomes generated per household.

1.2 Arrangements for Sustainability

The section on sustainability in the project proposal (reproduced in Box 1) deals with financial, institutional and policy sustainability. Here we take each of these in turn.

Box 1. Proposal Section 2.4 Sustainability (p31)

(a) financial sustainability (How will the activities be financed after the EC funding ends?)

The aim of the pilot project is to develop income producing activities through sustainable management of natural resources and through the sale of carbon offsets generated by these activities.

The financing of these elements of the project will be carefully controlled to avoid subsidising commercial activities which could lead to financial problems once funding has stopped.

All commercial elements of the project will produce financial projections for costs and incomes once the project phase is over to ensure financial viability is achieved.

Part of the funds raised from the sale of carbon sales will be invested in the community association which will work with the trust fund to determine how community carbon funds should best be used.

The project will leave behind various types of capital:

1.Increased technical capacity: a key component of the project is training: training farmers in agroforestry and forestry techniques and training technicians in the use of carbon management systems

2.Management systems: The project will develop a system for managing the sale of carbon credits

3.Data and technical information: The project will produce datasets and develop technical documents that will be required for the management of carbon assets

4.Institutions: the project will lead to the establishment of community associations with responsibility for the management of community resources and regional institution with the responsibility of managing carbon assets from the pilot project and other areas

5.Material: tree nurseries and planted seedlings, reforested areas will have the potential to provide long-term social and economic benefits to the community and through tree nurseries established in the project this area may be expanded.

(b) institutional sustainability (Will structures allowing the activities to continue be in place at the end of the present project? Will there be local "ownership" of project outcomes?)

The forestry operations (sustainable harvesting and timber utilisation) component of the project will be set up as community owned businesses.

The N'hambita community association will own all company assets.

The community association will be responsible for the investment of all incomes generated and the aim of the project is to strengthen the community association to ensure transparent accounting and adequate stakeholder consultation.

The trust fund will be set up as a independent entity. The aim will be for the trust fund to employ a manager and administrator directly and to utilise local technical expertise from the Department of Forestry and Wildlife and other technical organisations.

The trust fund will have a number of trustees on its board representing key members of the civic, legal and cultural societies as well as representatives of project management and financing bodies.

The project has been structured in such a way as to provide capacity building and support to Mozambiquen Government Institutions, such as the Ministry of Tourism's Directorate of Nature Conservation and the Gorongosa National park Administration.

(c) sustainability at the policy level (where applicable) (What will be the structural impact of the project – e.g. will it lead to improved legislation, codes of conduct, methods, etc?)

The project will work closely with local government to advise on how current legislation affects sustainable land use by communities in the region and to highlight opportunities and problems for this type of project.

The project will seek to work with both provincial and national government to demonstrate how carbon offset projects can provide a range of benefits to rural populations and provide a framework through which rural development projects can register resulting carbon offsets in a way that will facilitate either the sale of such offsets if international agreements allow or for such offsets to be included in the national carbon balance once international treaties are extended to include Annex one countries.

1.2.1 Financial sustainability

The project has managed to introduce a wide range of new income-generating activities into the community. For some, e.g. the sawmilling, the lack of a forest management plan stating annual allowable cuts means that we cannot state whether or not this is based on sustainable management of natural resources. In relation to the financial sustainability of these activities the main source of information is the summarised version of the Envirotrade Accounts for 06/07. It would have been useful to include a text description of the main elements of these accounts in the 2007 annual report as the summary is not always easy to understand.

- Based on the summary it appears that the sawmill and carpentry are profitable to some extent. It is not clear from the summary, however, whether the carpentry and sawmill are making sufficient profit to replace their equipment as necessary. Their relationship with each other is very unclear (e.g. is the sawmill selling planks to the carpentry at a subsidised price?) and how their finances are linked to the forestry fund (managed by the Community Association) is also not explained. No discussion of the possible impact of these initially (and possibly still) subsidised activities on similar enterprises in the area is provided.

- Establishment costs for a nursery are provided but the reports also indicate that the project is experimenting with different models of nursery ownership (community nursery versus two types of privately contracted nurseries). This kind of experimentation is what one would hope for from a pilot project but it nevertheless requires some justification (e.g. in terms of benefits in relation to sustainability of seedling production and income generation for the nursery employees/owners) given that the project proposal highlights nurseries as being a community resource.

- With respect to individual commercial activities (principally beekeeping and guinea-fowl), the summary figures are averaged over all the participants. Given the evident high variation in levels of participation (e.g. in numbers of guinea-fowl raised or honey harvested), they need to be analysed on a per-farmer basis to determine how many of the participating farmers are deriving sufficient benefits to outweigh their costs and encourage them to continue with these activities.

- Financial sustainability of the individual Plan Vivo plots is not assessed. As yet, there is no report that suggests that new land use practices (whether boundary planting or intercropping) are leading to raised yields of staple crops (maize and sorghum) or income from fruit sales. Given the lag between planting of trees and maturity, some delay in assessing financial sustainability can be expected. However, in the fourth year of the project, some data should be available from the demonstration plots the project intended to set up (though it isn't clear whether and where these exist).

- Finally, the summary accounts show that carbon sales are by far the most important source of potential income for the community, apparently bringing in $153,530 during the 06/07 financial year. Of the CO2 sold to raise these funds, 80% is considered to be the product of forest management (and 20% from agroforestry). Of all activities, therefore, the financial sustainability of forest management is by far the most important to the long-term viability of the whole project. Unfortunately, as indicated in point 4 below, this activity

has not yet been implemented and no financial reports on costs (current or expected) have been presented in the documents reviewed.

The level of carbon sales suggests that there are important new funds entering the community. How the community association and trust work together to determine the use of these funds is not discussed. If broad ownership and support is to be engendered, then benefit-sharing systems need to be highly transparent and accountable.

The project proposal outlined five types of capital it intended to leave behind. Achievement of these has been mixed:
1. Increased technical capacity: the reports indicate a high level of training activity but few quantifiable indicators are provided regarding the numbers of people trained in different activities and the extent to which capacity is now sufficient to maintain the activities into the future.
2. Management systems: The project has successfully sold carbon credits. It is less clear that there is a direct link between these credits and on-the-ground activities to sequester or retain carbon. In other words, after looking through not only the documents provided but also the web sites of Envirotrade and ECCM, the documentation of carbon credits actually produced is not transparent to the review team.
3. Data and technical information: On these issues see point 4 below.
4. Institutions: See next section.
5. Material: The project has certainly established nurseries and produced many seedlings. How many of these have been planted is not clear and earlier comments point to the difficulties in assessing long-term financial sustainability of both agroforestry and forest management activities.

In summary, financial sustainability is not clearly demonstrated for any of the activities undertaken. For some of the activities (such as the community enterprises) this may be attributable to poor reporting. However, the review team is particularly concerned about the financial sustainability of the project's main income-generating activity, namely forest management for avoided deforestation. The lack of progress on this front is worrying and is discussed in more detail in points 4 and 5 below.

1.2.2 Institutional sustainability

The project has set up several institutions but the reporting provides very little information to make an assessment of their functioning and sustainability.

The N'hambita Community Association was set up early on in the project. As outlined earlier in the discussion on social impact analysis, there is no information regarding the make-up of this association – who are the members and who is on the committee? What is the level of satisfaction amongst the general population with the way in which the Association is run and decisions are taken? Is accounting transparent and how are stakeholders consulted? Do the committee members have the capacity to manage the community owned sawmill, carpentry and nursery and to manage the incoming funds from carbon sales? Given the portfolio of community enterprises created, is there a need for a general manager to be employed rather than relying on (presumably) volunteer committee members? The information provided in the reports is insufficient to make a judgement on the eventual sustainability of this institution.

Forestry operations (sustainable harvesting and timber utilisation) were to have been set up as a community-owned business. With respect to timber utilisation, a community-owned sawmill and carpentry have been established. With respect to

sustainable harvesting, it is not clear how this is organised from an institutional point of view. There is mention in the reports of a Timber Utilisation Association and also of a forestry co-operative though these may be one and the same and it is not clear how they are related to the Community Association. Presumably this Timber Utilisation Association is responsible for drawing up the forest management plan required for sustainable timber harvesting (both of dead wood and of live wood), for carrying out forest management activities, and for applying for the felling licences. But does it employ a forester to carry out these tasks and is the return on the forest management sufficient to cover these costs? The information provided is insufficient to judge the sustainability of these activities.

The Mozambique Carbon Livelihoods Trust (MCLT) was set up as an independent entity in 2007 to act as a registry for carbon offsets (and see point 5 below). The reports suggest that the Trust will be managed by a committee which will include nominees from the N'hambita Community Association, Envirotrade Lda and WWF. The presence of Envirotrade Lda on the committee may be construed to be a conflict of interests, given that it also carries responsibility for monitoring carbon activities in the farmers' plots. It is not clear whether the committee members are also trustees and whether other trustees represent 'key members of civic, legal and cultural societies'. No information is provided on whether the Trust has employed a manager and administrator and how it works with the Department of Forestry and Wildlife.

One of the strengths of the proposal was the emphasis put on the provision of capacity building and support to Mozambican Government institutions, such as the Ministry of Tourism's Directorate of Nature Conservation and the Gorongosa National Park Administration. None of this has been reported. It may well be that the project made attempts to work with government institutions in the early stages and found this to be difficult. But if this is the case, it needs to be reported and explanations provided of what the project has done instead and the implications of this for the sustainability of the present pilot and expansion into new areas.

1.2.3 Sustainability at the policy level

The project proposal was relatively weak on issues relating to policy. The reports mention some meetings with policy makers but no specific work related to advocating policy change. The fact that Envirotrade Lda has expanded its activities into new areas of Mozambique suggests that any existing policy hurdles to projects of this kind have been overcome. More detailed reporting specifically on this issue would be very useful for any future projects.

2. Are the EC's requests for additional information consistent with the outputs defined in the proposal?

Of the documents reviewed, the first one in which the EC asked for additional information was a set of comments made in response to the monitoring report carried out for the EC in April 2006. This was shortly followed by a letter to the University in May 2006, the minutes of a site visit in November 2006, and then four sets of increasingly detailed comments and counter-comments on various versions of the 2007 Annual Report – culminating in the decision to undertake this external review.

We do not intend to discuss each EC request for additional information separately. In general, these requests are fully justified. As is clear from our spreadsheet, the information provided in the annual reports and additional materials is still not sufficient to assess how some of the activities are progressing. As the main donor of this project, it is the EC's responsibility to insist on the provision of sufficient

information to be able to monitor progress of the project against its proposal. Instead, the process of extracting some very key information that is evident in the exchanges between the EC and the University is almost too painful to be true. For example, it is only in the fourth set of comments and counter-comments on the 2007 Annual Report[3], that (i) the summarised accounts of Envirotrade are presented, showing how much money has been earned through carbon sales since project inception and how this money has been divided between payments to farmers, the community and operational overheads; (ii) the structure of the trust and its relation to the community association and community fund become clear; and (iii) an attempt is made properly to address the difficult issue of the forest inventory (see point 4 below). All of these are issues that are critical to the success or otherwise of the project.

The University several times makes the point that this is a pilot project almost as though this were a justification for the fact that certain activities have not been implemented as initially foreseen. Our understanding of a pilot project is one in which lessons (both positive and negative) are analysed and documented so thoroughly that the activities can be replicated more effectively in other areas and by different sets of partners. While it is true that individual annual reports tend not to provide a comprehensive and historical overview of implementation, focusing instead only on activities implemented during a particular period, taken together they should tell a coherent story of how activities have been tackled, where obstacles have been faced and what corrective action was undertaken.

3. Are the reports using sufficiently robust evidence to substantiate the project's impact, with particularly reference to the agro-forestry systems, reduction in shifting cultivation, increased yields, improved soil fertility, and the financial benefits of NTFPs?

As outlined under point 1 above, the main problem with the information provided in the reports is that no quantifiable indicators have been defined for each activity. It is not enough to state that farmers have been trained if we are not told how many were trained when, how many were women (for those activities where the role of women is highlighted), how many have used their training successfully (and are now earning an income from doing so), where these farmers are located (are they in the original focus community N'hambita or in one of the neighbouring communities?), etc. Specific issues in relation to the themes mentioned are as follows:

Agroforestry sytems: This theme includes a number of activities. The project has successfully established a central nursery and two smaller ones and is producing sufficient seedlings of indigenous species and grafted fruit trees for planting by farmers. No information is provided as to the balance of species produced and how these reflect farmer preferences. The nursery activities have provided employment though apparently not predominantly to women as planned. Pigeonpea has been a popular new crop that fixes nitrogen and increases food security. Several 'technical specifications' have been produced for different land use systems that farmers can opt to apply in their 'Plan Vivo' fields such as boundary planting, woodlots, dispersed planting, fruit orchards and homestead planting. No assessment is provided of the relative costs and benefits of the different systems and who is taking them up. One report mentions that farmers prefer boundary planting to dispersed planting (of Nitrogen-fixing trees) even though the latter is apparently better in terms of improving yields. This highlights another gap in the reporting – there is no mention of the demonstration plots the project intended to set up or farmer plots that might be used

[3] In a document named Addendum Feb 08.doc and accompanying Envirotrade Accounts 0607.xls

as controls to provide evidence to convince farmers of the benefits of specific systems. Apparently payments to farmers are staggered over a period of 7 years and the assumption is that trees will be retained or replanted for 99 years. In this respect several areas are not touched upon:

- What are the provisions for conflict resolution, e.g. in contract negotiation or throughout the project lifetime?
- What happens if there is a default from a contract or a farmer wants to get out of the project (especially if the carbon has been sold)?
- How flexible are the farmer contracts? What are the provisions to switch between the different 'technical specifications' or to leave the contract?

Finally, the question of extension is not reported on sufficiently. Is it integrated with the Provincial Forestry and Wildlife Department as originally planned or how will extension agents be funded in future?

Reduction in shifting cultivation: No assessment has been provided of how many fields were cleared before the advent of the project and how many are now being cleared per year or per farmer. One report mentions the inclusion of an additional 500 farmers in the project activities, which either means that the project is extending its reach to communities beyond N'hambita or that these people have moved to N'hambita (which is initially characterised as having only 250 households). If the latter then this would suggest that the project has the typical drawbacks of well-funded buffer zone integrated conservation and development projects of attracting new people into the project area. The question then arises as to whether, in addition to their Plan Vivo plots, the new (and existing) farmers still continue to carry out some traditional shifting cultivation. If this is the case, then it has large implications for any interventions to reduce deforestation and would be a cause of leakage for which a monitoring plan would be needed. Although continued shifting cultivation is apparently not permitted under the terms of their Plan Vivo contract, no mention is made of whether/how this is monitored or enforced. The fact that the project area still has enormous problems with fire in spite of the existence of 12 teams of trained and equipped community firefighters, suggests that fire may still be used as an agricultural tool.

Increased yields: None of the reports specifically address this issue. The Envirotrade Accounts 06/07 provide some data on yield trends in six intercropped fields but the data have not been aggregated and analysed and appear to be more indicative of rainfall than the implementation of different agroforestry systems.

Improved soil fertility: This is another issue that is not specifically addressed in the report and no quantifiable indicators were provided.

Financial benefits of NTFPs: It is clear that the project has invested a great deal of effort in promoting various NTFP commercialisation activities, particularly beekeeping and, to a lesser extent, various crafts (such as weaving and pottery) and woodcarving. Also included under the heading of 'NTFPs' (Activity 4) are additional unplanned activities such as vegetable gardening and the farming of guineafowl (instead of the proposed cane rat domestication). These activities are important in that they provide faster returns to farmers than tree planting activities and, in some cases (like beekeeping) may add value to the forest in its natural state. Although the Envirotrade accounts for 2006/7 provide some information on the financial benefits of beekeeping and guinea fowl farming, they need to be analysed to give a sense of the rate of success among participating farmers and the level and potential sustainability of these benefits. Much more information is needed on the institutional set-up (who does the training? how are various NTFP producers organised? who fronts the initial costs (e.g. of beehives)?) if such activities are to be replicated elsewhere.

4. Is the technical quality of the forest inventory, biomass survey, management plan and carbon baseline consistent with i) the proposal; and ii) the norms and standards for the industry, including the Guidelines for LULUCF prepared by the IPCC?

The technical quality of the inventory, management plan, and carbon baseline are not consistent with either the proposal or with the norms and standards of the field as will be explained here.

To develop a forest management plan requires that a forest inventory first be performed. Although an inventory was made in 2004 (Mushove), it did not meet norms and standards of the industry and very little information collected will be useful for planning sustainable timber production. Typical steps to plan an inventory (for both timber and biomass) would first involve collecting aerial or satellite data over the area to be used to stratify the forest area of interest, decision on sampling target (how many plots in each strata needed to achieve targeted precision), decision on plot design (a variety of designs exist – single plots or clusters), and metrics to be collected (usually dbh, height, species [commercial or not], volume). Not only are these steps typical of the standards for a forest inventory, but they are also outlined in the IPCC Good Practice Guidance (Chapter 4.3) on how to design a measurement and monitoring plan for carbon projects (even though the methods are for afforestation they are also applicable to a biomass inventory). There was very little indication in any of the reports reviewed that the IPCC GPG had been referred to. Furthermore, if the project had searched the literature they would have come across the Noel Kempff pilot carbon project (The Nature Conservancy pilot project for stopping deforestation and logging in Bolivia) and its associated Project Design Document (PDD) that contains all the details about how the C inventory was done, the baseline developed, etc. This project encompassed about 640,000 acres of lowland rainforest and it has been certified by SGS and issued VERs. The carbon stocks in this forest (live and dead trees, litter, understorey, and soil C to top 30 cm) were measured to a precision of <10% of the mean with 95% confidence.

Implementation of the inventory would provide the data needed both on timber volume and, with a good biomass regression equation, biomass and thus C stocks. Given that dead wood is used and appears to have been the only type of wood sawn to date (reported in 2007 annual report), an inventory of dead wood would also have been required. If this is a relatively large pool (no indication in any reports read that this was measured) it should have been included not only in the inventory for forest management planning but also for the carbon inventory (method for dead wood is given in the IPCC GPG).

From such an inventory, an estimate of the standing volume of live and dead wood could have been made for each strata of the forest by commercial and non commercial species and diameter – it would have helped identify which strata had adequate stocking, which strata needed fire management to “protect” timber resources, or which strata needed restoration by interplanting. The same data could have been used to generate a robust estimate of the carbon stocks (biomass) in the forest in a systematic way, rather than in the way it has been done to date by combining plot data from a variety of different studies done for different purposes.

The inventory results would then have informed the project on the design and number of PSPs that would need to be established to generate accurate and precise rates of growth, mortality, ingrowth, etc. – having precise results (95% confidence intervals of the order of +/-10%) would provide confidence regarding the rates observed. Given that growth of the trees and rates of C accumulation are critical

metrics for this project, was there any investigation of whether the species put on a discernable growth ring given the highly seasonal climate?

A management plan could then have been developed based on quantitative data to estimate the allowable cut of live trees and the offtake of dead wood. Only through such planning is there more guarantee that the forest would be sustainably harvested and could supply the developing enterprises with the resources needed.

As for the carbon baseline, the project appears to have not completed this – knowing the carbon stock in the project area is not a baseline. As part of the focus of this project is to reduce deforestation and associated emissions as a carbon activity, a baseline for this activity is needed (we note that details about a baseline for the Plan Vivo activities are given in the technical specifications). A deforestation baseline represents the likely emissions of GHGs caused by deforestation. Thus it has two components – the rate of land use change and the carbon stocks in those lands being changed. The product of the rate of land use change and change in carbon stock gives CO2 emissions (details of this are in the IPCC AFOLU report). The question is what rate has been used – is this based on the past and projected into the future? The proposal said that the project would use the CLIMAFOR model to develop the baseline but this was not done as it was deemed by the project to be too difficult. However, there are other models for doing deforestation baseline projections that are peer reviewed that could have been looked at as a modification to CLIMAFOR (e.g. Brown, S., M. Hall, K. Andrasko, F. Ruiz, W. Marzoli, G. Guerrero, O. Masera, A. Dushku, B. DeJong, and J. Cornell, 2007. Baselines for land-use change in the tropics: application to avoided deforestation projects. Mitigation and Adaptation Strategies for Global Change, 12 (6):1001-1026; this method was used for the Noel Kempff pilot project mentioned above). Part of the reason given for not completing this task is that the area to focus activities on to reduce deforestation had not been selected. However, if the project had applied CLIMAFOR or other modelling approaches (cited above), the area to focus on would have been identified – for a successful reduced deforestation activity, the area needs to be under medium to high threat for ongoing deforestation but yet where any activities to provide alternative livelihoods are likely to be successful adopted with no activity shifting to other areas (leakage), and where the carbon stocks of the forests under threat are high too.

In summary, the project seems to be too focused on basic carbon science rather than an applied project that has great potential to make a difference to people in the area. The overall results to help develop carbon activities and carbon credits in this area is very weak and highly unlikely to achieve the type of revenue expected given the higher quality projects out there in developing countries and that are achieving higher standards of carbon monitoring.

5. Is the institutional framework established by the project consistent with the proposal, and likely to provide a sustainable and transparent platform for the management of carbon revenues and the delivery of offsets (both on-farm and avoided de-forestation)?

In general it has been very difficult to comment on the institutional framework because it is so poorly reported on in the various documents reviewed. It has been necessary to consult the websites of the project, Envirotrade, BR&D[4] and Plan Vivo to obtain additional clarification of some of the relationships between project institutions.

[4] BioClimate Research and Development, soon to become the Plan Vivo Foundation

The proposal mentions three new institutions, of which two have been set up broadly as outlined in the proposal with information too vague to be sure about the third:

(i) N'hambita Community Association (CA).

The CA was to employ people to carry out forest management and invest the profits in the community. It was to represent the community on the Trust Fund and receive assistance (from the Trust) in carrying out its management functions. A representative from the GNP was to cement the links between these two institutions.

According to the documents reviewed, the CA was set up and appears to be working as planned. Our main concerns are the lack of information about how the CA membership is constituted and how its committee is elected; how transparency over decision-making and benefit-sharing is ensured (prevention of elite capture); and the extent to which the CA committee has the capacity to carry out all its tasks beyond the lifetime of the present project. Another factor which could be essential to the CA's sustainability is whether or not it has the support of the GNP, the links to which are not specified in the documents.

(ii) Community Timber Utilisation Association.

This association was to be formed in order to facilitate community ownership of sawmill and carpentry and was to be responsible for disbursement of financial surpluses made from timber utilisation into community wide projects such as healthcare and education. Representatives were to be drawn from the community to serve on the association.

Even in the proposal it was unclear whether this association was one and the same as the CA or a subsidiary or parallel body. This has not been clarified in the review documents, which rarely mention a Timber Association, though a forestry cooperative is mentioned. A cooperative usually has a very different legal status and membership base from an association. Given the centrality of the sawmill and carpentry as income-generating activities for the community, the status of this body and its relation to the CA need to be clarified before sustainability can be assessed.

(iii) The Independent Trust Fund

This was to be established at a regional level with a number of different tasks:

- Administer the registration and sale of carbon offsets and act as a registry for carbon offsets for other communities, eventually becoming self-financing from the carbon sales;
- Contract technical personnel from the Provincial Forestry and Wildlife Department (PFWD) to provide verification and registration services;
- Employ staff to work alongside project managers in charge of promoting land use activities;
- Take responsibility for assessing land use plans produced by farmers and communities (including an assessment of the baseline) and registering the carbon on the trust fund database;
- Employ technicians to monitor land use activities registered with the Trust Fund and train community technicians to help with this monitoring.

The Mozambique Carbon Livelihoods Trust (MCLT) has been established, though apparently at a national rather than provincial level. It appears to work as outlined in the proposal though it is not clear whether it has ever hired or worked with any PFWD staff. Training has occurred and management plans have been developed but insufficient evidence was provided to make a judgment on robustness of results in these areas

However, an acceptable C monitoring system is not in place to demonstrate whether the project is delivering robust results in terms of carbon sequestered or carbon dioxide emissions avoided. The submitted documentation provides no confidence that an acceptable baseline has been developed, that changes in stocks will be accurately tracked or that project leakage and project emissions will be examined at all. No clear plan is in place for third party verification to assure acceptable standards are met. Ultimately to be fungible in the modern carbon world the project should conform to international standards, this is not the case.

Independent scrutiny is also required to deal with the possible conflict of interests represented by the fact that Envirotrade is both on the Trust's board and contracted by the Trust to manage field operations (including monitoring the carbon sequestered on individual plots).

VI. Conclusion

Based on the reports provided, the review team feels the EC has been justified in its requests for additional information as the reports do not provide a sufficient basis on which to assess whether the project is delivering on the activities in its proposal in a robust and sustainable manner. The poor reporting on activities is a particular concern given the pilot nature of this project which requires an open presentation of any difficulties faced and corrective action taken, to enable others to learn from the experience.

Appendix 4 lists the further actions needed if the project is to fulfil its aims. Some of these may be resolved through the provision of more information, particularly in the form of reports against quantitative indicators (which must first be defined) and detailed business plans for individual and community enterprises and the operation of the Trust.

However, the area of greatest concern is the whole carbon aspect of the project. As outlined above, the community's main source of income is predicted to be through avoided deforestation of its forest area. Yet this area has apparently only just been defined and has not been the subject of a standard forest inventory to enable preparation of a forest management plan. The lack of management plan also has implications for the sustainability of the sawmill and carpentry, for both of which a sustainable source of raw material is required. More importantly, without the management plan, and in the absence of independent verification, it is debatable whether the project will continue to be able to sell carbon credits in the future. This may have been possible when the proposal was originally defined, but the current carbon trading context increasingly requires third party verification.

The review team therefore recommends that the carbon aspect of the project be retooled to meet the standards and requirements of the Voluntary Carbon Standard (http://www.v-c-s.org). This standard has been developed to include more eligible activities than the CDM that generate fungible C offsets and to make the process simpler, yet maintain rigour and scientific integrity. These standards will require a sufficient definition of project additionality and a conservative definition of the project baseline. The VCS standards will also ensure sufficient monitoring and verification. Offsets achieved under the VCS standards would be attractive to investors worldwide and thus ensure the sustainability of the project's activities.

APPENDIX 1. TERMS OF REFERENCE

Desk Review

Miombo community land use and carbon management – N'hambita pilot project

BACKGROUND

The Project

The EC financed the 'Miombo community land use and carbon management – N'hambita pilot project' from its 'Environment' budget line. The project was de-concentrated for management by the EC Delegation in 2003.

The project beneficiary and grant manager is the University of Edinburgh's Dept of Ecology. Three partners were identified in the proposal: International Centre for Research into Agro Forestry (ICRAF), the Edinburgh Centre for Carbon Management (ECCM) and Envirotrade. ICRAF subsequently withdrew, and Envirotrade took over their tasks in the field.

The total budget is €1,991,000, of which the EC contribution is €1,587,000, or 79% of the total. It runs for five years, from July 2003 until July 2008. In addition to the co-financing, the project should also give rise to carbon revenues totalling $200,000.

The aim of the project is ´to develop forestry and land use practices that promote sustainable rural livelihoods in participation with rural communities in a way that raises living standards and to assess the potential of these activities to generate verifiable carbon emission reductions´. The project works with communities and small-scale farmers in the Gorongosa National Park buffer zone, the initial target group was/ is the N'hambita community and the project aims to extend the activities to other communities in the area. The project has three main components: the promotion of sustainable land use in N'hambita (forest management, agroforestry and non-timber forest products), research into the regional potential for carbon offsets generated through these activities and capacity building of regional organisations including the Provincial Forestry and Wildlife Department to enable the verification of carbon offsets.

There are six activities and results areas:

1. Forest management
2. Timber utilisation
3. Agroforestry
4. Non timber forest products (NTFPs)
5. Regional carbon management research
6. Carbon verification capacity building

Context of the assignment

Since the start of the project the University submitted annual reports (see list in annex). While these were accepted, the content raised some questions about the way that results were being presented and the implementation of the monitoring

framework. There were also delays in carrying out the inventory and creating the institutional structure. The Delegation shared these concerns with the University.

In September 2007 the University submitted a draft report for 2006-7 (the fourth annual report). To analyse it, the EC prepared a matrix that compared the proposal with what was actually happening on the ground in the inventory, baseline, monitoring and institutional structure. From this analysis it appeared that the draft report was not detailed enough, and the Delegation was not satisfied that the monitoring framework was being implemented as per the proposal. The Delegation sent an official note to the University, together with an attachment that set out in detail what was expected of the final report in order for it to be accepted, including full disclosure of the income and commissions generated by carbon trading. It also informed the University that no further advance payment for the fifth and final year would be made until this report was accepted.

In December 2007 the University submitted a 2007 'final' report. The task manager judged it seriously wanting on three grounds: it did not address the issue raised in the EC's note; the quality of the technical work in the inventory, management plan and baseline were considered far below what could reasonably be expected of a pilot project managed by a University; and it continued to make positive claims about its impact that could not be substantiated.

The Delegation's Position

The Delegation's view is that a pilot project is only useful when it provides evidence-based lessons-learned to guide decision making in the future. These lessons should tell us both what works, and what does not. But judging by the interim reports, there are strong grounds for believing that the project will not be able to deliver sufficiently robust results, one way or the other. Moreover, there appears to be a tendency to make positive claims about the benefits without substantiating them, rather than critically assessing the challenges faced by community-level carbon offset trading.

Second, carbon is a new and interesting area, but one that could attract controversy, and so it is important that any results implicitly carrying the EC's stamp of approval (by virtue of its funding) can withstand critical public scrutiny.

Third, the Delegation needs to take operational decisions relating to payments to the University, or to request corrective actions. But carbon trading is a specialised area, and the Delegation does not have sufficient in-house technical competence.

On this basis, the Delegation determined to carry out an independent assessment as the basis for developing its response strategy.

DESCRIPTION OF THE ASSIGNMENT

Beneficiaries

The beneficiary is the EC Delegation. The lessons learned will be shared with AIDCO, DG DEV and DG ENV.

Objective

To provide the Delegation with a technical and analytical assessment of project progress to guide operational decision-making.

Requested Services

The consultants will carry out a desk review of project documentation (proposal, reports, evaluations, EC comments and notes) to assess whether in their opinion:

- The reports provide sufficient evidence that the project is implementing in full its proposal, with particular regard to the monitoring framework outlined on page 19, and the arrangements for sustainability in Section 2.2.
- The EC's requests for additional information are consistent with the outputs defined in the proposal.
- The reports are using sufficiently robust evidence to substantiate the project's impact, with particularly reference to the agro-forestry systems, reduction in shifting cultivation, increased yields, improved soil fertility, and the financial benefits of NTFPs.
- The technical quality of the forest inventory, biomass survey, management plan and carbon baseline are consistent with i) the proposal; and ii) the norms and standards for the industry, including the Guidelines for LULUCF prepared by the IPCC.
- The institutional framework established by the project is consistent with the proposal, and likely to provide a sustainable and transparent platform for the management of carbon revenues and the delivery of offsets (both on-farm and avoided de-forestation).

Required Outputs

The report should provide the EC with a clear and concise analysis that should:

d) Enable the Delegation to form a view whether the project is delivering robust results.

e) Express a technical opinion on the quality of project interventions; and

f) Identify areas where the project might need to take further action to achieve the planned results.

EXPERTS PROFILE

The proposed task shall be conducted by a team of two experts who should have the following profile:

- Expert level II (two) with at least three years experience in carbon trading at the community level, including baselines, monitoring, the institutional framework and best practices in carbon trading.
- Expert level II (two) with at least five years experience in community/agro forestry, and technical knowledge of forest inventories, forest management

plans, community forest enterprises (sawmills and carpentry workshops) and NTFPs.

- One expert should have experience in M&E frameworks.
- Knowledge of the Mozambique or the regional context would be preferable.

LOCATION AND DURATION

The mission should start by 1 March and conclude by mid-April 2008. The work will be carried out in the consultant's home country. No field trips are foreseen. The team leader could propose to visit Mozambique for a de-briefing session, should this be considered necessary. A total period of 13 working days is foreseen, based on the following indicative workplan:

Task	**Expert 1**	**Expert 2**
Desk analysis	3	3
Report finalisation	2	2
Briefing Mission to Mozambique	3	
Total days	8	5

REPORTING

A draft report should be submitted within 15 working days following the signature of the contract.

Within 15 working days, comments on the draft study will be provided by the EC.

The final report should be submitted with 10 working days of receiving the comments from the EC.

Should it be necessary, the lead consultant will be invited to brief the EC in Maputo.

The consultants should submit two hard copies of each report, and an electronic copy. All reports must be in English.

ADMINISTRATIVE INFORMATION

The unit costs of the consultants must include all the costs associated with preparing and producing and transmitting the reports.

APPENDIX 2. List of documents consulted

	Name of file	Title and Author	Date	Page length	Comments on content
1	Project Proposal.doc	"Miombo community land use and carbon management – N'hambita pilot project", Univ of Edinburgh	2002	32	Standard EU project proposal.
1b	Nhambita maps.doc	Various maps of the site from John Grace	No date	6 maps	
2a	Annual report Yr 1.pdf	Report by Univ of Edinburgh to EC in Nov 2004.	Nov 2004	161pp (technical report only 10 pp)	Short technical report (10pp) pus lengthy annexes. Those of immediate interest are listed separately below.
2b	UoE First Report Appendix A Location of PSPs.pdf	Appendix A (10)…Rationale and Background for identifying PSPs using GIS	2004	3	Appendix to first annual report
2c	Jindal 2004.pdf	Measuring the socio-economic impact of Carbon sequestration on local communities: An assessment study with specific reference to the Nhambita pilot project in Mozambique. R Jindal (MSc thesis)	2004	96pp + annexes	MSc thesis carried out within the context of the project.
2d	Spadevecchia Sept04.pdf	'Synthesis of Remote Sensing Products and a GIS database to Estimate Land Use Change: an Analysis of the Nhambita Community Forest, Mozambique'. L.Spadavecchia, M. Williams and J.Wright	2004	27pp	Appendix to Year 1 report
2e	Forest inventory.pdf	"Preliminary inventory of Nhambita community forest, Gorongosa district, Mozambique", Mushove and Williams	2004	40	Appendix to Year 1 report

3	Annual Report Yr2.pdf	Report by Univ of Edinburgh to EC in Aug 2005.	2005	85pp	Short (6pp) technical report plus appendices.
3a	Comments on Carbon Project 2005 Report.doc	"Comment on Second Interim Narrative Report" from EC	29 October 2005	3	Deals with issues around carbon trading, calculating carbon values, NTFPs and forest management.
4a	Monitoring Report Miombo Carbon.pdf	"Re-monitoring report Mozambique – MZ – Miombo community land use and Carbon management - N'hambita pilot project.", by Nuno Moreira	April 2006	2	Monitoring report by Nuno Moreira, apparently for the EC.
4b	Response Sheet Miombo Community Land.doc Use	"RESPONSE SHEET - Results Oriented Monitoring", comments by NC in response to Nuno Moreira	April 2006	2	Table of monitoring comments (as laid out in doc 4a) with responses from Noel Cooke (EC).
5	Letter to UoE Miombo Carbon Project.pdf	Letter from Carreras (EC) to Prof Grace (U of E)	May 2006	2	Lays out issues that the EC expects to have dealt with in the upcoming 3 year narrative report.
6	Annual Report Yr3.doc	"Miombo Community Land use & Carbon Management N'hambita pilot project. Annual report 1 Aug 2005 – 31July 2006", Univ of Edinb.	Aug (?) 2006	11	Annual report of activities.
7a	Miombo Woodland Mission Report.doc	"MISSION REPORT (20-22 November 2006) Miombo Community Land Use and Carbon Management – N'hambita Pilot Project", by EC (Pistohlkors and Cooke)	Nov 2006	6	Reports on a field mission by Pistohlkors and Cooke to attend a project stakeholder meeting together with the grant beneficiary (University of Edinburgh) and its two subcontractors (ECCM and Envirotrade). The objective of the meeting was to review project progress, identify areas of weakness, and agree on solutions and tasks. Lays out issues still to be resolved and specific action points.
7b	MOZ	MIOMBO Project	22 Nov	15	Minutes of the field

	Minutes.doc	Mid-Term Evaluation Meeting – Minutes prepared by Joanne Pennie, UoE project administrator	2006		meeting also documented in no. 8.
8	Interim report John Grace Nov 2006.doc	Miombo community Land use & carbon management N'hambita Pilot Project. Midterm Report. U of E	Nov 2006	28	
9	External Evaluation Nov06.doc	"External evaluation of the miombo community land use and carbon management N'Hambita pilot project" by Kooistra and Wolf	Dec 2006	10	Mid term evaluation
10	Annual Report_ V2 0_23 09 07	"Miombo community land use and carbon management N'hambita Pilot Project. DRAFT Annual INTERIM REPORT 1 August 2006 – 30 April 2007"	Mid 2007	27	Draft annual report for 2007 (year 4)
11a	Follow up on 2007 draft report.doc	"Comments on Draft 2006-7 Report", from EC	Before July (?) 2007	4	These are EC comments on the draft 2006/7 Annual Report (document 10). Asks for redrafting of report for it to be accepted.
11b	Carbon values.xls	No title, prepared by EC		1	Appendix of document 11a: summarising revenue and cost projections submitted by ECCM and adding in the grant and other costs
11c	Miombo Report July 2007.doc	"Miombo Community Land Use & Carbon Management. Report to address concerns raised by the European Commission", from Project	July 2007	9	Responds issue by issue to comments made by EC in doc 11a.
11d	Reply to July 2007 Report.doc	"Reply to the July 2007 Miombo Report", from EC	Aug (?) 2007	5	Counter response, issue by issue, to the Miombo Report July 2007 (doc 11c). Accepts some of the points made by UoE but raises further issues.
12	Carbon matrix	"Agenda Issues for	Sept	3	Matrix of issues to be

	for agenda.doc	September Meeting – EC Delegation to Mozambique", from EC	2007		discussed at a meeting between EC and project, listing methodology as per proposal, the actual situation as per reports and issues for discussion.
13	Final Report 2007.pdf	Miombo community land use & carbon management: N'hambita pilot project Annual Report 1 August 2006 – 30 November 2007	End 2007	105	Main report of 23 pp plus appendices mostly dealing with aspects of inventory and some published papers.
14a	Comments on 2007 Final Report UoE Jan 22-1.doc	"Comments on 2007 Annual Report- Final Version Miombo Community Land use and Carbon Management Project Submitted by the University of Edinburgh – December 2007", from EC	22 Jan 08	7	EC comments outlining perceived failings of project as presented in its 2007 Annual Report (doc 13).
14b	Addendum Feb 08.doc	Miombo community land use & carbon management: N'hambita pilot project. Response to Comments made on the Annual Report (1 August 2006 – 30 November 2007), from University	Feb 08	29	Detailed point-by-point response from the university to the EC's comments on the 2007 annual report.
14c	Response to Addendum - 2.doc	Draft Comments on the Addendum to the 2007 Report, Miombo Woodland, UoE CRIS 63241 by NC	13 March 2008	5	Response to Addendum by NC.
15	Envirotrade Accounts 0607.xls	Envirotrade Accounts 0607, from University	Feb 08	13	Summary of the full Envirotrade accounts showing various income-generating activities such as agroforestry, beekeeping, guineafowl, as well as carbon sales allocations.

APPENDIX 4. Further actions needed for the project to achieve planned results.

Critical activities are highlighted in yellow. The justification for these recommendations are provided more fully in the excel spreadsheet in Appendix 3.

Activity 1 Forest Management	What further action might be needed for the project to achieve planned results?
1a Establishment of community forest association	Clarify the set-up of the community association and the forest association and how they relate to each other (in terms of management structure, accountability, funding). Clarify the relationship between the CA and local gov institutions. Determine and implement necessary capacity-building for the CA to cope with potential large influx of funds in a transparent and equitable way. Outline role of PFWD and ORAM in setting up the CA to provide help to other communities undertaking similar activities - would be useful to have a 'technical specification' for how to go about setting up the necessary institutional structures, including how to obtain appropriate legal status.
1b Training of community forestry workers	Clarify numbers of people trained. Involve community forest workers in production of final version of forest management plan. Although not stated in the proposal, achieving ownership will require involvement of wider community too.
1c Forest inventory	Need to redo the whole inventory to generate information needed, can build on the data already collected to statistically estimate number of plots needed to reach a given precision level --could then balance cost versus precision targeted. Need to decide if need precision target for whole representative area of miombo or just some strata that have commercial value and where activities are allowed. A regression of volume versus ht and dbh would have been useful for estimating volume growth; given this system is very climatically seasonal, was there any investigation to see if several species put on annual rings?--would have been useful for growth projections.
1d Community forest nursery establishment	Provide information on costs/benefits of different ownership models of nurseries and their likely sustainability. Determine whether work can be organised in such a way as to make it more attractive to women.
1e Production of seedlings	None
1f Management planning	Decide on a system of classification that is useful for developing a management plan for the various activities planned for the forest; use the inventory data that would come from re-doing the inventory as suggested above; develop a management plan for each key activity such as estimate of stock of commercial volume and allowable cut based on growth versus mortality; fire management plan, etc.
1g Establishment of Permanent Sample Plots (PSPs)	Bottom line is that these 15 PSPs have limited value to the goals of the project--project needs to estimate how many plots are needed to achieve a given target for whatever property they want to estimate. The target should be close to +/-10% of the mean at 95% confidence for C stock and could be even more precise for commercial volume (likely less variable so same number of plots could provide higher precision).
1h Timber extraction	Use data from new forest inventory to determine allowable cut of timber and annual offtake of dead wood by different forest classes (3 types of miombo identified in report)
1i Replanting and enrichment planting	Complete management plans using data from a new forest inventory
1j Measurement of PSPs	Prepare a report based on re-measurements of PSPs to indicate what has been learned and what can be used to develop management plans

Activity 2. Timber Utilisation	**What further action might be needed for the project to achieve planned results?**
2a Establishment of community timber utilisation association	Provide organigram to clarify relationships between the different institutions including accountability and funding flows.
2b Provision of equipment (saw mill and carpentry)	While the activity has nominally been achieved, there is a need to clarify whether the carpentry and sawmill (either jointly or separately) are profitable and sustainable without donor support.
2c Training of community workers	Assess need for, and implement, further capacity-building required to allow carpentry and sawmill workers to manage these businesses independently.
2d Production of sawn timber	Further study on why sawmill seems to be more profitable than manufacturing wood products--need to understand where costs and prices are resulting in this trend.
2e Manufacture of furniture and other products	Develop quantitative indicators to show achieving this activity--e.g. related to change in sale price of products
2f Marketing of products	Develop quantitative indicators to show achieving this activity--related to number and type of items sold .

Activity 3. Agroforestry	**What further action might be needed for the project to achieve planned results?**
3a Training of farmers	None
3b Propagation of seedlings	Need to justify move to contract nurseries in terms of costs and benefits to the community and long-term sustainability. Discuss with women whether the terms of the contracts can be altered to encourage their involvement.
3c Intercropping	If not too late, establish a demonstration plot for intercropping with trees (rather than pigeon pea) to assess whether this is a better option than boundary planting and, if so, to convince farmers to move to this option.
3d Improved fallows	Develop quantitative indicators for assessing the success or not of this activity
3e Reforestation with fruit trees	Develop quantitative indicators for assessing the success or not of this activity.
3f Planting of riverine areas	Develop quantitative indicators for assessing the success or not of this activity
3g Participatory analysis of results	As per proposal, put in system to measure soil nutrients, crop yields and fallow length, and the area cleared for agriculture and explain how these are analysed in a participatory manner. Refer to a baseline or control plot to determine improvements.
3h Extension of techniques	Clarify how many extension staff are working in what (thematic) areas and how their work will be sustained beyond the project.

Activity 4. Non-Timber Forest Products	**What further action might be needed for the project to achieve planned results?**
4a Training and provision of equipment	Clarify how many people trained in each activity and develop indicators for assessing success (e.g . proportion of people actively pursuing and generating income from activity 12 months after training)
4b Bee keeping	Develop quantitative indicators to assess success or not of this activity. Analyse what works and what doesn't.
4c Cane rat	Develop quantitative indicators to assess success or not of this

production	activity. Determine what constrains success and deal with as necessary.
4d Marketing	Once again, need to develop some quantitative indicators to assess success or not of this activity. Carry out basic value chain analysis to determine where value can be added.
4e Extension	Determine what is needed to make extension system sustainable and implement, eg local capacity-building and/or negotiation with govt extension depts for services.

Activity 5. Regional carbon management research	**What further action might be needed for the project to achieve planned results?**
5a Literature review	5a.1. A database of the literature review should be created. 5a.2. A table should be created that includes literature estimates of potential biomass accumulation. 5a.3. Information should be provided on how the review was used to plan biomass field surveys
5b Training of community technicians (ICRAF)	A detailed description of the training activities should be included. This should include the number of people trained, the number of crew chiefs trained, the exact methods the people were trained in, what field manuals were created for the training, were Standard Operating Procedures developed, and the like.
5c Biomass surveys	5c.1. It is recommended that a biomass survey take place again specifically in the area that will be in the 'avoided emissions' land. Sampling methods should be in line with those presented in the CDM A/R approved methodologies as these are the standards accepted worldwide or in the IPCC GPG. This should include random distribution, stratified by land cover types and result in a mean and variance. As stated in "Activity5c" this should include all carbon pools. OR a justification should be written describing why a pool was not measured.
	5c.2. A separate report should be written presenting the results from the allometric equation creation. This should include information on how trees were selected, what specific measurements were made, the species, how the root biomass was collected, etc. This also should compare results to other allometric equations developed for the miombo woodlands. It should also explain why height was not used as an independent variable as trees in dry environments are sensitive to moisture and small changes in this can make a difference to height – not just dbh.
	5c.3. There is no analysis of the expected rate of accumulation as stated in "Activity 5c". Although the Williams et al paper did examine the recovery of biomass in fallow fields, there is no information about how this relates to the planned 'project activities'. Therefore, it is recommended that information be presented on the expected biomass accumulation resulting from each project activity and the area of land in which each activity will take place. Based on the information in the 'Technical Specifications' a lot of this information has been developed for certain project activities. Therefore, this information needs to be compiled in one location into a report with sources presented for each project activity.
5d Regional baseline analysis	5d.1. A baseline study should take place for the Plan Vivo activities and for REDD. This should have been one of the first components completed in this project. It is recommended that the plan vivo activities be inline with the methods described in CDM and/or VCS. The deforestation rate calculated can be used as one component of this study if it is deemed appropriate, however, a spatial analysis must take place estimating WHERE deforestation is expected in the

	future based on the drivers of such deforestation (provides indication of where threat is coming from--high to low threat). Then carbon stocks should be associated with each land cover type determined to be in the baseline. This baseline study should include all areas to be included in the project. So the baseline may have deforestation along with continued agricultural production. This analysis should include a wider area so that it may also be used for leakage assessment with predicted baseline deforestation later compared with actual deforestation to assess any deforestation that is displaced from within the project boundaries
5d Regional baseline analysis (continued)	5d.5. The Technical specification for Plan Vivo conservation needs a lot of work and needs to make sure it follows the methodologies being developed or developed already for these kinds of activities in other countries and in the voluntary market (e.g. VCS)--Plan Vivo was developed many years ago when methodologies etc were fewer in number--as this project moves forward the methodology needs to be revised and updated to be in line with those being developed for other projects on AD--if not there will be limited opportunity to sell carbon credits from Mozambique.
5e Carbon modelling	5e.1. The carbon modeling needs to be finished. 5e.2. Although CO2FIX was used in the technical specification, no information about its use is presented in one location. The "Nhambita carbon calculator' is also not described.
	5e.3. There is no information presented in one location on the estimated carbon accumulation for each project activity. It seems in the technical specifications some of these data have been developed but mostly from CO2Fix. Addtionally, the carbon stocks resulting from the baseline activities must also be estimated. Additionally, if this activity is to be fulfilled, modeling should include descriptions of the impact of management practices on various carbon pools. HOWEVER - for a carbon project, it is not necessary for in depth modeling of the project activities to take place. Therefore, the goals of this activity should be reassessed and then only those activities required for creation of a carbon project be pursued.
5f Production of technical specifications	5f.1. All technical specifications must be translated into local languages or at least Portuguese. 5f.2. The goal and audience of these should be extremely explicit. If local farmers are the user audience, they must include more detailed and simplified steps. 5f.3. Detailed information should be provided on needed baseline data collection and monitoring data collection. 5f.4. The section titled 'monitoring' should be changed to 'ex ante estimations'. A separate 'monitoring methodology' should be included.

Activity 6. Carbon verification	**What further action might be needed for the project to achieve planned results?**
6a Establishment of institutional structure	A follow up report on the first months of full operation of the trust fund is needed to assess the success or not of the trust fund. Ideally this would be by an independent verification organisation. This must (i) provide full accounts, (ii) an indication of when self-financing will be achieved, (iii) what may still be needed (e.g. in terms of capacity-building) to ensure financial sustainability, (iv) clarify the objective of the Fund, specifically whether it is just a registry or a financial management unit, (v) pay special attention to transparency and accountability provision especially with respect to involvement of Envirotrade in the Trust Fund and in carbon sales, and the representation of multiple communities on the Trust Fund Committee, and (vi) outline plans for independent third party verification of

	operations.
6b Training of administrative and technical personnel	Indication of completion of all training and names/affiliations of staff trained. If intended links with PFWD have not been made, this needs to be justified. Explore possibilty of using one of the voluntary market standard schemes for verification.
6c Land use planning	Provide examples of plans and develop quantitative indicators for assessing the success or not of this activity. These could include number of plans in existence and where plans have been implemented, and the ease with which farmers and technicians can prepare, follow, amend and monitor implementation of plans. Also need to explain provisions for protection of database and plans for making land use plans publicly available.
6d Assessment and registration of carbon assets	Evidence of the trust fund's involvement in assessing plans, and examples of assessed plans
6e Monitoring and administration of carbon assets	Ideally the monitoring program would be adapted to meet the CDM or VCS standards. However, this is not strictly necessary to meet the requirements of the proposal. To meet the proposal there should be a demonstration that community technicians are trained to carry out monitoring and that the monitored data are being recorded, analysed and securely archived. Standard operating procedures (SOPs) for the farmers should also be presented to show the standards required. SOPs will ensure quality and provide a basis for quality control. In addition, a plan should be in place for third party verification (perhaps at 5 year intervals). A plan is also required to define the purpose of remote sensing, the frequency of remote sensing, and of great importance procedures for defining and updating the avoided deforestation baseline.