Plan Vivo Guidance Document

for

Reducing Locally-Driven Deforestation

Updated: July 2015

Contents

Glossary

Approved Approach	A protocol, methodology or tool that has been approved by the Plan Vivo Foundation. Plan Vivo may itself develop an approved approach or a project may develop an approach and submit this to Plan Vivo (as part of the PDD) for approval.
Crediting Period	The time period over which Plan Vivo certificates are issued
Deforestation	Conversion of forest to other land uses or reduction of forest crown cover to less than the national definition of forest (usually in the range 10-30%)
Environmental Integrity	The sustenance of important biophysical processes supporting plant and animal life which should be allowed to continue without significant change as a result of a project.
Ex-ante	A Plan Vivo certificate issued where activities have been already carried out but where climate services will be delivered in the future e.g. a certificate issued after planting trees which will sequester carbon as they grow.
Ex-post	A Plan Vivo certificate issued where climate services have already been delivered and monitored.
GFW	**Global Forest Watch**
GHGs	**Greenhouse Gases** including: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and others
PDD	**Project Design Document**. The key project document containing information on the project's objectives, participants and governance, activities and anticipated impacts and including a Technical Specification for each project intervention
Project Intervention	An activity or set of activities that will be carried out as part of a project. Note that each project intervention requires a separate technical specification in the PDD
Project Intervention Area	The area of land where specific project interventions are carried out i.e. the total area of land under the *plan vivo*
Project Period	The time period over which a project is developed (and described in the PDD) and validated by Plan Vivo.
Quantification Period	The time period over which the ecosystem service benefits from a project intervention are quantified
REDD/REDD+	**Reducing Emissions from Deforestation and Forest Degradation**. REDD (or REDD+) can refer to the UNFCCC protocol and to many other projects and processes, but in a Plan Vivo context REDD refers to projects that generates ecosystem service benefits through the protection of existing forests.
Technical Specification	The section of the PDD (part G) that describes the technical aspects of each project intervention including the methodology used to quantify climate services, assessment of risks, leakage and additionality, the management and monitoring system to be adopted and description of likely ecosystem impacts.
Validation	The initial assessment of a project's design and governance against the Plan Vivo Standard
Verification	The periodic evaluation of a registered Plan Vivo project against the Plan Vivo Standard to assess its continued conformance to the standard and delivery or progress towards delivery of climate services and other anticipated impacts

Background

This Guidance Document has been developed by Plan Vivo to assist project developers in preparing technical specifications (Part G) of their PDD for submission to Plan Vivo for validation and approval under the Plan Vivo Standard (2013 version). With this guidance you will be able to estimate changes in carbon stocks and GHG emission resulting from locally-driven deforestation (under the 'baseline', or without-project, scenario) and compare this with a planned project where such locally-driven deforestation is halted or reduced.

This guidance has been prepared for REDD type projects where the drivers of deforestation are largely local. This means places where deforestation is happening because of the actions of local people – usually through unsustainable forest product harvesting or through conversion of forest land for agriculture or other uses. Addressing such local drivers of deforestation invariably means involving local communities in protection and sustainable forest management, and ensuring that they have viable alternative livelihoods opportunities to enable them to dedicate time and energy to this without reducing their economic or social well-being. Where the causes of deforestation are not local, i.e. where they are a result of external commercial interests or unfavourable policies, then this guidance document does not apply, though aspects of it could remain useful. Plan Vivo will produce another guidance document for use in such situations.

The methodology in this guidance document initially developed out of experiences from Indonesia but it can be applied to other countries. However, it only applies to situations where the forest:

- is largely intact i.e. with more or less continuous canopy cover (this includes secondary forest)
- is largely natural i.e. not planted
- is tropical/sub-tropical evergreen or semi-evergreen i.e. not semi-arid or temperate
- is at risk of deforestation mainly as a result of the actions of local people
- will be used, managed and controlled by a local community in future

This is a guidance document, representing one way to build up a Technical Specification under the Plan Vivo Standard (2013). Projects that follow this document are not guaranteed to be approved, as they must meet all other aspects of the Plan Vivo Standard including many requirements not touched on in this document. However, this approach to writing the Technical Specification part of the PDD will meet the requirements of the Standard if followed. There is no requirement to follow this approach for Plan Vivo REDD projects that meet the criteria above, and alternative approaches may be equally valid under the Standard. Technical Specifications that follow this guidance document will be subjected to a streamlined peer review process, concentrating on the data layers and evidence provided rather than the basic methodology.

PREPARING THE TECHNICAL SPECIFICATION

To prepare the technical specification, work though this guidance document systematically following each step in sequence. For each step the following are described:

a. The purpose of the step
b. A description of the methodology to be used for the step (including any tools or Approved Approaches)
c. Options (where these are available) and any other advice on completing the step
d. The outputs of the step i.e. what information you will have produced by completing the step
e. How and where this information will be used in the Technical Specification (with reference to the PDD template)

Plan Vivo has developed a number of approved approaches (AAs) that can be used during different steps (the places where these Approved Approaches can be used are indicated in the methodology for the step). AAs that are available and relevant for this guidance document are included in the Annex.

The Technical Specification forms Part G of the PDD and should not normally exceed 10 pages. The template for the PDD is available on the Plan Vivo website at http://www.planvivo.org

In future, further AAs will be developed by Plan Vivo so you may wish to refer to the Plan Vivo website for the current versions of these or for any new AAs that may become available.

Step 1. Describe the Project

1.1 Purpose

The purpose of this step is to describe the project and demonstrate that it is appropriate for the particular local situation and applicable to the Plan Vivo Standard.

1.2 Description

Although this guidance document was primarily developed to address a specific set of problems and actions relating to locally-driven deforestation (gradual conversion of forest land to non-forest land) in Indonesia, it may also be applicable to other similar situations in South East Asia and possibly elsewhere where there are similar baseline conditions and drivers of deforestation.

a) This guidance document for projects addressing locally driven deforestation is only applicable where:

- Deforestation is being caused by small-scale locally-driven events including: illicit tree felling; unsystematic and unsustainable collection of forest products including timber, fuelwood and others; permanent clearance for small-scale agriculture (either for subsistence or cash crops); forest clearance for unofficial and small-scale settlements; fires and over-grazing.
- Deforestation is being carried out by people who are mostly resident in the project area or nearby and who have no defined legal right or permission to cause deforestation in this way
- The project involves carrying out actions that when taken together will reduce the causes of locally-driven deforestation and are therefore expected to halt or substantially reduce the deforestation rate.
- The project area consists of largely intact forest i.e. with more or less continuous canopy. It can be secondary forest or forest that is already being disturbed by local actions. The important factor is that it can be restored by carrying out conservation and sustainable forest management interventions rather than by plantation establishment.
- The project is expected to lead to long-term and sustainable benefits for the community/households having responsibility for managing the forest in terms of enhancing or not negatively affecting any of their livelihoods capitals and securing sustainable levels of forest products and services
- The forest can be defined clearly with a mapped boundary
- Forest in the project area (which can consist of a whole village taken together) is mostly owned, managed or protected by a group of people or a community working together rather than by a single farmer or landowner (as a guideline, at least 75% of the forest should meet this criteria)

b) This approach is <u>not</u> applicable if <u>any</u> of the below apply:

- The drivers of deforestation include external companies or other non-local agents, and take place on a large scale (such as large-scale conversion of forest to agricultural land, ranching, mining or infrastructure development)
- Where project activities involve restoring or rehabilitating forests or ecosystems through tree planting or through various forms of assisted natural regeneration. For these activities a Plan Vivo project could still be appropriate – but this methodology is for interventions for avoiding deforestation or degradation
- The project area consists of bare or largely unforested land

- The forest in the project area is under private ownership

c) Project activities should include (but not necessarily be limited to):

- Activities to strengthen the tenure of local communities including registration and formal application for rights to the forest area, mapping the community-managed forest, boundary demarcation and creating/raising awareness of the forest and its value.
- Activities for developing a management plan for the forest, including those areas that will be designated as community forest conservation areas and areas for sustainable use for timber and non-timber forest product harvesting.
- Activities for strengthening the management and governance of the community institution including awareness-raising, record keeping, enhancing participation and social inclusion e.g. of women and/or other disadvantaged groups in the community, identifying sub-groups and their roles, holding meetings and building the capacity of key individuals e.g. chairperson, secretary, treasurer etc. and groups/sub-groups.
- Activities aimed at enhancing local livelihoods through sustainable use and management of the forest area or other activities that will provide livelihood alternatives to those actions that contribute to deforestation.
- Activities for managing, protecting and monitoring the forest such as patrolling, laying out and measuring forest monitoring plots, gathering monitoring data, regulating and enforcing local bylaws and for regulating any approved harvesting activities.

1.3 Options and advice

You should describe in detail the context of the project and the local drivers of deforestation. You need to demonstrate clearly that the project meets all the conditions described in 1.2a, and not those in 1.2b. Furthermore you should describe the project activities, which should include those listed in 1.2c. If you are unsure, it is recommended that you contact Plan Vivo for technical advice before you begin to prepare the PDD.

If the criteria described in 1.2a are not met, then you will probably not be able to use this guidance document for preparing your Technical Specification. In such cases a different guidance document for a different type of intervention may be available. Please contact Plan Vivo for further information.

It is possible to have more than one Technical Specification within a single project, for example it is common to combine an agroforestry or forest restoration activity in addition to forest conservation. However their respective intervention areas should be distinct and not overlapping, and this guidance document will only apply to the forest conservation component.

1.4 Outputs

Outputs from this step are:

Output A A description of the main drivers (causes) of deforestation

Output B A description of the main activities that the project will carry out

1.5 Using the information in the PDD

Use the information from the outputs and write it in Parts B1, B2, B3 and B4 and Part G1 of the PDD

Step 2. Define the Project Area

2.1 Purpose

The purpose of this step is to show the project intervention area clearly on a map and to measure it i.e. the area for which the technical specification will apply.

2.2 Description

The project intervention area is the clearly-defined patch of forest that is being considered to be under threat from locally-driven deforestation. It may be a community forest or village forest that has already been approved, or one for which application is currently being sought. It may consist of part of a larger forest area. It can be a single forest patch or it may consist of several separate patches with a common ownership/management regime and common drivers of deforestation.

Forest may be defined under local laws or by the FAO definition. Where a national forest definition exists it should be used by the project. In the absence of a national forest definition the project itself may define it. In this case the recommendation for a REDD project would be an area of land that:

1. Has a canopy cover > 30 % made up of trees with the potential to grow >5 m tall
2. Has a minimum area of 0.5 ha

Do not include in the project intervention area:

- Land that is not forest at the start of the project period i.e. forest that is so degraded that it does not meet the definition of forest e.g. having a crown cover lower than the national minimum crown density for forest. It is possible that such land could be covered by a project where the main intervention will be tree planting, agroforestry or other form of forest restoration. In such situations another technical specification should be used. Check with the Plan Vivo Foundation website for availability.
- Forest that will not be covered by the activities proposed for the project (as described in Output B)
- Forest that is not already under communal ownership or communal management and for which this is not being proposed for the future i.e. do not include private land or government-managed forest

2.3 Options and advice

Follow a participatory landscape-level planning approach for this step. If there is already a management plan for the forest area, you can use information and maps from it to help define the project intervention area. However, even if you already have a management plan, you are recommended to carry out a participatory land-use mapping exercise with the whole community to ensure that the project intervention area has been agreed and understood by them.

If you do not already have maps showing the project intervention area you will need to survey the forest boundary. This can be done by handheld GPS survey or by using appropriate remote-sensed data e.g. from Google Earth. If the area is greater than 5 ha the Plan Vivo Standard (4.8) requires a GPS to be used to map the corners or boundary of the area. You may need to seek technical support for this. During the GPS survey it is essential to involve a broad spectrum of community members in walking along and defining the forest boundary so they are fully aware of it and agree on its location. You are recommended to use a local UTM zone for the GPS map and note that mapping done in

metres rather than degrees is much more likely to be accurate, with the maps easier to interpret by non-specialists. Recording decimal degrees latitude and longitude is also acceptable.

Once you have produced a map showing the boundary of the project intervention area you should make a printed copy available for the community to endorse and use (preferably a large-scale map). Whilst surveying the boundary a written description should also be prepared - describing where it crosses recognisable features such as streams, roads, footpaths etc. or where there are other recognisable natural or non-natural features nearby.

Printed maps should be included in the PDD showing the project intervention area. Additionally GIS layers in a Shapefile (.shp) or Google Earth (.kml) format should be provided to Plan Vivo as part of the submission package. For a small project (e.g. less than 20 ha project intervention area) a table with lat/long co-ordinates of the boundary corners would be sufficient, instead of GIS layers. Having completed the GPS survey it is often desirable to mark the boundary using permanent markers so that members of the community and outsiders can recognise it. Various options are available to do this including boundary posts/pillars, paint-marking on trees, rocks, piles of stones etc. Boundary markers may need to be renewed from time to time as part of the project activities. Photos showing the process of participatory mapping and boundary marking (if appropriate) should be included in the PDD, along with the resulting maps.

If parts of a forest do not meet the criteria for the project intervention area for this particular intervention (reducing locally-driven deforestation), they can be separately mapped and included as a different intervention area e.g. an area that is already very degraded forest for which the main activity will be tree planting can have an intervention of planting to restore its condition. A separate technical specification will need to be prepared in this case and included in the PDD.

2.4 Outputs

Outputs from this step are:

Output C Map showing the project intervention area and the surveyed forest boundaries. This may be in the form of a Google Earth kml/kmz or shapefile (from ArcGIS) file output). There should also be a large-scale printed version of the map for the community to use.

Output D An accurate area estimate for the project intervention area, made using GIS software

Output E A clearly visible forest boundary marked on the ground if possible. If physical marking of the boundary is impractical then evidence should be provided showing that the community is aware of this boundary e.g. by showing photographs of community members walking the boundary and a table of points showing the limits of the boundary in reference to local landscape features.

2.5 Using the information in the PDD

The map should be submitted as part of the PDD. The measured intervention area will be used for calculations of the baseline scenario (Part G4 of the PDD) and for calculations of the Ecosystem service benefits (Part G5 of the PDD).

Step 3. Describe the Project's Additionality & Environmental Integrity

3.1 Purpose

The purpose of this step is to demonstrate that the ecosystem services resulting from the project intervention would not have been generated without the project, and that the project intervention areas have not been manipulated prior to the start of the project with the aim of increasing credits generated by the project.

3.2 Description

Ecosystem services forming the basis of Plan Vivo Projects must be additional i.e. they would not have been generated in the absence of the project. According to the Plan Vivo Standard (5.4), this means demonstrating as a minimum that:

i. Project interventions are not required by existing laws or regulations unless these are not commonly enforced or met in practice (thus justifying project support)
ii. There are financial, social, cultural, technical, scientific or institutional barriers preventing project interventions from taking place

Use approved approach AA1 in the Annex to demonstrate additionality.

There is also a requirement (for environmental integrity) under the Plan Vivo Standard (5.8) to demonstrate that project intervention areas have not been negatively altered prior to the start of the project for the purposes of increasing the payments for ecosystem services that participants can claim.

To complete this step:

- Describe how the project activities are additional. With projects for reducing locally-driven deforestation this means describing why designation of a community forest does not necessarily guarantee that the forest will receive adequate protection or that the community will automatically benefit from additional rights and that additional actions are needed to safeguard these.
- Describe any barriers that exist which prevent interventions from taking place and explain how these operate. Describe how the project will overcome these barriers.
- Describe the history of the project intervention area showing how it has come to be in its present state and demonstrate that it has not been negatively altered prior to the start of the project.

3.3 Options and advice

The project will be supporting a range of activities some of which will focus on generating livelihoods benefits for the community targeted at poorer or disadvantaged households. These types of benefits will invariably be additional i.e. they would not have been generated without the project. From this perspective alone project additionality can usually be demonstrated with some certainty. The key to this section is to justify why the project's activities are needed to ensure that the intervention takes place.

3.4 Outputs

Output F A description: (i) of project additionality, (ii) showing how any barriers preventing project interventions from taking place will be overcome (in the form of a table) and (iii) of the history of the project intervention area, how it has reached its present condition and how this demonstrates environmental integrity.

3.5 Using the information in the PDD

The descriptions from this step including the statement and a barrier analysis table should be used to complete Part G2 of the PDD template

Step 4. Describe and Justify the Project Periods

4.1 Purpose

The purpose of this step is to define the project period, quantification period and crediting period and the start and end dates for these.

4.2 Description

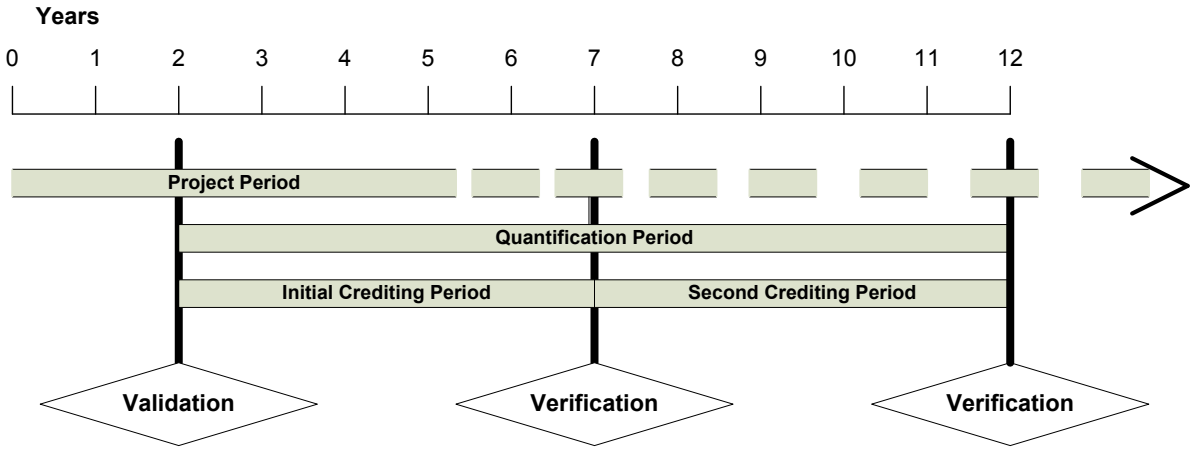
Three different periods can be defined for Plan Vivo projects, reflecting the often complex nature of the start of a project. Sometimes project activities will have begun before the PIN and PDD were written and approved. However, payments for climate services cannot normally be claimed until the PDD has been validated. Ideally all three periods would have the same start date, but that is often not possible. The three periods are shown in *Figure 1* and are defined separately as:

The project period: The time period over which project interventions take place. This can include initial activities for registering the community forest or for seeking approval for it to become a community forest or village forest. The start of the project may therefore be earlier than the date on which approval was received or when a certificate was issued. Since the project start date is the actual date when project activities began, it may occur before the project was validated by Plan Vivo. The end of the project period may not need to be defined precisely because it is assumed that activities will continue indefinitely (even if external project support ceases).

The quantification period: The period over which ecosystem service benefits from a project intervention are quantified. For projects aiming to reduce locally-driven deforestation the quantification period normally starts when the project is validated by Plan Vivo and extends for a maximum of 10 years, with an understanding that further quantification periods could be set up in the future

The crediting period: The time period over which payment for climate services can be claimed by the project for a particular project intervention and for which Plan Vivo certificates are issued. For projects aiming to reduce locally-driven deforestation the crediting period will normally start at the same point as the quantification period but the initial crediting period will extend only for a maximum of 5 years (until the first verification). After 5 years a further 5-years crediting period is possible provided that necessary measures are taken to ensure continued conformance of the project with the Plan Vivo Standard and after project evaluation based on activity monitoring and impact monitoring (in terms of reduced levels of deforestation) has taken place. Further crediting periods could be established beyond this.

Figure 1 Project Periods (example)



4.3 Options and advice

Selection and definition of all these critical periods and their starting dates must be fully justified with an explanation of why they were selected and by reference to the activities that were taking place at different times.

Ideally the project start date will be the same as for the start of the quantification period and crediting period. However, in some situations an argument can be made for an earlier project start date (in which case an application should be made to the Plan Vivo Foundation).

Backdating the start of the quantification period is possible under exceptional circumstances (with prior approval from the Plan Vivo Foundation) but in no circumstances can the quantification period be backdated more than 3 years before project validation. Similarly the project crediting period cannot normally be backdated prior to PDD approval and project validation. Refer to the Plan Vivo Foundation for advice in situations where there may be exceptions to this – particularly where clear impacts in terms of reduced deforestation can be identified after the intention to apply for credits for climate services was agreed by the project proponents.

4.4 Outputs

Outputs from this step are:

Output G A clearly identified and agreed project start date and a defined quantification period with start date (if different) with justification for both these.

Output H A proposed initial project crediting period and start date with justification

4.5 Using the information in the PDD

The project start date and quantification period should be included in the PDD template Part G3 along with the justification. The project quantification period will be used for the estimation of ecosystem service benefits in both the baseline and with-project scenarios.

Step 5. List and Describe the Carbon Pools and Emission Sources

5.1 Purpose

The purpose of this step is to identify all the carbon pools in the project intervention area and to show which of these will be used for the calculations of the climate benefits of the project.

5.2 Description

Complete a table similar to that in Table 1 (below).

Column 1: list all the carbon pools e.g. above-ground woody biomass, below ground woody biomass, soil carbon, leaf litter, dead wood, non-tree biomass etc.
Column 2: assess the likely impact of the project on the carbon stock in that pool, e.g. increase (large or small), decrease (large or small), no change etc.
Column 3: indicate any limitations to measuring the carbon in that pool (including cost limitations and capacity limitations)
Column 4: indicate clearly whether that pool will be considered and measured in the calculation of carbon benefit.

After completing all columns give a written explanation for your decision to include/exclude each carbon pool.

TABLE 1: Carbon Pools

1. Carbon Pool	2. Likely impact of project on C-stock	3. Limitations	4. Decision to include in calculations
Above-ground woody biomass			
Below-ground woody biomass			
Soil			
Leaf litter			
Dead wood			
Non-tree biomass			
Other			

In addition to completing this table, you will also need to identify any additional significant emissions that will result from activities being carried out by the project. For example, if you plan to reduce the pressure on forest for fuelwood collection by introducing fossil fuels as an alternative then – this will result in increased emissions. Any activities listed in output B that will result in increased emissions from non-forest sources need to be identified. In case these are likely to result in substantial emissions these will need to be quantified in the with-project scenario – although projects including such activities will not normally be approved by Plan Vivo.

5.3 Options and advice

You may decide to exclude a particular carbon pool from the project carbon-benefit calculations for various reasons including:

- Because it is very small (in comparison with other carbon pools) e.g. <5 %
- Because it is unlikely to be affected significantly by the project

- Because it will be too expensive and time consuming to measure it and it is very unlikely to decrease due to the project: e.g. soil carbon is a common example of this

All carbon pools that are likely to positively or negatively affected by the Project should be included. For projects that aim to reduce locally-driven deforestation it will always be necessary to include and estimate above-ground woody biomass and below-ground woody biomass. Other pools may be excluded for some or all of the above reasons. Pools that are known to be significant (in terms of their potential for emission reductions or carbon stock enhancement) but which are not included in the calculations of the climate benefits will contribute to ensuring that the overall estimate of the project's climate benefits is conservative (an underestimation of actual benefits).

At this stage – all activities listed under Output B will need to be screened to clearly identify which (if any) will result in increased emissions. These may be assessed during project verification.

5.4 Outputs

Outputs from this step are:

Output I (i) A completed table (as shown above) including a written justification for the pools that have been selected for inclusion/exclusion and (ii) a written statement identifying any planned activities that will result in significant additional emissions.

5.5 Using the information in the PDD

The table and the associated written explanation should be included in Part G4 of the PDD template

Step 6. Estimate the Reference Emission Levels

6.1 Purpose

The purpose of this step is to estimate the level of greenhouse gas emission that would occur if the project intervention did not take place (the baseline scenario). This is referred to as the reference emission level.

6.2 Description of this step

Under the baseline scenario (without project interventions), locally-driven deforestation will lead to release of CO_2 into the atmosphere. The quantity of this can be estimated based on two figures.

- The baseline deforestation rate (the deforestation rate without the project)
- The initial carbon stock (the carbon stock at the start of the quantification period)

An approved approach for estimating both these is given in Approved Approach AA2 – estimating reference emission levels. Follow the methodology given in AA2 to estimate the baseline deforestation rate and initial carbon stock.

6.3 Options and advice

An estimate of the baseline deforestation rate comes from analysis of historical trends from a reference area using remote sensing. This has become possible because new remote sensing-based surveys of deforestation are freely available at 30 m resolution for 2000-present, and are believed to be highly accurate in humid tropical forest. Similarly, pantropical maps of aboveground biomass have recently become available: while these are by no means perfect, they contain confidence intervals, and by using the lower confidence interval on a per pixel basis it is possible to obtain a conservative estimate of carbon stocks (i.e. we have high confidence that there is at least as much carbon in the site as suggest by the data layer) without having to use plot data.

Conventionally, projects have carried out sample plot surveys (inventories) to estimate the initial carbon stock and changes in this (these sample plots can also be used for subsequent monitoring). However this is expensive and time-consuming to carry out and unless the sampling percentage is high and plots are large (>0.5 ha), plots may not provide information any more accurate than obtainable from remote sensing. Because of the difficulty of carrying out such surveys it is often tempting to take short cuts – usually involving reduced sampling percentages. A result of this is that sampling errors can be high (especially if forests areas are not homogenous) and data produced may be misleading.

A major advantage of sample plot surveys is that local communities can be directly involved in implementing them and it is a good way of ensuring their participation. Plots can also be used for other purposes such as biodiversity monitoring and for monitoring local drivers of deforestation (Step 10).

Therefore, whilst many Plan Vivo Projects continue to use sample plots surveys for estimation of the initial carbon stock and for monitoring, they are not a requirement for the Plan Vivo Standard. Before starting to implement sample plot surveys to assess carbon stock it is important to consider whether the information produced could be more cheaply and quickly obtained through other means and whether the resources needed to carry out a sample plots survey could be better used for other project activities that contribute more to reducing locally-driven deforestation.

Remote sensing maps can only give an estimate of AGB, and via a simple relationship between AGB and BGB, an estimate of BGB. If other carbon pools are included in the project, they will have to be measured separately. For example, tools are being developed for measuring soil organic carbon.

6.4 Outputs

Output J A map showing the reference area and its relationship to the project intervention area

Output K The historical annual deforestation rate (expressed as a %)

Output L An estimate for the initial carbon stock (tC/ha) for the project intervention area.

Output M A table (Table 2 below) that gives the area and the carbon stock in each separate forest area within the project intervention area. In many cases there will be only a single forest area but sometimes the project intervention may cover different forests.

Output N A table (Table 3 below) that gives annual estimates for the forest area and carbon stock under the baseline scenario (without project) over the quantification period and cumulative and annual figures for the forest area lost and carbon lost

TABLE 2: Example of Output M

Forest	Area (ha)	Carbon stock (tC/ha)	Total C stock (tC)
Total			

TABLE 3: Example of Output N (Reference Emission)

Year	Forest Area (ha)	Carbon stock (tC)
0	1,000.0	200,000
1	980.0	196,000
2	960.4	192,080
3	941.2	188,238
4	922.4	184,474
5	903.9	180,784
6	885.8	177,168
7	868.1	173,625
8	850.8	170,153
9	833.7	166,750
10	817.1	163,415
Total loss of forest area (over 10 yrs)		***182.9 ha***
Mean annual loss of forest area		***18.29 ha***
Total loss of carbon		***36,585 tC***
Mean annual loss of carbon		***3,658.5 tC***
This example assumes a deforestation rate of 2%; an initial carbon stock of 200 tC/ha and a baseline forest area of 1,000 ha. Quantification period is 10 years.		

6.5 Using the information in the PDD

Information from this step is used to calculate the carbon emission under the baseline scenario (Part G4 of the PDD template). It is also is used to calculate the ecosystem service benefits in Part G5.

The methodology used to estimate the reference emission levels should also be described in Part G4 (Plan Vivo Standard requirement 5.18).

Step 7. Estimate the Project Scenario Emissions

7.1 Purpose

The purpose of this step is to estimate the emissions likely to take place over the project period. This estimate will be verified at the first project verification (after 5 years)

7.2 Description of this step

It is necessary to obtain an estimate of what the deforestation rate would be under the with-project scenario and to calculate the emissions associated with this. If any planned sustainable timber harvesting is likely to take place during the project period, the associated emission from this are also required.

Consequently, estimates of the following will be required for the project period:

- Emissions from locally-driven deforestation
- Emissions from permitted timber harvesting

a Estimate the effect of the project on locally-driven deforestation

Discuss the estimated historical deforestation rate (obtained in Step 6) with the participating community. Explain how this figure was obtained and assist them to realistically assess how much they think they can reduce this with support from the project. Through participatory discussions, identify project activities that can be carried out to reduce locally-driven deforestation. Although it is unlikely that a project or participating community will be able to completely halt locally-driven deforestation, by carrying out a series of locally identified and agreed activities (with the support of the project) it will be possible to reduce this significantly compared with the baseline (without-project) scenario. For example you could list all the driving factors (identified earlier) and identify a set of activities that can be used to address each.

During this discussion maintain the focus on the effect on reducing locally-driven deforestation resulting from the activities that are being proposed for the project. Examples might include: registering the community forest; patrolling and monitoring; awareness-raising; supporting alternative livelihoods activities for certain households; enhancing the capacity of the local community/forest management institution; local control of fires, illicit harvesting and forest conversion to agriculture and others.

For example, in Indonesia in some project areas baseline deforestation has been estimated at about 2% per annum. In these areas communities felt that with project support they could halt this completely. However, following discussions between communities and project developers a more realistic estimate that 90% of the forest carbon stock could be protected over a 30 year period could be achieved with project support. This means that about 0.3% of the forest carbon stock would continue be lost annually through locally-driven deforestation – even with community protection.

Use discussions with the community derive an estimate of this kind. Since the resulting figure only represents an estimate it will be assessed during validation and after 5 years it will be fully verified using monitoring information to get a more accurate picture what was actually achieved. This will improve the estimates for the next crediting period. Estimates of the effects of the project on emission reduction should always be conservative and project developers must be able to demonstrate this.

b Calculate the emission from any permitted timber harvesting

The community may wish to carry out sustainable timber harvesting over the project period. If such sustainable harvesting will take place, estimate the number of trees that might be harvested annually and use this to estimate the volume of timber and the equivalent area of forest that would be lost through this harvesting.

The example below assumes that 50m^3 of sustainable timber harvesting will be carried out over 10 years:

Example:

- 50m^3 of timber will typically come from about 30 large trees > 30 cm dbh
- These 30 trees contain about 100 tonnes of carbon
- This is equivalent to about 0.5 ha of forest where the mean carbon stock is 200 tC/ha
- This is equivalent to an average of 0.05 ha of forest lost per annum over 10 years due to permitted tree harvesting

c Prepare a table showing baseline and with project carbon stocks

Table 4 is an example of this. It uses data from Table 3 and adds extra columns showing the estimated effect of the project in terms of forest area and carbon stock.

TABLE 4: Baseline and with-project carbon stocks

Project year	Forest Area (ha)		Carbon stock (tC)	
	Baseline	Project	Baseline	Project
0	1,000.0	1,000.0	200,000	200,000
1	980.0	997.0	196,000	199,400
2	960.4	994.0	192,080	198,802
3	941.2	991.0	188,238	198,205
4	922.4	988.1	184,474	197,611
5	903.9	985.1	180,784	197,018
6	885.8	982.1	177,168	196,427
7	868.1	979.2	173,625	195,838
8	850.8	976.3	170,153	195,250
9	833.7	973.3	166,750	194,664
10	817.1	970.4	163,415	194,080

Baseline deforestation	***2% per year***
With-project loss of carbon stock	***0.3% Per year***
Permitted timber harvesting loss	***0.05 ha per year***

7.3 Options and advice

Since the figures for the with-project situation are all estimates they need to be verified by project monitoring. For projects that aim to reduce locally-driven deforestation, the initial project period will be 5 years. The technical specification will be revised after 5 years based on results from project monitoring. This will give a better estimate for the with-project scenario for the subsequent 5 year period.

7.4 Outputs

Output O A table showing estimates of forest area and carbon stock each year under the baseline scenario (without project) and under the project scenario

7.5 Using the information in the PDD

This information will be used in the PDD for calculation of the expected climate benefits of the project (Part G5 of the PDD template)

Step 8. Assess and Account for Leakage

8.1 Purpose

The purpose of this step is to identify and account for potential sources of leakage (threats) and to identify and put in place appropriate mitigation measures (activities) to address these in the project.

8.2 Description of this step

Discuss the concept of leakage with the community. Explain that by reducing locally-driven deforestation in the project intervention area pressure may simply shift elsewhere and increase emission from other places outside the project intervention area. Local communities should find this concept easy to understand.

Use the Approved Approach (AA3) Accounting for Leakage in the Annex to identify and discuss with the community all the leakage threats (internal and external). Discuss the scale of each threat and identify mitigation measures that will be built into the project. Follow the steps outlined in AA3:

Step 1: Identify leakage threats

Step 2: Assess the likelihood and scale of each threat

Step 3: Identify mitigation measures

Step 4: Identify monitoring measures

The following discussion questions may assist during these steps:

- Will the leakage threat be effectively controlled by the project inside the project area?
- Could the threat be displaced to another location outside the project intervention area? If so - where? What can be done to prevent this?
- What is the risk of the leakage threat? Is it likely to take place?
- What is the likely scale of the leakage threat? Is it likely to be significant or not?
- If the leakage threat is significant – what actions will be implemented by the project and community to mitigate it?

8.3 Options and advice

It is necessary to identify and assess all potential leakage threats and describe appropriate mitigation measures that will be implemented by the project for those that are significant. For projects to reduce locally-driven deforestation, leakage can be accounted for by reducing the overall with-project emission reduction by 10% or more (shown in Step 10).

When drivers of deforestation are largely local in origin leakage can often be effectively controlled by communities themselves by managing and protecting their forest and by carrying out mitigation actions. However, locally-driven deforestation drivers may simply be displaced to other forest areas as a result of the project. If these other forest areas are not subject to control by community groups or other methods, leakage can be significant and mitigation measures will be required. One possible mitigation action to reduce the displacement of drivers to adjacent areas will be to support the adjacent communities to establish and protect their own forests. However this will be time consuming and will require additional resources that may not be readily available. Individuals whose livelihoods depend on activities that contribute to locally driven deforestation, e.g. illegal logging,

are often local people and members of the community group. If sufficiently empowered, the group will be able to enforce sanctions on such individuals to deter them from pursuing these activities. At the same time the project must support them with livelihoods activities that will provide them with more sustainable alternatives to actions contributing to deforestation.

At this stage it is important to identify mitigating actions that will be implemented by the project to prevent or reduce leakage. In order to know how effective these mitigating activities are, monitoring measures need to be included in the project's monitoring plan (Step 11).

8.4 Outputs

Output P Completed Table 6 describing the potential leakage threats and the mitigating and monitoring actions that will be taken

8.5 Using the information in the PDD

Use the information resulting from discussions at Steps 1-4 of the Approved Approach (AA3) to complete Table 6. This information (in table form) will be used to complete Part G6 of the PDD

TABLE 6: Leakage Threats

Leakage threat category	Description	Scale L/M/H	Likelihood L/M/H	Mitigating actions	Monitoring actions
External					
Local					
Internal					

Step 9. Assess Risk and Define the Risk Buffer

9.1 Purpose

The purpose of this step is to carry out a risk assessment to determine the level of risk associated with delivery of climate services and to define a risk buffer for the project based on this.

9.2 Description of this step

Under the Plan Vivo Standard (Section 6), projects are expected to assess and manage any risks to the delivery of ecosystem services. Having identified the risks, actions need be taken to minimise them and a proportion of the expected climate service benefits will be held as a risk buffer to protect the project from any unexpected reductions in carbon stocks or increases in emissions. During the calculation of the project benefits, this risk buffer will be subtracted from the overall total before the Plan Vivo certificates are issued.

Risks of 3 kinds are considered:

- Internal risk (arising from within the project). These risks can be mitigated by project activities that strengthen community group governance, administration and capacity. Examples include: breakdown of the community group, local level misappropriation of funds, non-implementation of planned activities
- External risk (arising from outside the project). These risks are external to the community group and project area and cannot readily be mitigated by project actions although the project may be able to influence some of them. Examples include: changes in policy or laws, external corruption, weak rule of law.
- Natural risk (arising from natural factors). These can be partially mitigated by the project through adaptive processes (such as creation of fire breaks to reduce fire damage). Examples include: fire, diseases, climate events including drought, floods etc.

Follow the Approved Approach AA5 – assessing risk and setting a risk buffer (in the Annex). This will enable you to assess the risks, describe mitigation measures and to determine an appropriate risk buffer for the project intervention.

9.3 Options and advice

According to the Plan Vivo Standard, a risk assessment must be carried out and renewed after every 5 years. For each identified risk appropriate mitigation measures must be identified and put in place. The monitoring system will be used to assess whether this is the case. For projects for reducing locally-driven deforestation this means that the risk buffer will be renewed at the time of the first verification after the initial 5-year period.

For locally driven deforestation interventions it is suggested that the risk buffer should be at least 20%.

9.4 Outputs

A risk assessment matrix showing the risks and mitigation measures and an overall % risk buffer

9.5 Using the information in the PDD

The matrix and the risk buffer % will be included in Part H of the PDD template. The risk buffer % is also used to calculate quantity of Plan Vivo certificates that will be issued (a quantity equivalent to the risk buffer % will be retained by Plan Vivo) on behalf of the project.

Step 10. Calculate the Expected Emission Reductions

10.1 Purpose

The purpose of this step is to estimate the overall project benefits over the project period in terms of reduced CO_2 emissions

10.2 Description of this step

Net project benefit is calculated by subtracting the baseline emission from the project scenario and subtracting the leakage % estimated in Step 8. Table 7 illustrates this with an example using

Table 7 illustrates an example of the calculation of the project's climate services benefits. The example assumes that the baseline reduction in C-stock is 2% per year (column i) and 0.3% with the project in place (column ii). The difference between these 2 figures gives the with-project benefit for each year (column iii). This is calculated in terms of CO_2 (column iv) and with 10% subtracted for leakage (column v). The total for column v gives the net emission reduction for the 10-year quantification period which is averaged to estimate the mean annual benefit in terms of CO_2.

TABLE 7: Calculation of project benefits

Project year	Carbon stock		Project benefit tC	Project emission reduction tCO_2	Net emission reduction (with 10% leakage) tCO_2
	Baseline tC	Project tC			
	(i)	(ii)	(iii)	(iv)	(v)
0	200,000	200,000	-	-	-
1	196,000	199,400	3,400	12,478	11,230
2	192,080	198,802	3,322	12,191	10,972
3	188,238	198,205	3,245	11,910	10,719
4	184,474	197,611	3,170	11,634	10,471
5	180,784	197,018	3,097	11,365	10,228
6	177,168	196,427	3,025	11,100	9,990
7	173,625	195,838	2,954	10,842	9,757
8	170,153	195,250	2,885	10,588	9,529
9	166,750	194,664	2,817	10,339	9,306
10	163,415	194,080	2,751	10,096	9,087
Net emission reduction benefit over 10 years					***101,289 tCO_2***
Mean annual benefit					***10,129 tCO_2***

10.3 Options and advice

This calculation of the estimated climate benefits (emission reductions) of the project as illustrated in Table 7 become the basis for Plan Vivo certificate issuance. Every tonne of CO_2 emission reduced by the project will be eligible for issuance of one Plan Vivo certificate (if the project receives Plan Vivo certification). Certificates will normally be issued on the basis of the mean annual climate benefits spread over the project period to 'smooth' the payments. Note that where a risk buffer is applied (normally at least 20% for this type of project) this will be deducted from the certificates issued by Plan Vivo.

For projects that aim to reduce locally-driven deforestation, the initial crediting period will normally be 5 years. This means that certificates can only be issued to pay for emission reductions over a five

year period from the start of the quantification period. This period can be extended for a further five years following verification.

10.4 Outputs

Output Q A table showing the total climate benefits over the project period in terms of emission reductions (tCO_2) resulting from reduced locally-driven deforestation.

Output R A full description of the methodology, calculations, assumptions and justification that have been used to calculate this figure

10.5 Using the information in the PDD

This information will be used to complete Part G5 of the PDD template and also the summary table of Ecosystem services in Part F1

Step 11. Describe the Monitoring Plan

11.1 Purpose

The purpose of this step is to develop a plan for monitoring the ecosystem benefits of the project.

11.2 Description of this step

A monitoring plan is required for each project intervention (Plan Vivo standard 5.9) as part of the PDD (Part K). This should cover: performance indicators and targets, monitoring approaches, frequency, duration, assumptions used, resources and capacity required and participation of the communities in monitoring. Monitoring information will be reported in annual project reports required to trigger certificate issuance and will also be required for verification after 5 years when monitoring data are used to improve and refine the technical specification.

The project monitoring plan (required for the Plan Vivo Standard) should include monitoring of carbon stock, project activities, socio-economic and biodiversity impacts.

The monitoring plan for projects to reduce locally driven deforestation involved includes 3 stages:

i. At the start of the project period, estimate the climate benefits expected to result from a prescribed set of management activities. During project validation, this estimate is reviewed by the Plan Vivo Foundation to determine whether the expected climate benefits are likely to result from carrying them out.
ii. During the project period, use a set of performance indicators to assess whether the activities are actually being carried out as planned. These indicators can be linked to the phased release of payments or support to the community to ensure there is sufficient incentive to continue with the activities throughout the project period. The Plan Vivo Foundation will assess whether the indicators and thresholds for release of payments or support provide sufficient incentive to implement the required activities.
iii. At the end of the initial 5-year crediting period and prior to the start of a new crediting period, assess whether the activities described did actually result in the expected climate benefits and update the estimates for the subsequent period accordingly. This assessment can make use of data collected throughout the project period, and should be supported by additional data collection for example from use of satellite imagery (step (a) above)

Monitoring data need to be safely stored to ensure availability after several years. At least one copy of all monitoring data should be stored by the project coordinator with a suitable back-up held in a different location to ensure that important data do not become lost.

a Monitoring deforestation

The project monitoring plan for reducing locally-driven deforestation must include a system for monitoring deforestation in the project intervention area. This means monitoring the forest area in the project intervention area and quantifying any areas of forest lost over the monitoring period.

This should be done by remote-sensing using satellite imagery of sufficient resolution to be able to detect the size and location of small areas of forest loss (as described in AA2). This analysis should be carried out within 5 years of the start of the quantification period (preferably sooner) and the results

compared with baseline data collected at the start of the project. Data resolution of 30 m or greater is likely to be required to detect small clearings/opening, indicating the need to use data from Landsat, SPOT, DMC, ASTER or similar. 30 m resolution data from Hansen *et al* (2013, Science), which involves an analysis of the complete Landsat archive from 2000-present is eminently suitable. This is available from the Global Forest Watch website, or the Google Earth Engine-hosted website, as described in AA2. Updated information from these sites is required and its availability may vary from place to place.

At Step 7 an estimate of the with-project deforestation rate was made i.e. the effect that communities would have in reducing locally-driven deforestation. Analysis of actual change in forest area over years 0-5 of the project period will give a much improved figure for this based on actual data rather than estimates. This revised figure can then be used to revise the Table 7 in Step 10 during the first project verification.

b Activity-based monitoring

Projects for reducing locally-driven deforestation do not need to monitor carbon stocks on an annual basis since this is costly and time-consuming. The costs of carrying out repeated sample plot measurements can soon outweigh any benefits received through sales of Plan Vivo certificates.

As an alternative, annual activity-based monitoring is recommended. This approach ensures that the maximum amount of finance generated through sales of Plan Vivo certificates is used to support land management activities under the project and ensures that monitoring does not place additional burdens on rural communities.

Example: A community estimates that formal registration of their community forest plus daily patrolling/monitoring by community members combined with support for alternative livelihoods activities for 20 poorest households will reduce locally-driven deforestation by 90% of what would be expected without these activities (say 2% per annum). This is validated by Plan Vivo during the review of the PDD. The project monitoring plan therefore incudes: (a) monitoring of the registration process, (b) monitoring of the patrolling activity and (c) monitoring of the support received by households for alternative livelihoods activities (for which separate Plan Vivo guidance will eventually become available). Every year these are recorded and evidence is provided in the project annual report to the Plan Vivo Foundation. If these activities have been implemented (or at least 90% completed) then payments will be triggered for climate services and certificates issued. At the end of the first 5-year crediting period – using remote sensing information – a verification check is made to see whether deforestation has in fact been reduced by 90% compared with the baseline. The results of this will determine if any changes are necessary for the next crediting period.

11.3 Options and advice

Table 8 gives an example of the types of monitoring that will be required in the project monitoring plan for this intervention. Note that this does not constitute the whole of the monitoring plan and other sections will be required for socio-economic (livelihoods) monitoring and environmental monitoring (including biodiversity).

For activity monitoring it is essential that the monitoring plan should cover all key activities that have been included in the PDD and that annual project monitoring reports provide full information on these. The assumption is that if the planned and agreed activities are fully and properly carried out

then the envisaged effects on reducing the deforestation rate will be achieved. If the activities are not fully and properly carried out then the deforestation rate will not be reduced as anticipated and payments will be withheld accordingly. This critical assumption can be checked during the first verification.

Importantly, activity-based monitoring creates opportunities for communities to become directly involved in self-monitoring and introduces a powerful element of local accountability. This has been found to be a critical factor for the success and sustainability of such community-based initiatives e.g. community forestry.

TABLE 8 – Example of a Monitoring Plan for Ecosystem Services

Indicator	How it will be monitored	Who will monitor it	Frequency	Comments
Forest area (intact forest in the project intervention area)	Remote sensing	Project coordinator	At least every 5 years (possibly more frequently)	Suitable imagery will be acquired for comparison with area in project year 0 to calculate actual deforestation rate More frequent monitoring if possible
Forest carbon stock	Activity monitoring	Project coordinator with community	Annually	Assumes that implementation of planned activities under the project will achieve the desired impacts
Forest condition	Fixed point photography in sample plots of from distant viewpoint	Project coordinator with community	Annually	From fixed locations located by GPS. No quantification is required. This is simply to get a visual impression of any changes occurring and use this for discussions amongst the community
Drivers of deforestation	During patrolling and during visits to sample plots	Community (patrol teams)	As frequently as possible	Record evidence of illicit tree felling, encroachment, fires etc. from sample plots and from regular forest patrols

11.4 Outputs

Output S A monitoring plan with identified indicators for project climate service (similar to that shown in Table 8)

11.5 Using the information in the PDD

The monitoring plan for ecosystem service forms Part K1 of the PDD. Monitoring data will be used to revise the technical specification after 5 years (as per the Plan Vivo standard) and to recalculate the project ecosystem service benefits for the subsequent 5 years.

Step 12. Describe the Expected Biodiversity Benefits

12.1 Purpose

The aim of this step is to focus attention on the biodiversity implications of the project intervention and describe any activities that will specifically enhance biodiversity or which may have negative impacts. Biodiversity monitoring indicators should also be described.

12.2 Description of this step

Projects are required to describe habitat types and species that have important biodiversity value (Plan Vivo Standard 5.13). They are also required to describe how these are likely to be affected by planned project interventions and how these will be monitored. Normally, few activities in projects aimed at reducing locally-driven deforestation are likely to have negative biodiversity impacts although consideration may be given to:

- Selective harvesting of 'unwanted species' in favour of species that provide more direct local benefits e.g. fruit/NTFP species
- Increased collection of NTFPs for cash incomes
- Effects of fire control on biodiversity

Activities that are likely to have a positive (or neutral) effect on biodiversity include:

- Protection of trees and regeneration from illicit felling
- Fire control
- Reduced conversion of forest land to agriculture
- Reduced hunting

12.3 Options and advice

Describing and monitoring biodiversity impacts under the Plan Vivo Standard need not be an arduous task for projects aiming to reduce locally-driven deforestation. Considering the criteria for such projects (as described in the background to this document), tropical forest areas that are selected for this type of project intervention will have relatively high biodiversity (compared with forest areas that have already been deforested). This means that reducing deforestation will inevitably conserve and may enhance biodiversity. A statement to this effect needs to be included in Table F3 of the PDD.

Biodiversity monitoring of some kind is essential for Plan Vivo Projects and it is important to select at least one indicator of biodiversity that can be monitored easily and regularly (preferably by the community themselves). Discussions with the community will often enable such indicators to be identified e.g. presence/absence of animal or bird species seen during patrolling; regeneration of tree/plant species that had previously been reduced.

12.4 Outputs

Output T A statement describing the effects of the project intervention on biodiversity

Output U Description of biodiversity indicators for inclusion in the monitoring plan

12.5 Using the information in the PDD

Biodiversity benefits should be included in Part F of the PDD template and any indicators and/approaches for monitoring biodiversity included in the monitoring plan (Part K of the PDD template)

ANNEX – APPROVED APPROACHES

The approved approaches in this Annex have been prepared by Plan Vivo to support and guide project developers. If you use one of these approved approaches you can ensure that the methodology complies with the requirements of the for Plan Vivo standard.

The approved approaches included in these Annexes can be used for developing the technical specifications for interventions in projects aiming to reduce locally-driven deforestation. They are also applicable for interventions for other types of project, although in these situations these Approved Approaches may need to be modified before use.

AA1 – Demonstrating Additionality

This approved approach will help projects demonstrate that their planned activities and the resulting emission reductions are 'additional' in nature i.e. that they would not happened without the project. In some cases this may require supporting evidence.

Proving the concept of additionality is required under Principle 5 of the Plan Vivo Standard (version 2013) which states that:

> *Ecosystem services forming the basis of Plan Vivo projects must be additional i.e. would not have been generated in the absence of the project, which involves as a minimum demonstrating that:*
>
> *5.4.1. Project interventions are not required by existing laws or regulations, unless it can be shown that those laws are not enforced or commonly met in practice and the support of the project is therefore justified;*
>
> *5.4.2. There are financial, social, cultural, technical, scientific or institutional barriers preventing project interventions from taking place.*
>
> ***Plan Vivo Standard (2013)*** **Principle 5.4**

In order to satisfy these requirements projects should clearly demonstrate 2 things:

a **Regulatory surplus**: that the activities are not required by enforced legislation or conducted to fulfil the official policies, regulations, or industry standards or any organisation or institution. If existing legislation or regulations do exist, projects should state why the proposed project activities are not being carried out/will not be carried out. This might be the case, for example, with non-existent or ineffective enforcement of current forest protection measures.

Method: Provide a written statement that demonstrates the regulatory surplus e.g. *"although the community forest has been registered with government authorities the local people are unable to effectively patrol it to ensure that illegal harvesting activities do not take place or to support alternative livelihoods activities for poorer households because they lack an effective group organisation, awareness and capacity, and financial resources to initiate new livelihoods activities. The project will provide support for all these to strengthen the effectiveness of the community forest".*

Annexes can be used to specify the relevant legislation that is applicable and if possible, by quoting the appropriate passages.

b **Barrier analysis**: that the project must enable existing barriers to be overcome that otherwise would prevent the desired project activities from taking place. Projects should demonstrate how they will overcome the identified barriers.

Method: Prepare and complete a barrier analysis table similar to the example in Table AA1.1 showing the types of barriers and indicating how these will be overcome by the project. The information provided in the table should demonstrate how the project will overcome these barriers,

for example through the provision of financial support, materials, training and technical/other support.

Clear statements of intent to address each identified barrier should be written in the third column. Additional supporting evidence e.g. letters, funding statements can also be attached if available and relevant.

TABLE AA1:1 Example of Barrier Analysis

Type of barrier	Description of Specific Barriers	How barriers will be overcome by project activities
Financial/economic barriers	• Insufficient financial resources to develop project • No system of community payments for ecosystem services	• Funding is secured to develop initial project, ongoing project management and transaction costs and payments for ecosystem services
Technical barriers	• Project coordinator organisation does not currently have required skill set and human resources necessary to implement and manage the project • Communities without awareness and skills to initiate project development processes and activities.	• Recruitment of staff and skill strengthening for the project coordinator will be undertaken • Training will be undertaken with the project coordinator staff, site coordinators and community field workers include mapping; biomass inventories; participatory threat assessment and derivation of baselines; carbon quantification
Institutional/political barriers	• Lack of regulations regarding forestry and land-use, or poor enforcement of such regulations.	• Support will be given for community members to develop their own bylaws and rules for a community forest
Ecological barriers	• Widespread soil degradation, recent natural events such as floods, climatic conditions, land-pressures such as intensive grazing	
Social barriers	• Poor organisation and mobilisation of local communities and groups, remoteness of communities, poor infrastructure	• Capacity development for community members will be supported
Cultural barriers	• Traditional knowledge, laws and customs, market conditions or practices, traditional equipment and management activities.	

AA2 – Estimating Reference Emission Levels

For projects to control locally driven deforestation, this approved approach will derive estimates for the 2 key pieces of information needed to estimate the reference emission levels:

a. The baseline deforestation rate
b. The initial carbon stock

A. Estimating the Baseline Deforestation Rate

The baseline annual deforestation rate for the project intervention area is the deforestation rate that would apply without the project. It is expressed as a % of the measured forest area covered by the intervention.

Description

This approach involves measuring the historical deforestation rate for a reference area (a wider region that includes the project intervention area) and projecting this into the future under the baseline scenario.

This will provide an estimate of what would be expected to happen to the forest in the project intervention area without the project. To ensure that this estimate reflects the project baseline scenario as accurately as possible it is necessary to use good quality data and any other evidence (as far as this is available) to cross-check and validate the estimated deforestation rate. This includes seeking the views and advice of local experts. It is particularly important to ensure that the most appropriate reference area and historical time period are selected. There are a number of separate steps involved and a number of options available:

A1 Select the best methodology based on available data sources
A2 Select the most appropriate reference area
A3 Select the historical time period
A4 Estimate the baseline deforestation rate
A5 Cross-cross check and validate estimates with local experts

A1 Select the best methodology based on available data sources

Different methodologies to estimate the baseline deforestation rate are available depending on the availability of information and the capacities within the project to analyse the data. Table AA2.1 outlines these. They are arranged in order of preference – most projects using this methodology will use approach (a).

TABLE AA2.1

Approach	Type of data	Advantages/disadvantages
a. Using the Global Forest Watch tool	• 30 m resolution maps and deforestation data are available on http://www.globalforestwatch.org/ using data from an analysis led by Matt Hansen and supported by Google. Details of the analysis and raw data are available at http://earthenginepartners.appspot.com/science-2013-global-forest • Other layers are available on the GFW site, but only the 30 m resolution data	• This is a versatile and simple to use tool that is freely available • It requires minimal IT capacity to use the tool • You can define your own reference area • The accuracy of the estimate can be improved by classifying the forest into canopy cover classes, and calculating changes in area of each class. Performing this

	provided by Hansen *et al.* is suitable for use in this methodology (coarser resolution MODIS-based products will miss small-scale deforestation). Other suitable products may be added to the GFW system at a later date: check with the Plan Vivo Foundation before using an alternative dataset • Any reference area can be selected using this tool and the forest cover change data within it can be analysed without the need for GIS software or data download • Maps can be produced for the reference area showing forest loss/gain over a specified time period	analysis will require downloading the raw data from http://earthenginepartners.appspot.com/science-2013-global-forest/download.html, as this analysis is not possible on the GFW website.
b. Analysis of remote sensing data	• Landsat or SPOT satellite imagery, or other imagery giving at least 30m resolution, can be downloaded or purchased • At least 2 datasets need to be obtained for the last 10 years including a recent set within the past 3 years • Analysis of forest cover change between the two years for the reference area will enable the annual deforestation rate to be calculated • The method can be improved by classifying the forest sub-classes (e.g. dense, medium and sparse crown cover) and using the remote sensing analysis to calculate change in the area of each of these classes	• There will be costs associated with obtaining the data and carrying out the analysis • Requires IT capacity to obtain the data and carry out the analysis • Forest definition can be defined by the user, rather than relying on an existing analysis that could potentially poorly represent local conditions
c. Secondary data analysis	• Publically available data on deforestation rates or forest cover • Use forest cover data for at least 2 different years over the past 10 years (including one set of recent data from within the past 3 years) to ensure accuracy • Comparison of the 2 data sets enables the annual deforestation rate to be estimated for the reference area (the area for which data are available)	• Data collection and analysis is simple and cheap • Sufficient data from at least 2 different years may not be readily available • Data will only be available for a fixed reference area (usually an administrative region or province) i.e. you cannot define your own reference area. This may limit its validity for the project. • It is unlikely that conditions in the area for which secondary data are available closely match those in the project area. Therefore any data should be applied and interpreted conservatively

Projects using approach (c) will be subject to a particularly intensive review during validation to ensure the likely accuracy and relevance of the data sources. Therefore, this approach is not normally recommended.

A2 Select the most appropriate reference area

This is a critical step for getting a good estimate of deforestation rates. Without an appropriate reference area your estimate of the baseline deforestation rate for the project intervention area will be poor. The following criteria should be used to select the most appropriate reference area:

- The reference area should be representative of the baseline conditions for the project intervention area in all possible ways
- The reference area should be geographically larger than the project intervention area and should include the project intervention area within it
- The size of the reference area can vary but it should normally extend approximately 20-30 km from the project intervention area in all directions (although this may not be possible if there are significant differences in the wider forest landscape surrounding the intervention area)
- The reference area should resemble the project intervention area i.e. with similar forest types, similar drivers of deforestation (locally-driven deforestation), similar proportions of forest in different conditions, similar ownership and management regimes, similar topography etc.
- The reference area should be defined to exclude forests that are significantly different from the project intervention area, e.g. national parks, as these will be subject to different deforestation rates and different drivers of deforestation
- The reference area should exclude any areas for which planned deforestation has already occurred e.g. conversion to oil palm monocultures on an industrial scale (normally greater than about 20 ha at one site).

If you are using method (c) in Table AA2.1, your selected reference area will depend on the areas for which secondary data are already available. These will normally be administrative areas such as districts, provinces or others. If the project intervention area falls close to the boundary of one of these, then you may need to consider combining data from adjacent districts/provinces to give a better estimate.

Using either of methods (a) or (b) in the Table AA2.1, you can select the reference area based on the criteria listed above. Try different reference areas (sizes, locations) and see what effect this has on changes in forest cover. Having tried several configurations, select (with justification) the one that gives the best indication of historical deforestation rates for the project area.

A3 Select the historical reference period

The historical reference period is the period over which you are calculating the baseline deforestation rate. It will have a significant effect on the accuracy of the baseline estimate for the project intervention area. Use the following criteria for selecting the historical reference period:

- The historical reference period should lie between 2 dates for which forest data are available. These mark the start and end of the historical reference period.
- The start and end dates should be separated by at least 3 years

- The start date should be more than 10 years before the start of the project quantification period
- The end date for the historical reference period should be as recent as possible

A4 Estimate the baseline deforestation rate

Using forest cover data for the reference area at the start and end of the historical reference period, calculate the change in forest area over this time (in ha). Divide this by the number of years between the start and end of the historical reference period to get the mean annual change in forest cover (in ha).

Mean annual change in forest cover ÷ forest cover at the start of the historical reference period = deforestation rate %

Example
Forest cover in the reference area in 2002 = 20,000 ha
Forest cover in the reference area in 2012 = 16,000 ha

Change in forest area (loss) = 20,000-16,000 = 4,000 ha
Mean annual change in forest area (loss) = 4,000/10 = 400 ha

% deforestation rate = 400/20,000 x 100 = 2%

A5 Cross check and validate estimates with local experts

Consult widely with local experts to determine whether your figure for the historical deforestation rate is realistic and acceptable based on their local knowledge and experience. Identify local experts who are familiar with the forest situation in the project area and ask them a series of questions to cross-check and validate your methodology and calculations. These can include:

- Are the drivers of deforestation in the project intervention area similar to those in the wider reference area?
- Are forest conditions in the project intervention area similar to those in the wider reference area?
- Does the reference area contain any forests that somehow are better protected or less well protected than the project intervention area?
- Have there been any significant events during the historical reference period that have had a sudden and significant impact on deforestation e.g. road construction, transmigration, declaration of protected areas etc.?
- Does the figure for the deforestation rate under the baseline scenario appear to be a good estimate based on their local knowledge and experience?

Based on the responses to these questions it may be advisable to reconsider the reference area and the historical reference period that you have been using. It is important to document these meetings and conversations, and responses from the experts (for example you could include as evidence attendance sheets from meetings, written statements following meetings, or email conversations).

Options and advice

Whatever data you use to calculate the historical deforestation rate, you must describe clearly its source in the accompanying text of the PDD. Give the full reference so that the source can be validated by Plan Vivo. The accompanying text should also include a justification for the selected

reference area and historical reference period including a description of any alternatives that were considered before final selection was made.

Option using forest classification

The approach described above will give a sufficiently accurate estimate of the historical deforestation rate for the purposes of complying with the Plan Vivo Standard. However, for greater accuracy (especially for larger forest areas) it is recommended that you use a modification of this approach by classifying the forest into a number of different crown density classes at the start and end of the historical reference period e.g. dense, medium and open (sparse) forest. This involves the following steps:

- Use the satellite image analysis (or Global Forest Watch Data) to determine the area of forest in each crown density classes for the reference area at the start of the historical reference period
- Similarly find the area of forest in the same classes at the end of the historical reference period.
- Set this information out as shown in the example in Table AA2.2
- Use the satellite data to find how much forest in each crown density class has become degraded into a lower condition category. Set out this information in the form of the example shown in Table AA2.3

TABLE AA2.2

Forest category	Area in 2002 (ha)	Area in 2012 (ha)
Dense > 70% canopy cover	10,000	8,000
Medium 40-70% canopy cover	8,000	6,000
Sparse < 40% canopy cover	2,000	2,000
Open (non-forest)	0	4,000
Total	**20,000**	**20,000**

TABLE AA2.3

Land use change 2002-12	Area (ha)	% change (over 10 years)	Annual change %
Dense forest changed to medium forest	2,000	20%	2.0%
Medium forest changed to sparse forest	2,000	25%	2.5%
Medium forest changed to non-forest	2,000	25%	2.5%
Sparse forest changed to non-forest	2,000	0%	0%

Using the information in the PDD

These figures will be used to calculate the baseline emissions in Part G4 of the PDD

B. Estimating the Initial Carbon Stock

The initial carbon stock is that which exists in the project intervention area at the start of the quantification period. It is usually expressed in the form of tonnes of carbon (tC).

Description

The approach involves estimating carbon stocks by measuring them from available secondary data, through remote sensing or possibly by actually measuring tree inside the reference area.

Options and advice

Several options are available for estimating the initial carbon stock. They vary in their accuracy and effort/cost and also in the extent to which local people can be involved. This approved approach gives the option of selecting from either of 4 options (or combinations of these). Note that sample plot surveys are not necessarily required provided that alternative data sources for carbon stocks are available. Possible options include:

Option A: Using existing forest management plan data
Option B: Using other available national or sub-national data sources
Option C: Using remotely sensed data
Option D: Carrying out a biomass survey (inventory) using sample plots

Option A: Using existing forest management plan data
Accuracy - high; Effort/cost - low; Participation – low (high if communities have already been involved)

If a forest management plan for the project intervention area has already been prepared, then sample plot data or growing stock data may be available. If data from a forest management plan is recent it can be used to estimate the initial carbon stock.

A forest management plan usually contains volume (stem volume) data often presented in the form of growing stock (usually m^3/ha). It may be possible to obtain the actual sample plot data that was used to calculate this. This would normally be in the form of diameter (dbh) of trees recorded from a series of sample plots. Using this data, follow these steps:

- Convert stem volume (m^3/ha) to stem biomass (t/ha) using figures for wood density for the main forest type or tree species. Wood density figures can be obtained from http://datadryad.org/handle/10255/dryad.235 or http://www.worldagroforestry.org/sea/products/afdbases/wd/index.htm
- Estimate above ground biomass (t/ha) by applying standard conversion factors to stem biomass. These will vary from species to species. Alternatively overall forest-based conversion factors from growing stock to above ground biomass may be available.
- If sample plot diameter data are available, above ground biomass (t) per tree is estimated using allometric equations based on tree dbh. These have been developed for many tree species and can be found in published literature e.g. most recent generic tropical equations from Chave *et al*. 2014; http://onlinelibrary.wiley.com/doi/10.1111/gcb.12629/abstract and for individual tree species in online resources e.g. http://www.globallometree.org/
- Estimate the total above ground biomass for each sample plot from the total of the individual trees and convert this to t/ha based on the area of the plots.
- Calculate below ground biomass where BGB = 0.37*AGB
- Calculate total tree biomass (t/ha) as AGB+BGB
- Convert tree biomass (t/ha) to carbon (tC/ha) using a conversion factor of 0.47
- Convert carbon stock (tC/ha) to CO_2 (tCO_2/ha) using a conversion factor of 3.67

Options B: Using other available national or sub-national data sources
Accuracy - medium; Effort/cost - low; Participation - low

Published national and/or sub-national data sources may be available to give generalised forest carbon stock data for different forest types. If using such data the sources should be clearly indicated and should come from peer reviewed journals or be published by national forestry agencies. International sources of data (such as that published by IPCC) should not be used as they are too general for specific small forest areas and may give inaccurate results if used for this purpose.

Published figures may distinguish between different forest types and different crown density classes. Such data may be able to give an accurate-enough estimate of the initial carbon stock for the project intervention area for the purposes of estimating the reference emission levels. However, it is essential to clearly indicate the source of such data and demonstrate that it is applicable for the project intervention area. Information from such published sources should be applied conservatively. The source will be checked during project validation.

Option C: Using remotely sensed data

Accuracy – medium; Effort/cost – variable; Participation - low

Increasingly, remotely sensed data products that are maps of aboveground biomass have been produced. In particular two pan-tropical maps are available: one by Saatchi *et al* published in PNAS in 2011 (http://www.pnas.org/content/108/24/9899), and one by Baccini *et al.* published in Nature Climate Change in 2012 (http://www.nature.com/nclimate/journal/v2/n3/full/nclimate1354.html).

These maps can be compared interactively at http://carbonmaps.ourecosystem.com/interface/, which will also display other regional maps, which may be higher resolution and can also be used if available. The Carbon Comparison website will enable a project to estimate the average carbon stocks for their Project Intervention Area before the project start date using these layers: in order to be conservative we recommend using the lower of either the Saatchi or Baccini maps. Raw data for Saatchi or Baccini maps are available at http://carbon.jpl.nasa.gov/data/dataMain.cfm and http://www.whrc.org/mapping/pantropical/carbon_dataset.html respectively.

At a higher level of accuracy, LiDAR data is becoming available that can be used to measure tree height (canopy height) and hence estimate biomass. Conducting a LiDAR survey for the purposes of a Plan Vivo Project is unlikely to be cost-effective. However data may already be available and can be used.

The participatory element of this option can be improved by involving communities in ground-truthing and selection of reference sites for spectral signal matching.

Option D: Carrying out a biomass survey (inventory) using sample plots

Accuracy – variable; Effort/cost – high; Participation - high

Many countries have standard protocols for carrying out biomass surveys (or forest inventories) – usually for the purposes calculating the growing stock in forest management plans. Whilst such methodologies are accurate and can be an effective way to involve local people in these activities they can be expensive in terms of time and level of effort and may be beyond the capacity of many projects. Large forest areas with difficult terrain are particularly difficult to survey. Frequently costs are reduced by scaling-down such sample plot surveys (usually through having a lower sampling percentage) but there is a risk that by doing this carbon stock estimates may prove to be inaccurate and misleading.

If you use a standard methodology for sample plot surveying, you will fully meet the requirements of this approved approach. But it is important to follow the standard methodology carefully (especially in terms of the level of sampling) and a reference to the published methodology should be given so that it can be checked during project validation.

Sample plots
The purpose of sample plots is:

- To provide a means of assessing initial carbon stocks in forest of different density categories i.e. dense, medium, open
- To ground-truth the remotely sensed data i.e. to quantify forest carbon stocks for forest in different categories as assessed by remote sensing
- To enable community members to be involved on assessing baseline forest condition and project monitoring
- To provide a visual picture of the forest at different stages in the project (through the use of photographs)
- To ensure that there is a systematic and robust way to assess forest carbon stocks that can convince policy-makers and purchasers of credits of the validity of the approach
- To ensure that all the aspects of the Plan Vivo standard relating to quantification and monitoring of ecosystem services are met

Laying and recording sample plots in the project intervention area

Follow these steps:

- Decide on a sampling percentage for the sample plot survey. This should be at least 0.1% (but also refer to standard protocols for forest inventories)
- If necessary divide the area to be sampled into strata. Crown cover categories can form the strata for sampling. For smaller forest areas (less than 100 ha) stratification is not necessary. If the forest consists of more than one separate patch then each patch should be separately sampled.
- Using maps – first determine the location and number of sample plots required in a stratified sampling pattern. Once the sampling system has been finalised, geo-locate the plots on the ground using GPS.
- Plots can be any convenient shape and size (bearing in mind any approved technical protocols). Square plots are recommended of minimum size 50 x 50m - preferably larger
- Use a tape measure and compass to ensure that each plot is properly located on the ground and is the correct size and shape. During assessment of the sample plots it is convenient to temporarily mark the plot boundary with rope or tape to ensure that it is clear. This should be removed after plot assessments are complete.
- Plots should be permanent i.e. it should be possible to relocate them after a number of years for monitoring. Mark plots discretely so that they are not differently treated from the rest of the forest. Small marks at plot corners are preferable to marking all trees in the plot. Hammering long metal stakes deep into the ground, with the tips painted, has been shown to be a good long-term corner marker.
- Ensure that you have recorded the GPS readings for the plot corners.
- In each plot record the dbh and species of each tree > 10cm dbh

- Record other relevant information from the plots including: evidence of illicit cutting/harvesting e.g. number of cut trees/stumps; evidence of other damage e.g. fire or grazing; evidence of any other deforestation activities
- Take photographs from a fixed point in each plot. This will assist future relocation of the plots and will also contribute to a visual, photo-monitoring system
- Ensure that community members are fully involved in recording the plot data
- Make sure that all the plot data is safely recorded and back-up copies are made
- Follow the same methodology as for Option A to calculate the baseline carbon stock

Using the information in the PDD

This information is used to calculate the carbon emissions under the baseline scenario (Part G4 of the PDD template.

The methodology used should also be described in Part G4 (Plan Vivo Standard requirement 5.18).

AA3 – Accounting for Leakage

The risks of leakage in REDD projects for reducing locally-driven deforestation can be divided into three categories:

- Internal threats that are a result of displacement of activities carried out by the community such as agriculture, timber harvesting, and grazing;
- Local threats that result from displacement of activities carried by actors outside the community, but over which the community can exercise some control, including unsanctioned logging or land clearance by neighbouring villagers; or authorised use of land for timber harvesting or agriculture by companies or other communities; and
- External threats that result from displacement of unsanctioned activities carried out by actors over which the community have no direct control.

Step 1 – Identify threats

To account for leakage, projects must first identify what types of threat exist. Threats of leakage are usually linked to the land-use activities that cause the deforestation expected in the baseline scenario.

External threats

Since communities have no control over external threats, they are not required to account for leakage from this source. Note that if external threats are the main cause of deforestation under the baseline scenario, projects where the aim is to reduce locally-driven deforestation are probably not appropriate. Under such circumstances drivers of deforestation will almost inevitably be shifted elsewhere and community-based approaches may not be effective.

Local threats

Projects must identify local threats that are present and include activities to mitigate these threats as far as they are able. They are not required to account for leakage from these threats however.

Internal threats

If internal threats of leakage are identified, projects must demonstrate that they have developed activities to address these (and the activities must themselves be monitored in the monitoring plan and the information included in annual reports). Any potential leakage must be accounted for.

When accounting for leakage that results from internal threats, projects must assess and if necessary develop mitigation activities for any reduction in food supply and/or income derived from activities in the project area in the with-project scenario relative to the baseline scenario. The potential emission from leakage can then be gauged by assuming that an equal amount of food production and/or income would be shifted to outside the project area unless the project implements activities to increase food production or increase income from activities outside the project area.

Step 2 – Assess likelihood and scale of each threat

Having identified the leakage threats in each of these 3 categories (and described them) an assessment is required of (i) the likelihood of them occurring i.e. high/medium/low and (ii) their scale i.e. large/medium/small

Step 3 – Identify mitigation measures

For any threats of leakage that are highly likely to occur and which if they do occur are likely to significant in scale mitigation measures should be identified. These are actions that will prevent or reduce the level of leakage.

For local and internal leakage threats mitigation actions are essential. If the threats are external (as described above) it is not necessary to identify any mitigating actions since community-based projects are unlikely to be able to mitigate such leakage threats. However if there are significant and likely external leakage threats the whole project itself should be reconsidered as it may not be a suitable Plan Vivo project and may not comply with the Plan Vivo Standard.

Mitigation actions to address leakage must then be included in the PDD (Part D of the PDD template)

Step 4 – Identify monitoring measures

As with the identification of mitigation measures, if there are any leakage threats that are likely and significant, measures are required to enable these to be monitored. It will be necessary to monitor all significant leakage threats identified regardless of the type of threat (external/local/internal).

Monitoring measures are those actions which can be undertaken by the project to determine whether the leakage threat identified is actually taking place. Note that external threats may prove to be difficult to monitor if they take place geographically separated from the project area but it may be possible to use remote sensing or other secondary information to put in place a monitoring system for these. Projects are not expected to monitor the quantity of leakage – but rather the presence or absence of leakage threats – especially those which are internal and which do need to be accounted for. Activities for monitoring leakage threats should be included in the project monitoring plan (Part K of the PDD template)

AA4 – Assessing Risk and Setting the Risk Buffer

Projects are required under the Plan Vivo Standard to define a non-permanence risk buffer, the size of which should be set based on an analysis of the risks associated with carbon credits generated by the project. Where a project is registering credits from different types of project intervention a separate risk buffer should be defined for each intervention. The overall risk can be assessed through consideration of the types of characteristics in the table below.

Type of risk	Description
Target group selection	Does the selection of target groups include a risk assessment?
Producer communication and training	How does the project inform communities of their responsibilities of selling carbon credits? What level of training/technical support does the project provide for communities?
Monitoring	Is the monitoring programme sufficient to verify monitoring targets given in the technical specifications?
Permanence	What is the risk of failure or reversal of activities being promoted by the project? Where credits are issued ex-ante are the assumptions regarding viability over the crediting period realistic? Are mechanisms used by the project to encourage permanence likely to be effective?
Leakage	What are the most likely causes of leakage? Do the project activities set out to significantly reduce these risks?
Internal audits	Does the project carry out any form of internal audit to check performance and identify areas of weakness?

For REDD projects using 'ex-ante' climate benefit accounting there is a risk that expected emission reductions will not be achieved and/or that emission reductions that are achieved may only be maintained temporarily. Projects must therefore determine a risk buffer based on assessment of both of these types of risk.

Step 1 – Identify threats

Use similar questions as shown in the example table above to identify the main risks of non-delivery and non-permanence of climate benefits for the project in each of the categories listed below. For each of the identified risks, assess the impact on climate benefits if the risk is realised, and the likelihood that the risk will be realised. A justification for the assessment should be provided, along with a description of any actions the project will take to mitigate the risks in the form of a risk matrix.

Social

- Land tenure and/or rights to climate benefits are disputed
- Political or social instability
- Community support for the project is not maintained

Economic

- Insufficient finance secured to support project activities
- Alternative land uses become more attractive to the local community
- External parties carry out activities that reverse climate benefits

Environmental

- Fire
- Pest and disease attacks
- Extreme weather or geological events

Technical

- Project activities fail to deliver expected climate benefits
- Project activities fail to deliver expected livelihood benefits
- Technical capacity to implement project activities is not maintained

Administration

- Capacity of the project coordinator to support the project is not maintained

Step 2 – Prepare a risk matrix

Prepare a matrix for the project intervention using the following categories of risk

Category	Description of risk	Likely impact (H/M/L)	Likelihood (H/M/L)	Justification	Mitigating action
Social					
Economic					
Environmental					
Technical					
Administrative					

Step 3 - Set the risk buffer

The risk buffer that will be maintained for the project intervention depends on the level of risk as determined in the risk matrix and on whether the Plan Vivo certificates are being issued 'ex-ante' or 'ex-post'. 'Ex-ante' credits are issued where activities have already been carried out but where the climate services have not yet been delivered. For example tree planting projects where trees have been planted but where they have not yet sequestered carbon. Project interventions for which 'ex-ante' credits are issued are inevitably more risky than those for which credits are issued 'ex-post'. The table below gives the range within which the risk buffer will lie for different types of project. A risk buffer proportional to the identified risks can be determined from this table.

For community-based REDD projects including projects for reducing locally-driven deforestation the risk is considered medium. The main risk of such projects is one of permanence because reduced levels of deforestation may be achieved for a period but cannot be guaranteed indefinitely. As a result, where credits are issued 'ex-ante' there should be a risk buffer of minimum 20% for community based-REDD type projects and for 'ex-post' issuance a minimum of 10%.

Risk	Ex-Ante Credits	Ex-Post Credits
Low	10-20%	5-10%
Medium	20-40%	10-20%
High	40-60%	20-40%

FREQUENTLY ASKED QUESTIONS

Note that these questions refer to projects for reducing locally-driven deforestation only.

FAQ 1: Is it necessary to lay-out and measure sample plots in the forest during preparation of the PDD?

Answer 1: No it is not necessary and is rather discouraged by Plan Vivo because it will lead to project resources going into monitoring rather than activities that benefit communities more directly. Baseline carbon stock can usually be estimated by other means (e.g. using secondary information – which needs to be referenced and validated) and the preferred monitoring method is a combination of activity-based monitoring with verification by remote sensing after 5 years. However there may be situations where projects may choose to lay out sample plots (possibly for other reasons). In this case the sample plot data can be used in the PDD and for monitoring.

FAQ 2: Project activities started several years ago (before preparing the PDD). Will it be possible to claim for climate benefits that were generated before Plan Vivo validation?

Answer 2: Not normally. Project benefits can usually only be claimed starting from the date of Plan Vivo validation at the earliest. If registration with Plan Vivo, activities to reduce deforestation, and the historical baseline period all precede Plan Vivo validation then a case could be made for backdating claims – however in this case a strong justification is required and this should be discussed and agreed with Plan Vivo before final submission of the PDD.

FAQ 3: Climate benefits have been quantified over a 10 year period. Can the project claim ex-ante benefits for this period?

Answer 3: No – not initially. Community-based REDD-type projects are based on several assumptions and estimates. Payments will therefore be based on an initial 5-year crediting period at which point verification of the climate benefits up to that point will be needed. This may result in some modifications to the Technical Specification and based on this a further crediting period of 5 years can be started. At this stage it is not possible for Plan Vivo to make any commitments beyond 10 years, although there is certainly potential for a project to be extended beyond 10 years, this will need to be discussed during the second crediting period.

FAQ 4: In part of the forest that is already highly degraded (open land) the community plan to plant trees to regenerate the forest and produce various products e.g. fruit, NTFPs etc. Can this area be included in the technical specification for reducing locally-driven deforestation?

Answer 4: No. This area should be excluded from the area covered by the project intervention for reducing locally-driven deforestation. A separate technical specification can be prepared for this tree-planting area and submitted as part of the same PDD.

FAQ 5: Locally applicable information about growing stock or biomass for the forests in the project area does not seem to be available. How can I estimate the initial forest carbon stock?

Answer 5: Since this is expected to be an estimate of forest carbon stock secondary information can be used. It is expected that most projects will use available remote-sensing based carbon maps if existing inventory data is not available, as described in AA2. If these are not thought of sufficient

quality for the area, it is possible to use national statistics on growing stock for forests with different canopy density classes. If (for example) you know the canopy density of the forest (from remote sensing) then you can estimate the carbon stock based on a fully-stocked forest of similar type.