eco
ecosystem certification organisation

nfs
natural forest standard

Guidance for Standard Requirements

Version 1.1

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Introduction

This Guidance document is designed as a guide for developing a Natural Forest Standard project and is provided to assist project developers in meeting the normative requirements of the Standard. The guidance is divided into 3 sections:

- Project eligibility
- Project management
- Quantification of project benefits

Verifiers and Validators are directed to use the guidance in assessing the conformity of projects to the Standard.

This Guidance document will be reviewed as part of an on-going process to reflect any clarifications made to the Standard, incorporating lessons learned and good practice developed by NFS projects, and to reflect developments in good practice used by other forest conservation and restoration initiatives.

The guidance should be interpreted in a pragmatic, professional and balanced manner to address aspects of project design and management that are important for achieving effective forest conservation and restoration in ways that benefit local and indigenous people.

Additionally, there are further guidance tools within the templates section of the NFS website (http://www.naturalforeststandard.com/guidance/templates/). These template documents are designed to assist project developers in completing the documentation for presentation within the NFS process.

Acronyms

ACEU	Accessible, Cultivable, Extractable, Unprotected
ACR	American Carbon Registry
AFOLU	Agriculture, Forestry and other Land Use
AGC	Above-ground Carbon
ANSI	American National Standards Institute
BGC	Below-ground Carbon
CBD	Convention on Biological Diversity
CCB	Climate community and Biodiversity Alliance
ECO	Ecosystem Certification Organisation
FAO	Food and Agriculture Organisation
FPIC	Free, Prior and Informed Consent
FSC	Forest Stewardship Council
GISP	Global Invasive Species Program
GHG	Greenhouse Gas
IUCN	International Union for Conservation of Nature
NBM	Normative Biodiversity Metric
NCCs	Natural Capital Credits
NFS	Natural Forest Standard
PDD	Project Development Document
PIN	Project Idea Note
REDD	Reduced Emissions from Deforestation and Degradation

SOC	Soil Organic Carbon
UKAS	United Kingdom Accreditation Service
VCS	Verified Carbon Standard
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute

Definitions

Wherever the following terms appear in the Natural forest Standard, or the guidance and templates relating to the standard, the meaning of the terms are as follows:

Above ground biomass
Living biomass above the soil, including the stem, stump, branches, bark, seeds and foliage[1] (Consistent with VCS program definitions version 3.3).

Accreditation
Accreditation is the formal, third party recognition of competence to perform specific tasks. It provides a means to identify a proven, competent validation team.

For NFS projects, ANSI (American National Standards Institute), UKAS (United Kingdom Accreditation Services) and ISO 14064 accredited validators are approved to carry out validation of projects against the standard.

Additionality
Additionality describes the extent to which activities, and resulting outcomes, occur as a consequence of an intervention, such as the resource flows generated from carbon certificates, made possible by the existence of a standard and market for certificates.

A proposed activity is additional if the activity occurs as a consequence of the application of the NFS. The activity must be taking place as a result of the NFS, and would not have taken place in the baseline situation – defined as the absence of the Standard. The definition of additionality often seen in other

[1] VCS program definitions version 3. Available at: http://www.v-c-s.org/sites/v-c-s.org/files/Program%20Definitions,%20v3.2.pdf

standards – 'would the activities have taken place in the absence of the project?' – is not sufficient; the activities of a project are indistinguishable from the existence of the project, so framing the question in this way produces a meaningless answer[2] .

Baseline
A project baseline is an estimate of what would happen without NFS, and thus the absence of activities supported by carbon finance in the project area. The conditions of a baseline are described in a baseline scenario – a quantification of the expected biomass loss in the absence of the project activities.

Below ground biomass
Living biomass of live roots, excluding fine roots of less than 2 mm diameter, as these cannot be easily distinguished empirically from soil organic matter or litter[3] (Consistent with VCS program definitions version 3.3).

Benefit allocation mechanism
A mechanism administered by the project to allocate resources and/or finance to local communities to help establish sustainable land management, improve living conditions and livelihoods.

Biodiversity
The variability among living organisms from all sources including, inter alia, terrestrial, marine & other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems[4] (Consistent with Convention on Biological Diversity definitions).

Buffer stock
A buffer stock is a pooled stock of NCCs from projects which will not be traded. The purpose of keeping a buffer stock is to insure against the possibility of carbon losses as a result of unforeseen events.

Carbon at risk
The estimated stock of carbon at risk of emission to the atmosphere within a given area over a given time span, taking into account relevant risk factors such as accessibility, suitability for cultivation or extraction, and the degree of protection.

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[2] Gillenwater, 2012.*What is additionality? Part 1: A Long Standing Problem*. Greenhouse Gas Management Institute, Silver Spring, MD. Available at:http://ghginstitute.org/wp-content/uploads/content/GHGMI/AdditionalityPaper_Part-1(ver3)FINAL.pdf
[3] See footnote 1.
[4] Secretariat of the Convention on Biological Diversity, 2011.*Livelihood Alternatives for the Unsustainable use of Bushmeat*. Technical Series No. 60, Montreal, SCBD. Available at: http://www.cbd.int/doc/publications/cbd-ts-60-en.pdf

Carbon rights holders
"Rights holders" to carbon are individuals, institutions, groups or communities that have rights to the benefits (and liabilities) associated with carbon sequestration within a defined area. Where the ownership of carbon benefits is not legally defined, contractual mechanisms apportioning benefits shall be acceptable. This can be established without a formal legal framework, although a formal legal framework defining rights is preferable.

Carbon stock
The quantity of carbon held within a pool, including aboveground biomass, below ground biomass, litter, deadwood and soil, measured in tonnes of $CO2$[5] (Consistent with VCS definitions version 3.3).

Carbon risk map
A map showing variations in the carbon at risk within the project area - see for example, Estimating Terrestrial Carbon at Risk of Emission[6].

Commercial timber extraction/logging
Commercial timber extraction is the extraction of wood by commercial organisations to supply markets for timber, pulp or bio-energy.

Commercial operations are distinguished from subsistence extraction or resource use by a combination of legal status, scale and level of mechanisation. Timber extraction is considered commercial when it exhibits any of the following characteristics:

- Conducted by a commercial business;
- Use of heavy machinery for extraction and transport;
- Use of contracted/hired labour;
- Construction of skid-tracks, extraction roads and landings;
- Logs taken to an industrial sawmill.

Conservation activities
Conservation activities are processes carried out by the project proponents with the purpose of maintaining forest cover, ecological functions, ecosystem services, and populations of species. It is a protective process to manage identified threats and risks. It is distinct from restoration activities (see below) which are designed to actively improve the quality of habitats, populations and ecosystems.

Double Counting
The scenario under which a singular GHG emission reduction or removal is monetized separately by two

[5] See footnote 1
[6] Terrestrial Carbon Group, 2009. Estimating terrestrial carbon at risk of emission: applying the Terrestrial Carbon Group 3 Filters Approach. Available at: www.terestrialcarbon.org

different entities or where a GHG emission reduction or removal is sold to multiple buyers[7] (consistent with VCS program definitions version 3).

Deforestation
The conversion of forests to non-forest through human activities (consistent with VCS program definitions version 3).

Degradation
Changes within the forest which negatively affect the structure or function of the stand or site, and thereby lower the capacity to provide ecosystem functions and services[8].

Endangered Species
Species classified in the IUCN (International Union for Conservation of Nature) red list of species as being 'Endangered' or 'Critically endangered'.

Forest Restoration
The repair of natural forest structure, function and biomass following degradation or deforestation. The success of restoration can be measured using the normative biodiversity metric, which will quantify improvements in the degree of 'pristineness'.

Free, prior and informed consent (FPIC)
Free, Prior and Informed Consent (FPIC) is the right of indigenous peoples and communities to give or withhold their consent to developments that affect part of their territory. It describes the establishment of conditions under which indigenous people and communities can exercise their fundamental rights to "negotiate the terms of externally imposed policies, programs, and activities that directly affect their livelihoods or wellbeing, and to give or withhold their consent to them"[9].

Greenhouse Gas Inventory Protocols
Internationally accepted guidelines for emissions reporting, such as the IPCC, the WBCSD, or the WRI[10].

Leakage
Greenhouse gas emissions occurring outside the project boundary as a result of project activities within the project boundary.

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[7] See footnote 1

[8] Food and Agriculture Organisation of the United Nations, 2000. *Global Ecological Zones*. Available at: http://www.fao.org/geonetwork/srv/en/metadata.show?id=1255

[9] RECOFTC & GIZ, 2011.Free, Prior, and Informed Consent in REDD+: Principles and Approaches for Policy and Project Development. RECOFTC, Bangkok.

[10] World Business Council for Sustainable Development; World Resources Institute, 2001. ***The greenhouse gas protocol: a corporate accounting and reporting standard.*** Washington, D.C. Geneva, Switzerland.

Local community
Communities verified as living within the project area boundaries, established prior to the start of the project. Where there are transient communities within and around the project area, those communities which are known to, or thought to often frequent the project area will be treated as local communities.

Major / Minor Deficiencies
Deficiencies are shortcomings with a project's design, management systems or operations that require attention as part of the process of validation or verification.

Major deficiencies are those that pose a serious barrier to meeting the standards and require resolution prior to the project progressing towards registration or credit issuance.

Minor deficiencies are those that raise risks or could, if uncorrected, have a negative effect on the project or its outcomes in terms of quantified carbon, social and biodiversity benefits.

Management Plan
A document, setting out activities and resources to be applied to the project area to protect and restore forest carbon and activities designed to benefit local people.

Natural Forest
A forest which has reproduced naturally, consisting of naturally immigrant or indigenous tree species and strains.

Natural forests can be more or less influenced by culture, e.g. by logging or regeneration techniques, but the forests must not have been subject to regeneration by sowing or planting. Natural forest originates from the original forest cover, i.e. a forest reproduced naturally. Natural forest is thus a forest which has spontaneously generated itself on the location and which consists of naturally immigrant and indigenous tree species and strains[11].

Natural forest might be managed to some degree, or be entirely unmanaged (untouched, non-intervention forest, or a strict forest reserve).

Every piece of forest is directly or indirectly influenced by human activity; either from forestry operations, cutting, planting and drainage, or indirectly by manipulation of the grazing regime, air pollution, hindering the immigration and spreading of natural species and influencing the kind and amount of dominant species in the landscape. As such, to be considered a natural forest, a forest need not be free from human influence.

[11] The National Forest and Nature Agency (Skov- og Naturstyrelsen),1994. Strategy for Natural Forests and Other Forest Types of High Conservation Value in Denmark. Available at: http://www.geus.dk/departments/quaternary-marine-geol/research-themes/env-cli-res-gr-forest-def-uk.htm

After an adequate amount of time without intervention, a previously managed or degraded forest can develop some of the basic structures of a virgin forest and be considered a natural forest.

Natural Capital Credits (NCCs)
A traded certificate representing the verified, permanently avoided emission of one-tonne of CO2

NFS Risk Panel
A sub-group of the Technical Panel who will provide guidance on the level of risk buffers or other insurance and risk management methods to be applied to ensure the permanence of emission reductions by NFS projects.

NFS Technical Panel
A group of independent experts, co-ordinated by the NFS Secretariat who will review, approve and rate carbon maps and risk maps used to quantify the carbon benefits of projects, and who will develop and propose good practice guidance.

NFS Registry
An independently run registry that helps provide transparency and credibility to environmental markets by ensuring provenance and singularity of credits[12].

Non-Permanence risk
The risk that the project will be subject to an unforeseen external event which will cause a significant loss of carbon/ biomass.

Normative Biodiversity Metric (NBM)
The Normative Biodiversity Metric is a tool used to provide a quantified assessment of the biodiversity significance of a defined area of habitat[13].

Performance Benchmark Approach
A performance benchmark approach draws upon statistically derived risk estimates for land categories to estimate the impacts of measures to improve forest conservation. According to VCS[14] performance benchmarks "are a promising alternative to determining baselines and assessing additionality on a project-by-project basis". A performance benchmark provides advantages for a programmatic approach

[12] Markit Environmental Registry. http://www.markit.com/en/products/environmental/markit-environmental-registry.page?
[13] Jarrett, D, 2011. Assessing Organisational Biodiversity Performance. Available at: http://ecometrica-cms-media.s3.amazonaws.com/assets/media/pdf/assessing_organisational_performance.pdf
[14] Seager & Lehman, 2011. Standardized Approaches to Baselines and Additionality Public Consultation. Available at: http://v-c-s.org/sites/v-c-s.org/files/VCS%20Presentation,%20Standardized%20Approaches,%20Webinar,%2013%20SEP%202011.pdf

to reducing emissions where projects within a given region can use a consistent set of baseline data, accounting methods and rules. This will aid the evaluation of the program, reduce costs for individual projects and allow the performance benchmark to be adjusted over time according to evidence.

Permanence
Emissions reductions expected to be avoided for a period of over 100 years.

Project NBM Score
The Project Normative Biodiversity Metric[15] score is average NBM score from all the distinct patches of habitat, including artificial habitats within the project area. The score is ranked on a scale from 0 – 10. The project NBM score will be attached to the carbon credit, so buyers are aware of the biodiversity value of the project area. The process for calculating the Normative Biodiversity Metric score is in the section Biodiversity Assessment.

Project Design Document
The document and annexes containing all material necessary for validation of a proposed project against the NFS.

Project Crediting Period
The time period for which GHG emission reductions or removals generated by the project are eligible for issuance of Natural Capital Credits, the rules with respect to the length of such time period and the renewal of the project crediting period.

Reduced emissions from deforestation and degradation (REDD)
Reduction in greenhouse gases emissions through the avoidance of deforestation and forest degradation.

Risk of biomass loss
The risk of biomass loss within the project area in the baseline scenario is the likelihood that in the absence of any interventions, carbon / biomass will be lost as a result of deforestation.

Risk Rating
A rating exercise carried out by the NFS Technical Panel with relevant expert input, to determine the level of Natural Capital Credits to be held in the project buffer account to mitigate risks and uncertainties associated with the delivery of permanent avoided GHG emissions.

Type 1 Error
Incorrect classification of risk (over-estimate) leading to the unnecessary protection and issuance of excess credits for areas of forest at low or no risk.

[15] See footnote 13.

Type 2 Error
Incorrect classification of risk (under-estimate) leading to insufficient protection and subsequent loss of forest and associated emissions.

Getting Started

Before starting to develop a project under the Natural Forest Standard (NFS) it is essential to understand the requirements of the Standard.

The first stage of registering a project with the Natural Forest Standard is to submit a Project Idea Note. A project idea note (PIN) is a short document that provides a brief summary of the intended project and identifies and determines the main features and objectives of the project, the parties involved and the proposed project activities. The purpose of submitting a PIN is to ensure that the project is suitable for the Natural Forest Standard, and that the aims and activities of the project are feasible. The Natural Forest Standard Secretariat will review the PIN and give feedback on whether the project is likely to be a successful Natural Forest Standard project. Once approved a PIN will be listed in the Project Index section of the website, with the project stage clearly disclosed.

PINs can be submitted to the NFS secretariat online at http://www.naturalforeststandard.com/nfs-standard/project-process/getting-started/.

Defining your Project

To assess whether a project is eligible for the NFS, you must first define the specific area and scope of activities. It is recommended that the project area is mapped, and if appropriate for management purposes divided into zones or strata.

The project objectives, ownership and management structure should be clearly described.

The project map-set should include:

- Vegetation types and where relevant to the objectives of the project land use should also be included
- Nearby population centres and settlements in and near the project
- Roads, tracks and rivers
- Ownership and tenure (including customary and relevant land use rights)

Please see an example map in Figure 1 below:

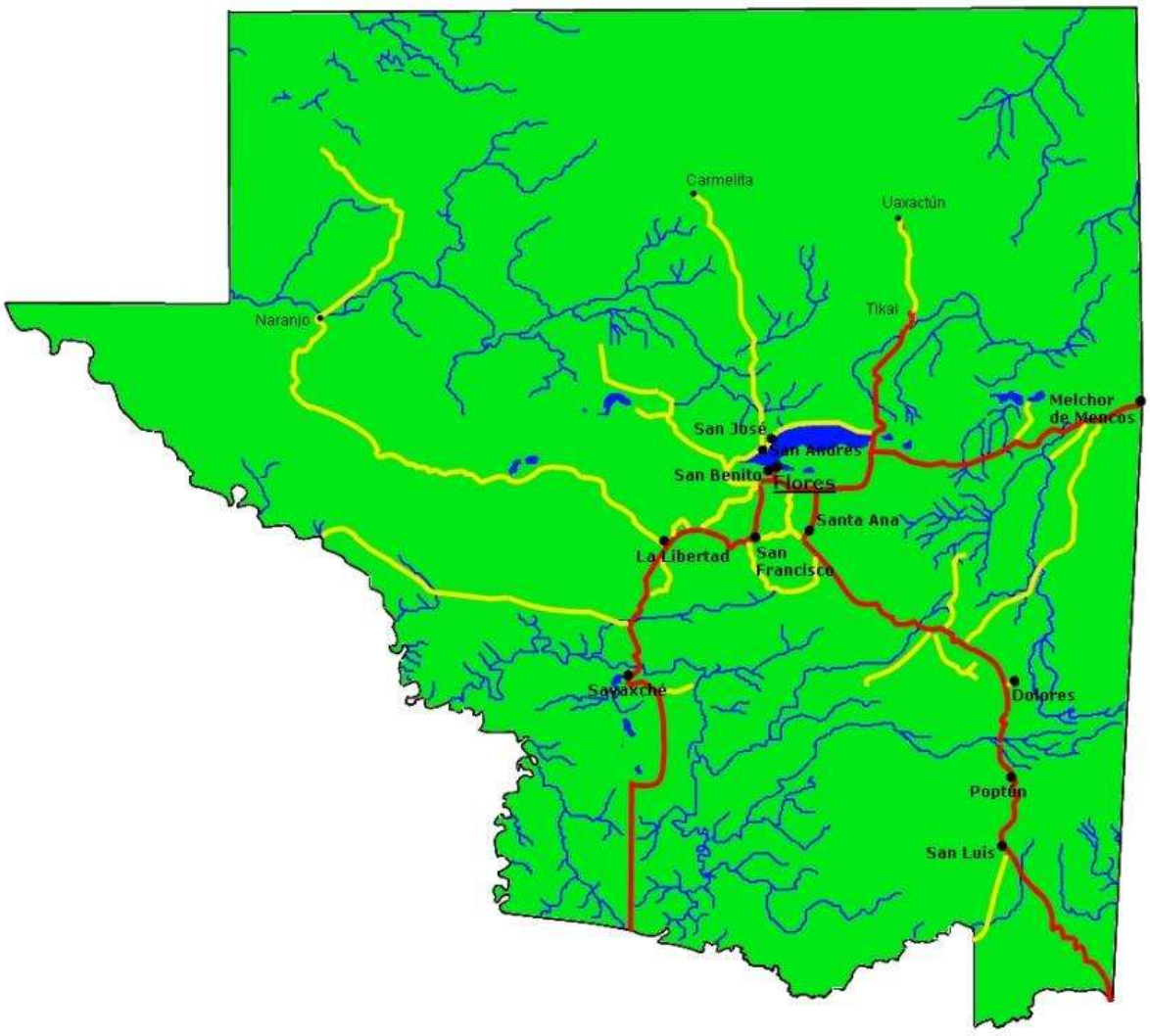

Figure 1: Example of a map showing road, river, and track access to a potential natural forest project area

1.0 Project Eligibility

Projects should first comply with the basic eligibility criteria that are outlined in Section 1 of the Standard, relating to the ecological condition of the forest, the ownership of carbon and land, and demonstrating the additionality of project activities.

1.1 Natural Forest

Does the project conserve or restore Natural Forests?

The first aspect of eligibility to test is whether the forest designated by the project to be protected or restored is a natural forest, as defined by the NFS (see definitions section).

To be eligible projects must demonstrate that forests can be reasonably shown to comply with the Natural Forest Standard definition[16] :

Natural Forest

"A forest which has reproduced naturally, consisting of naturally immigrant or indigenous tree species and strains.

Natural forests can be more or less influenced by culture, e.g. by logging or regeneration techniques, but the forests must not have been subject to regeneration by sowing or planting. Natural forest originates from the original forest cover, i.e. a forest reproduced naturally. Natural forest is thus a forest which has spontaneously generated itself on the location and which consists of naturally immigrant and indigenous tree species and strains.

Natural forest might be managed to some degree, or be entirely unmanaged (untouched, non-intervention forest, or a strict forest reserve).

Every piece of forest is directly or indirectly influenced by human activity; either from forestry operations, cutting, planting and drainage, or indirectly by manipulation of the grazing regime, air pollution, hindering the immigration and spreading of natural species and influencing the kind and amount of dominant species in the landscape. As such, to be considered a natural forest, a forest need not be free from human influence.

After an adequate amount of time without intervention, a previously managed or degraded forest can develop some of the basic structures of a virgin forest and be considered a natural forest."

[16]The National Forest and Nature Agency (Skov- og Naturstyrelsen),1994. Strategy for Natural Forests and Other Forest Types of High Conservation Value in Denmark. Available at: http://www.geus.dk/departments/quaternary-marine-geol/research-themes/env-cli-res-gr-forest-def-uk.htm

Project areas to be subject to restoration activities should be identified. Guidance on restoration should be obtained from organisations or individuals with relevant expertise, and restoration activities should be designed with the objective to restore the original forest structure, which should be still present in other areas of the forest or local region.

1.2 Additionality

Can the project demonstrate additionality?

Projects activities should be considered additional if they are taking place as a consequence of the existence of the NFS standard or the possibility of obtaining carbon finance, and would not have taken place in its absence.

Additionality

Additionality describes the extent to which activities, and resulting outcomes, occur as a consequence of an intervention, such as the resource flows generated from carbon certificates, made possible by the existence of a standard and market for certificates.

A proposed activity is additional if the activity occurs as a consequence of the application of the NFS[17]. The activity must be taking place as a result of the NFS, and would not have taken place in the baseline situation – defined as the absence of the Standard.

The definition of additionality often seen in other standards – 'would the activities have taken place in the absence of the project?' – is not sufficient; the activities of a project are indistinguishable from the existence of the project, so framing the question in this way produces a meaningless answer[18].

In cases where forest is not legally protected the following indicators in Figure 2 may be used to demonstrate additionality, and the corresponding evidence should be provided to support each indicator.

[17]Gillenwater, 2012. What is additionality? Part 1: A Long Standing Problem: Greenhouse Gas Management Institute, Silver Spring, MD. Available at: http://ghginstitute.org/wp-content/uploads/content/GHGMI/AdditionalityPaper_Part-1(ver3)FINAL.pdf

[18]See footnote 2. Available at: http://ghginstitute.org/wp-content/uploads/content/GHGMI/AdditionalityPaper_Part-1(ver3)FINAL.pdf

Indicators of Additionality	Evidence to Support indicators
Land of similar type and situation within the state or local area is subject to deforestation & degradation	Maps/images of historic land use change
Social and economic pressures on forest are high and/or increasing	Data on population growth Market data on agriculture & forest products
Area is accessible and has extractable resources and/or is cultivable	Survey data or maps indicating extractable resources and suitability for agriculture/livestock

Figure 2: Indicators of Additionality and Evidence to Support Indicators for non-legally protected forests

In cases where forests are officially protected or subject to protective regulations, additionality may be demonstrated by showing that forests are inadequately protected and at risk of deforestation and/or degradation. In cases where legal protections on forests exist, the following indicators and evidence may be used to demonstrate that the existing protection measures are not sufficient to address the threats to forests, in addition to those included in the previous figure (2).

Indicators of Additionality	Evidence to Support indicators
Land of similar legal status subject to deforestation/degradation	History of land use change in relation to protection status
Limited enforcement of legal protection	Data showing few successful legal interventions, low risk of prosecution
Under-resourced enforcement relative to threat	Number of protection officers in relation to forest area, accessibility and capabilities

Figure 3: Indicators of Additionality and Evidence to Support Indicators for officially protected forests

In addition to demonstrating current and future threats to forests, the project proponent should explain how the planned intervention of the project will mitigate the identified threats.

In the case of forest restoration activities, the project developer and verifier should confirm that these are not being undertaken to fulfill a legal requirement.

Verifiers should be satisfied that the project developer has not manipulated local agents or institutions to increase the level of threat to any forest area in order to make a case for additionality.

1.3 Legal

Does the project have a legal basis?

The project proponents should be able to demonstrate they have the necessary rights to carbon and land use to implement the project, create and transact Natural Capital Credits. Documents regarding the project area should be reviewed by legal advisors and a summary statement of this review should be presented in the project design document.

It is also important to note that the project proponents must hold the necessary legal rights to perform the project activities for the entire crediting period.

The directors of the project should warrant that the project organisation is not in violation of any applicable laws, regulations and relevant environmental treaties and agreements. As such, it will be important for the project to demonstrate an understanding of the national and local regulatory requirements relevant to the project activities.

Further guidance on land tenure and carbon rights is provided in the Project Management / Social and Governance sections of this document (2.0 and 2.1).

2.0 Project Management

Project developers are required to develop a management plan. This should set out how the project will address the identified threats to forest carbon and biodiversity and, where appropriate, recover carbon stocks and biodiversity through restoration activities.

The management plan should describe how the project will interact with local organisations, groups and communities, and should explain how agreements will operate to a standard of Free Prior and Informed Consent (FPIC).

Free, Prior and Informed Consent

"FPIC is the right of indigenous peoples and communities to give or withhold their consent to developments that affect part of their territory. It describes the establishment of conditions under which indigenous people and communities can exercise their fundamental rights to "negotiate the terms of externally imposed policies, programs, and activities that directly affect their livelihoods or wellbeing, and to give or withhold their consent to them."

The management plan should, where relevant, contain information on the following:

- The main activities that will be undertaken by the project (including locations and timing)
- The expected outputs of activities and anticipated outcomes
- The main functions and responsibilities of key staff
- The structures and arrangements for collaboration, partnership or sub-contracting with local organisations, government bodies and sub-contractors
- The budgets for activities, and intended sources and recipients of project funds
- The mechanism by which benefit distribution will operate
- The process for dealing with complaints or grievances
- The process by which progress will be monitored, reviewed and evaluated
- The management plan should be maintained as a living document, adapting and adjusting to developments over the course of the project.

The management plan is expected to be an internal document, maintained and agreed by the senior project staff.

The management plan should address relevant social, governance and biodiversity issues, as described in the following sections.

2.1 Social and Governance

The NFS aims to conserve and restore natural forests through actions that benefit local communities and indigenous people.

The social and governance guidelines of the NFS draw upon the reporting requirements of the UN REDD Draft Guidance on Rights Holder Engagement, REDD+ Social & Environmental Standards[19], the draft UN-REDD Programme Guidelines on Free, Prior and Informed Consent[20], UN Declaration on the Rights of Indigenous Peoples[21], alongside practices and experiences of other carbon standards. Although not all of these documents are designed for projects at an equivalent scale to the NFS projects, the way that issues relevant to NFS projects are framed within these documents is relevant.

The NFS is designed for use by projects in publicly owned areas of natural forest ranging from municipalities to state-owned concessions. There is a high chance that these areas will be inhabited by local communities, including indigenous groups, as the majority of the world's remaining natural forests in developing countries are located in ancestral and customary lands[22]. To ensure that projects do not have negative impacts on people living within project areas or who on those that have land use rights, and that the needs, rights and interest of these people are recognised by the project developments, the standard requires projects to apply the principle of Free Prior and Informed Consent, and to have an effective benefit distribution mechanism.

The project design document (PDD) and management plan should describe how the following social safeguards and benefit mechanisms will be put into practice.

2.1.1 Free Prior and Informed Consent

The Standard requires projects to obtain the Free, Prior and Informed Consent (FPIC)[23] for the development of a project from the carbon rights holders and any communities living or having land use rights within the project area, whose activities will be affected or constrained by the project. Projects

[19] http://www.redd-standards.org/
[20] http://www.unredd.net/index.php?option=com_docman&task=cat_view&gid=1333&Itemid=53
[21] http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf
[22] http://www.google.co.uk/#hl=en&sa=X&ei=MHvfT_LPBK6o0AWs3djiCg&ved=0CAYQvwUoAQ&q=UN-REDD+Programme+SPEC%3A+Supporting+Documents&spell=1&bav=on.2,or.r_gc.r_pw.r_qf.,cf.osb&fp=b244e88b8bc79e49&biw=942&bih=917
[23] RECOFTC & GIZ, 2011. Free, Prior, and Informed Consent in REDD+: Principles and Approaches for Policy and Project Development. RECOFTC, Bangkok. Available at: http://www.recoftc.org/site/uploads/content/pdf/FPICinREDDManual_127.pdf

should consider FPIC as a process rather than a one-time decision and any decisions or agreements made may be reconsidered throughout the projects lifetime.

Consent should be obtained prior to the commencement of project activities. In adhering to the principles of FPIC project developers should consider the relevant social, cultural and environmental factors in the proposed project area.

Relevant factors should include identification of, and communication with, communities and indigenous groups affected by the proposed project or its activities; identification and understanding of decision making institutions used by these groups, land tenure, resource users and associated off-take. Consideration of any constraints that proposed project activities may have on such resource use should be made.

The project should assess the ability and capacity of rights holders to engage effectively in the negotiation of project development and benefit sharing activities. If the assessment finds that rights holders have insufficient capacity to engage effectively in the negotiation of project development and benefits sharing activities, the project should consider how to assist rights holders to develop this capacity.

2.1.2 Adhering to the principles of FPIC

The following points provide guidance on how projects can adhere to the principles of FPIC during the stages of project development:

(i) Preparation of negotiations with the carbon rights holders and affected communities:

- Ensure that projects are developed in consultation with communities from the earliest planning stages and encourage community participation in project design and implementation;
- Communicate transparently with local communities, making clear the steps in the process of project development at which community involvement and consent will be sought;
- Ensure that any proposed changes in land use or management as a result of the project are clearly explained to the community, including potential benefits and costs for forgoing existing or potential benefits from alternative management and use;
- Seek to establish a climate of mutual respect, openness and trust in order to ensure that the process of seeking and obtaining consent is understood by all parties;
- Ensure that relevant government agencies are informed about the project design phase and given details of how communities are involved

(ii) The completion of negotiations:

- Be sensitive of the right of indigenous people to use their own decision-making institutions and processes;
- Ensure that consent is free from coercion and manipulation;
- Work alongside communities, providing the skills necessary to engage effectively with the project, and assist them in make informed decisions about project activities;
- Be alert to potential problems such as internal community divisions, the capture of resources by local elites or gatekeepers and unintentional negative consequences of access to new resources and technology.

(iii) The delivery of agreed terms:

- Ensure that there is a sufficient time period incorporated into negotiations and agreements for consideration and "cooling-off"
- Ensure that there is a mechanism in place for dispute resolution
- Ensure that adequate timeframes are imposed

2.1.3 Benefit Distribution Mechanism

The Standard requires projects to establish a mechanism to benefit local communities and that contributes to the sustainable management of ecosystems within the project area.

The benefit mechanism should be designed in consultation with local communities and relevant organisations, including as appropriate, government bodies.

The Standard recognises that the design, implementation and governance of this mechanism will be specific to projects, and will reflect the eligibility of stakeholders within the project area to make claims regarding the scale, timing and type of benefits accrued. The Standard is flexible in allowing for different approaches that projects may take to a benefit mechanism.

The development of a mechanism should be guided by the principles of free, prior, and informed consent. It should also be transparently and effectively administered to ensure that outputs are delivered on time and in appropriate quality. Details of which shall be outlined in the project management plan.

The benefit mechanism should be subject to periodic review and evaluation to assess the following[24]:

[24] http://www.oecd.org/dataoecd/51/7/38686953.pdf

- **RELEVANCE -** does it provide resources or inputs that are relevant to local needs and compatible with the conservation and restoration objectives of the project?
- **EFFECTIVENESS -** did the deliverables arrive, were they satisfactory, did the benefits materialise?) and
- **EFFICIENCY -** is the benefit mechanism operating efficiently?

Example process of developing a benefit mechanism may involve the following:

Negotiation and agreement to be agreed between the municipality, project stakeholders and the project developer to set the appropriate and proportional levels for the following criteria:

- Portion of funds for developing a mechanism and proportion of funds going to create "benefit"
- Type of "mechanism" e.g. fund or funds, projects or programs
- Type of "benefits" e.g. cash, resources in kind, social infrastructure, training
- Ties to project activities e.g. activities that help the project to meet project objectives e.g. REDD
- National scale agreements on REDD and processes or systems adopted within the host country or local area
- Structures for the management, development and distribution of benefits. Including actors involved and rules regulating benefit mechanisms
- Monitoring and evaluation systems and processes
- Processes for complaints and disputes

2.1.4 Process for Complaints and Disputes

The Standard requires projects to establish and maintain mechanisms for dealing with complaints and concerns of stakeholders, including allowance for an independent arbitration process. A complaints process is likely to focus on procedural complaints concerning the development of the project, and around verification and certification i.e. how the certification decision was derived or the certification decision itself.

Having a formal mechanism for complaints and disputes ensures that issues are aired openly and transparently and that there is a go to procedure, before communication becomes difficult or breaks down.

The mechanism, developed by the project, shall make provisions to address the concern or complaint in a timely and transparent manner. Project level grievance mechanisms offer an alternative to dispute resolution process but should include the possibility of independent arbitration, and recourse to legal or administrative remedies if negotiations do break down.

The project must ensure that stakeholders are made aware of, and have access to the process. The process should include grievance tracking and response systems, incorporating reporting on project

progress at monitoring meetings to discuss satisfaction and hear grievances. If necessary the project should ensure communities are informed about government adjudication channels and processes, and access to justice (provision of legal aid), if a situation arises and grievances cannot be resolved by the two parties without outside assistance.

Projects may draw upon already existing project level grievance processes. For example, the Forest Stewardship Council (FSC) Dispute Resolution System[25] gives a well-structured example of an established grievance mechanism including process for appeal, formal and informal dispute recourse. The Box below highlights some of the principles projects may wish to consider when designing a grievance mechanism.

Five Principles in Designing a Grievance Mechanism[26]

- Proportionality: Scaled to risk and adverse impact on affected communities;
- Cultural Appropriateness: Designed taking into account culturally appropriate ways of handling community concerns;
- Accessibility: Clear and understandable mechanism that is accessible to all segments of the affected communities at no cost;
- Transparency and Accountability for all stakeholders; and
- Appropriate Protection: A mechanism that prevents retribution and does not impede access to other remedies.

2.1.5 Carbon Ownership

The Standard requires project to hold evidence of necessary use rights to the project area, this includes the carbon rights and or ownership of land for the project area.

Carbon rights holders are - individuals, institutions, groups or communities that have rights to the benefits (and liabilities) associated with carbon sequestration within a defined area. Where the ownership of carbon benefits is not legally defined, contractual mechanisms apportioning benefits shall be acceptable. This can be established without a formal legal framework, although a formal legal framework defining rights is preferable. All activities should be informed by the principles of FPIC.

To do this the project will need to determine how carbon rights are allocated within the project area. This will involve project developers determining who owns the carbon rights and if necessary

[25]Forest Stewardship Council, 2009.*FSC Dispute Resolution System*. Available at: http://www.fsc.org/resources.10.htm

[26]International Finance Corporation, 2009. *Good Practice Note Addressing Grievances from Project-Affected Communities: Guidance for projects and companies on designing grievance mechanisms*. Available at: http://www1.ifc.org/wps/wcm/connect/cbe7b18048855348ae6cfe6a6515bb18/IFC%2BGrievance%2BMechanisms.pdf?MOD=AJPERES&CACHEID=cbe7b18048855348ae6cfe6a6515bb18

determining the correct process for obtaining the carbon rights. Figure 1 is indicative of a process that a project might go through to determine how carbon rights might be allocated in the project area. In the first instance projects should determine if the host country has a nationally approved mechanism for the allocation of carbon rights.

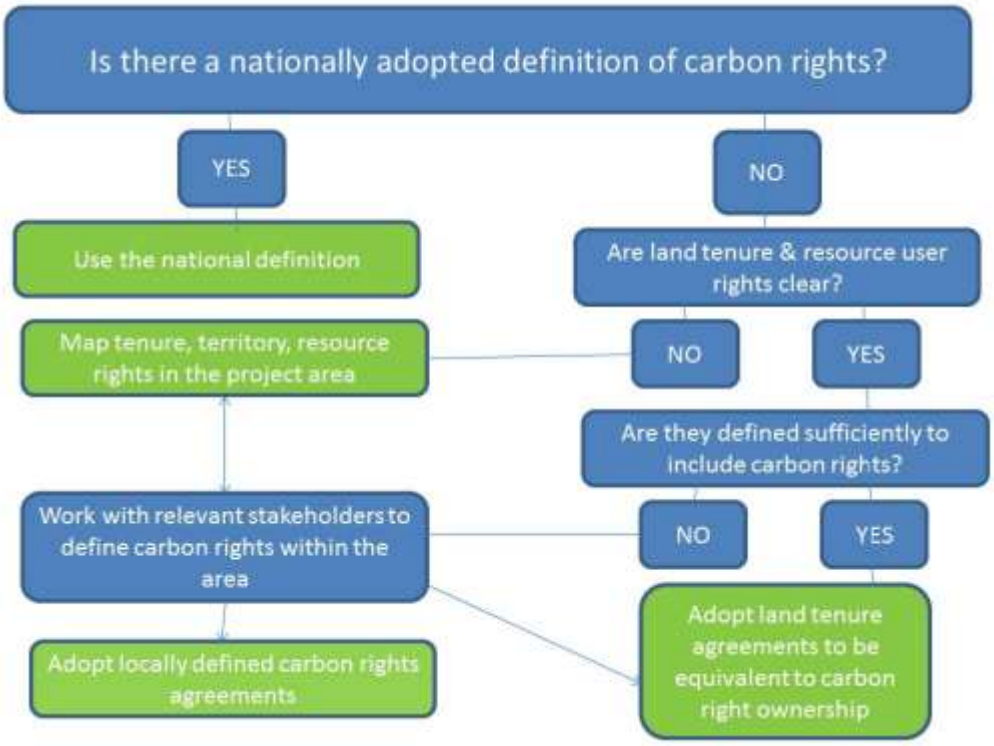

Figure 4: Example of how the process for determining carbon rights within a project area might work; carbon rights should be reviewed at intervals throughout the life of the project

Where the law does not explicitly allocate carbon rights, applicable laws for the host country should be assessed to determine if the rights can belong to the person or government that holds the rights to land and forests in the project area. If this is not provided within the legal framework (including customary law) of the host country then private contractual agreements between the claimants can improve legal certainty. In this instance if tree or land ownership is not clear within the project area then the project will need to work with communities, using participatory processes, to establish clear maps of tenure, territory and resource use rights, and from this work with relevant stakeholders to define carbon rights within the area.

As there is the potential for multiple claims for carbon rights to be made within any area, projects should obtain explicit contractual agreements with all potential claimants. Paths to different

understandings of carbon rights for the project, through full and effective participation of those impacted by the project, are illustrated in USAID Working Paper on Carbon-Rights Framework pg. 6[27].

2.2 Biodiversity

The Natural Forest Standard is designed to be used in large areas of natural forest which are at risk from deforestation. Because these forests are likely to have high ecological significance, the biodiversity management element of the project is vital in ensuring the project has a positive impact.

The biodiversity section of the management plan is based on good practice guidance issued by the Convention on Biological Diversity[28], the Global Invasive Species Programme[29], and Forest Trends[30]. The scope of guidance offered by these organisations is in more depth than contained here in the Natural Forest Standard; where more detail is required, refer to the referenced publications.

The project should ensure that there is 'no net loss of biodiversity' arising from the project's existence in comparison with a baseline situation without the project.

To achieve this, the standard requires projects to take appropriate measures to protect existing biodiversity within the project zone. The biodiversity policy of the project shall be informed by an understanding of the ecosystems and species present within and around the project area, and the likely causes of biodiversity loss.

The standard requires that project proponents complete a) a descriptive summary of important *endemic flora and fauna* within the project area, the *threats* facing them, and the project *mitigation activities,* and b) The project's biodiversity impacts should be assessed using the Normative Biodiversity Metric[31], described in the biodiversity assessment section of the quantification of project benefits section.

A summary of the different threats to the endemic species of the area, and a description of the activities of the project designed to mitigate these threats to biodiversity should be provided in the project management.

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[27] United States Agency for International Development, 2011. *REDD + and Carbon Rights: Lessons from the field*. Property Rights and Resource Governance Project (PRRGP) Working Paper. Available at: http://usaidlandtenure.net/events/usaid-events/redd-presentation/carbon-rights-framework-final.pdf/at_download/file

[28] http://www.cbd.int/

[29] Global Invasive Species Database. Available at: http://www.issg.org/database/welcome/

[30] http://www.forest-trends.org/

[31] Jarrett, D, 2011. Assessing Organisational Biodiversity Performance. Available at: http://ecometrica-cms-media.s3.amazonaws.com/assets/media/pdf/assessing_organisational_performance.pdf

2.2.1 Threats to Biodiversity

The threats to biodiversity within the project area may fall within the following categories, threats which are deemed to be significant threats to biodiversity within the project area should be documented. This section provides some guidance for how the project could mitigate these threats. These are examples; there may be other threats within the project area which should be documented and addressed.

The information gathered in these categories, and the extent of the measures implemented by the project to mitigate potential threats should be recorded in the management plan.

2.2.2 Habitat loss

Habitat loss is generally agreed to be the biggest driver of global biodiversity loss [32]. The project should reduce habitat loss in the project area associated with deforestation and degradation within the project area.

Other areas of the project documents, including the risk mapping section shall specifically address habitat loss. The drivers of habitat loss and necessary measures to mitigate habitat loss are a key component of the risk mapping process. This analysis will be considered sufficient to inform the project's biodiversity policy in mitigating this threat.

2.2.2.1 Invasive species

Invasive alien species are also considered to be a globally significant threat to biodiversity, according to the Global Invasive Species Programme (GISP)[33]. With regards to invasive species, the project should follow the three management stages of the GISP:

- Prevent the release and spread of non-native animal and plant species into areas where they can cause damage to native species and habitats and to economic interests;
- Ensure a rapid response to new populations can be undertaken; and
- Ensure effective control and eradication measures can be carried out when problem situations arise.

For more guidance on invasive species management review the referenced publications of the Global Invasive Species Program (GISP)[34] whose research in this area should guide the project approach.

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[32] Slingenberg, A et. al. 2009.*Study on understanding the causes of biodiversity loss and the policy assessment framework*. European Commission. Available at: http://ec.europa.eu/environment/enveco/biodiversity/pdf/causes_biodiv_loss.pdf

[33] Global Invasive Species Database. Available at: http://www.issg.org/database/welcome/

2.2.2.2 Hunting and Bushmeat

Consumption of bushmeat in tropical and sub-tropical forests is often an important source of food to forest communities[35]. The disappearance of wildlife as a consequence of over-harvesting of wildlife can have a serious impact on the well-being of forest communities. The Convention on Biological Diversity[36] recommends that the key to mitigating the over-harvesting of bushmeat is to focus on the trade in bushmeat, not subsistence consumption.

The majority of NFS projects are likely to be based in developing countries located in tropical and sub-tropical areas, which means managing and mitigating bushmeat trade within project areas will be critical to ensuring that the project achieves a 'no net loss' of biodiversity.

The diversification of income sources within local communities has been found to be the most successful way to reduce bushmeat trade and over-hunting. The hypothesis being that hunters will stop hunting only if a more lucrative activity is available; this has been applied in a number of different projects:

Successful examples include:

- Bee-keeping initiatives in Cameroon
- Bead-making in Kenya
- Fair trade agriculture in Ecuador
- Improving domestic livestock productivity
- Community-based wildlife management and tourism
- Working together with local farmers to minimise the burning of crop residues or natural areas.

Where the project seeks to enable alternative livelihood activities, this shall be with the Free, Prior and Informed Consent of the community involved in the project, and it should be ensured that there will not be any associated negative social effects on the community. For more guidance on bushmeat trade,

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[34] Wittenberg, R., Cock, M.J.W. (eds.) 2001. *Invasive Alien Species: A Toolkit of Best Prevention and Management Practices.* CAB International, Wallingford, Oxon, UK, xvii – 228. Available at: http://www.gisp.org/publications/toolkit/Toolkiteng.pdf

[35] Nasi, R., Brown, D., Wilkie, D., Bennett, E., Tutin, C., van Tol, G., and Christophersen, T. (2008). Conservation and use of wildlife-based resources: the bushmeat crisis. Secretariat of the Convention on Biological Diversity, Montreal, and Center for International Forestry Research (CIFOR), Bogor. Technical Series no. 33, 50 pages.

[36] Secretariat of the Convention on Biological Diversity, 2011.*Livelihood Alternatives for the Unsustainable use of Bushmeat*. Technical Series No. 60, Montreal, SCBD. Available at: http://www.cbd.int/doc/publications/cbd-ts-60-en.pdf

review the referenced publications of the Secretariat of the Convention on Biological Diversity[37], who have carried out much useful research in this area.

2.2.2.3 Project development

Where there are development projects planned for local communities, or there is anticipated to be a large inflow of resources into the project area as a consequence of the project, the project shall assess what effects this will have on biodiversity within and around the project area. For example, the building of new transport infrastructure could have negative effects on biodiversity as new areas become accessible to hunters and loggers. The project shall seek to ensure that the effect on biodiversity is minimised. Where a development project is expected to impact significantly on biodiversity a biodiversity impact assessment should be carried out. For more guidance on this process, see Forest Trends guidance on biodiversity impact assessment[38].

[37] See footnote 20

[38] Richards, M. and Panfil, S.N., 2011. *Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ Projects: Part 1 – Core Guidance for Project Proponents*. Climate, Community & Biodiversity Alliance, Forest Trends, Fauna & Flora International, and Rainforest Alliance. Washington, DC. Available at: http://www.forest-trends.org/documents/files/doc_2981.pdf

3.0 Quantification of Project Benefits

To generate Natural Capital Credits the project must quantify its carbon benefits and biodiversity impacts using approved methods.

Transparency of Evidence and Assumptions

To maintain a transparent account of the evidence and assumptions used throughout the quantification of carbon and biodiversity, methods, dates, locations and identities of people undertaking measurements and estimates should be recorded.

Training and Equipment

The personnel involved in quantification of carbon and biodiversity metrics should have sufficient training and be properly equipped to carry out the tasks assigned to them.

3.1 Carbon

A project's carbon benefit is the annual sum-total reduction in CO_2 emissions to the atmosphere and sequestration of CO_2 from the atmosphere that occurs as a result of the project activities, expressed in tonnes of carbon dioxide per year (tCO_2/yr).

Projects may, but are not required to, quantify non-CO_2 greenhouse gas benefits, such as avoided emissions of methane (CH_4) or nitrous oxide (N_2O).

Project should use a risk-based approach to quantifying the carbon benefits. This involves the following steps:

1. Mapping of vegetation to be conserved and restored within the project area and identification of potential leakage zones.
2. Estimation of carbon stocks within the project area, and leakage zones at the start of the project.
3. Stratification of the project area and leakage zones according to the risk of deforestation and forest degradation into the NFS risk categories.
4. Calculation of emissions expected under the baseline scenario.
5. Monitoring of carbon stocks over the course of the project in the project and leakage area.
6. Calculation of net annual carbon benefits.

The carbon benefit from conservation of forests at risk of deforestation and degradation in a given year is calculated as follows:

Carbon Benefit = (Annualised Baseline Emission - Monitored Emissions) - Leakage

The carbon benefit from restoration activities should be calculated as follows:

Carbon Benefit = (Monitored Sequestration - Monitored Emissions)

Leakage monitoring should be carried out annually throughout the project period.

3.1.1 Mapping Project and Leakage Areas

The first stage in quantifying the carbon benefits of the project is to accurately map the areas where conservation and restoration activities will be applied. The vegetation types in each of these areas should be recorded, including the state of degradation.

Mapping should show:

- Areas to be covered by conservation activities
- Areas designated for forest restoration
- Potential leakage zones

Sources of data and assumptions used in mapping should be clearly described, including references to data, estimates of uncertainty and/or classification errors.

Leakage

Potential leakage zones should also be identified and mapped at this stage. Leakage zones should include any areas outside the project where activities of communities or individuals, including agriculture, livestock rearing, firewood collection, charcoal production, timber extraction or similar resource use activities may be displaced to as a result of any planned project activities.

The NFS does not require projects to estimate the potential impacts of project activities on national or international markets.

3.1.2 Initial Carbon Stock

The next stage of calculating the carbon benefits of the project is to quantify the initial carbon stock within the project area and the area where leakage will be monitored.

Quantification of carbon stocks may be carried out using Approved Tier 1 or 2 Maps, or Tier 3 Inventory methods, combined with remote sensing, see figure 5 below:

	Scale	Data
Tier 1	Global	Global carbon data sets
Tier 2	Regional	Regional carbon data sets
Tier 3	Local	Local, based on measurements from within the project area combined with remote sensing

Figure 5: Characteristics of Tiers of data sources

3.1.2.1 Approved Tier 1 and 2 Maps

Maps of forest carbon may only be approved for use in NFS projects by the NFS Technical Panel.

Tier 1 and 2 maps will normally have been produced from a combination of remote sensing and inventory data. The approval process may result in adjustment of the carbon values to reflect a reasonably conservative estimate of carbon stocks.

The project may use Tier 1 or 2 maps of above-ground carbon (AGC), or above and below-ground carbon (BGC), and or soil organic carbon (SOC) where it can be demonstrated that land use changes expected in the project area would result in losses of these stocks of carbon.

Where more than one Tier 1 or 2 maps are available for a given area, the project should select the map that is most likely to accurately represent the carbon stocks in the project area and should provide evidence for this selection. Where approved Tier 1 or 2 maps are not available, projects may use Tier 3 inventory methods.

List of approved Tier 2 Maps:

NASA JPL *(subject to review)*

3.1.2.2 Tier 3 Inventory Methods

The GOFC-GOLD Source Book[39]describes suitable methods for estimating carbon stocks within a project area.

The carbon stock values adopted should provide a conservative estimate of carbon stocks at the start of the project. The maps should therefore be recent, and have a known error. Carbon stock maps can be derived from a combination of remote sensing data and ground-based survey or default values of carbon stocks.

The validity of the carbon stock map will be assessed by the NFS technical panel, who will recommend a discount factor to apply to reflect the degree of uncertainty. The methods and reference data used to generate carbon maps should be included in the Project Design Document.

3.1.3 Baseline Assessment

The Standard requires projects to use approved methods to provide a credible, conservative, baseline scenario of emissions from deforestation and degradation in the absence of the project activities. The Standard recommends a risk-based approach to provide baseline emissions scenarios.

3.1.3.1 Background to Baseline Quantification for REDD Projects

There are a number of causal factors widely cited as being responsible for deforestation; these include shifting cultivation, logging, expansion of ranch land and commercial agriculture, mineral extraction and infrastructure expansion.

Causal factors vary considerably between and within countries. As with carbon stocks, risk factors may be mapped at global (Tier 1), regional (Tier 2) or local (Tier 3) levels. However, given the spatial variability of drivers and predisposing factors, it is difficult to capture local conditions within global scale (Tier 1) maps; the NFS therefore currently supports only Tier 2 and Tier 3 Risk mapping methods, as shown in Figure 6 below:

[39]GOFC-GOLD, 2010.*A sourcebook of methods and procedures for monitoring and reporting anthropogenic greenhouse gas emissions and removals caused by deforestation, gains and losses of carbon stocks in forests remaining forests, and forestation.*GOFC-GOLD Report version COP16-1. GOFC-GOLD Project Office, Natural Resources Canada, Alberta, Canada. Available at: http://www.gofc-gold.uni-jena.de/redd/sourcebook/Sourcebook_Version_Nov_2010_cop16-1.pdf

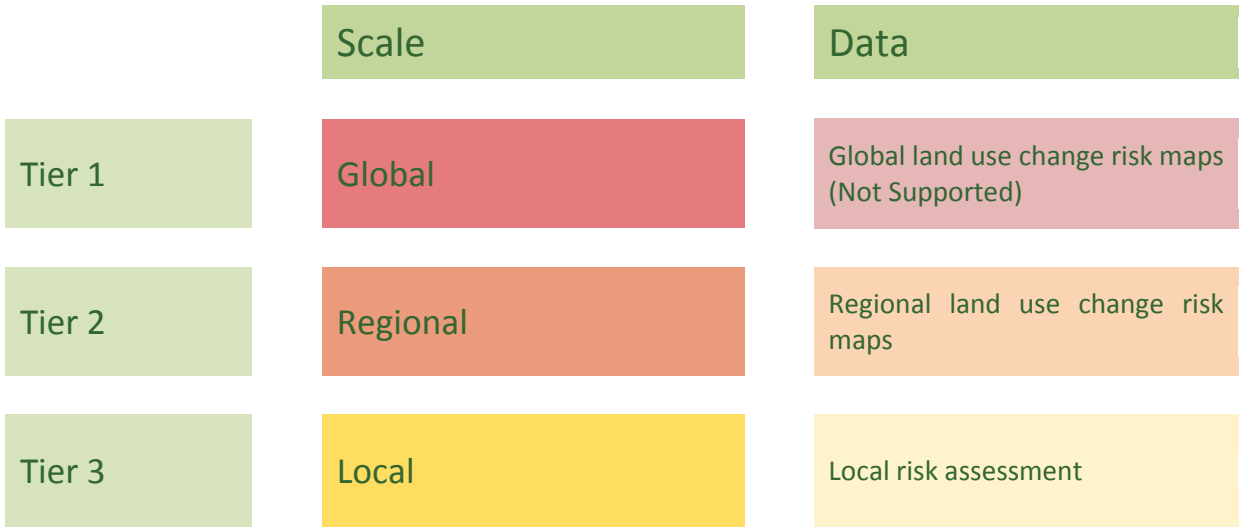

Figure 6: Tiers of data sources for risk-based baseline assessment

3.1.3.2 Predictive Modelling vs. Risk Assessment

Land use change is driven by many complex and interacting social, economic, political and demographic factors. There have been numerous attempts to predictively model deforestation; in 1999 Angelsen and Kaimowitz[40]reviewed over 140 models using a wide range of economic, demographic and technological inputs but found very limited evidence of reliable or accurate predictive capability.

More recently attention has focused on assessing areas that are at risk of land use change (rather than predicting the rate of loss at a specific location). The use of geographic information systems (GIS) helped many researchers find strong positive relationships between the rate of loss in areas that are accessible to roads, rivers, existing agriculture and centres of population[41].

[40]Angelsen, A and Kaimowitz D, 1999.*Rethinking the causes of deforestation: lessons from Economic Models*.A World Bank Paper. Available at: http://www.infoiarna.org.gt/media/file/areas/economia/documentos/artic/2-rethinking%20causes%20of%20deforestation.pdf

[41]http://www-personal.umich.edu/~thoumi/Research/Carbon/Forests/Forests,%20REDD/Castillo-Santiago_et_al.pdfCastillo-Santiago, M.A., A. Hellier, R. Tipper and B.H.J. de Jong, 2003. Carbon emissions from land-use change: an analysis of causal factors in Chiapas, Mexico. *Mitigation and Adaptation Strategies for Global Change* 12(6): 1213-1235

In recent years more work has been carried out on identifying different land use change risk factors[42].Assessments of forests and woodlands in a number of situations have found that forest biomass is at risk wherever the "ACEU" rule applies (see figure 7 below).

Risk assessment does not aim to provide an accurate prediction of the rate and location of loss of forest carbon into the future but, in the same way that risk assessment is used to underpin an insurance premium it can be used to provide a set of broad categories with outcomes falling into a range over a long period of time.

The NFS provides a normative process for setting conservative values for loss of biocarbon from forests in 5 broad risk categories. The process is conservative because it uses the lowest value in the range of each category. The value used for the baseline is therefore not a predicted value but a conservative estimate to apply to forest with a given combination of risk factors.The advantage of a risk assessment approach is that the qualification of areas into different risk categories can be objectively improved over time.

The "ACEU" rule states that any forest or woodland in a developing country context is likely to be deforested within a meaningful period for climate change mitigation wherever it is:

- ✓ **A**ccessible – local actors able to reach the area
- ✓ **C**ultivable – land can be used for subsistence or commercial crops
- ✓ Has **E**xtractable value – forest biomass has economic value
- ✓ **U**nprotected – land tenure regime does not prevent extraction or conversion

It is possible to define simple, verifiable criteria for the ACEU parameters within any given country or region. For example for a project in the Sofala province of Mozambique, the local conditions were such that the following criteria were deemed suitable:

[42]Grace, J., Ryan, CM., Williams, M., P Powell, P., Goodman, L., & Tipper, R., 2010. A pilot project to store carbon as biomass in African Woodlands. *Carbon Management* 1, (2) in press.

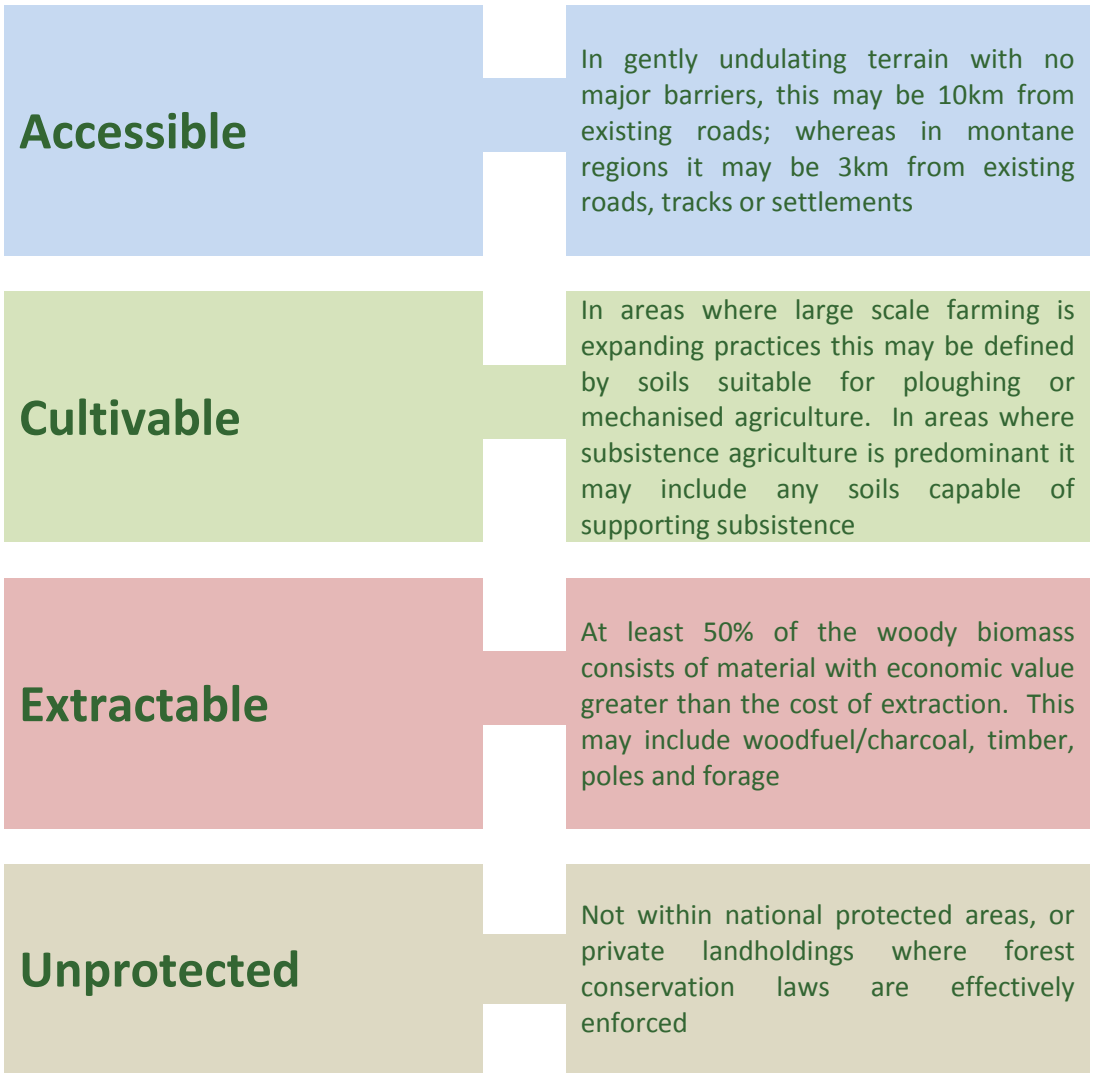

Figure 7: Description of the ACEU Criteria for Forests at Risk of Conversion or Degradation[43]

[43]Adapted from Tipper, R. (2008) A Simple Rule-Based Approach for Setting REDD Project Baselines. A discussion paper presented to the conference on Carbon and Communities in Tropical Woodlands, Edinburgh 16th-18th June, 2008. And, Box 1. ACEU Rules

3.1.3.3 The Outputs of Risk Assessment

The outputs of both Tier 2 and Tier 3 Risk Assessments should be a map of the project area and leakage zones, with areas categorised into the following classes:

Risk category	Expected % biocarbon loss over 20 years	Claimable Carbon loss
Very High	>70%	0.70
High	50 to 70%	0.50
Medium	25 to 50%	0.25
Low	2 to 25%	0.05
Very Low	<5%	0

Figure 8: Risk Category Model

There are two approved approaches to risk mapping - **Tier 2** (Approved Regional Risk Maps) and **Tier 3** (Local Assessment).

3.1.3.4 Tier 2: Approved Regional Risk Maps

Tier 2 approved regional risk maps are maps produced from models or spatial analysis of drivers and predisposing factors of land use change within a given region. Tier 2 maps should be used wherever a

project is taking place within a region with an approved map unless a project provides reasonable evidence that the regional model is not applicable to its specific area.

Approved Regional Risk Maps List:

SimAmazonia Risk Model *(subject to review)*

3.1.3.5 Tier 3 Local Risk Assessment

Where approved regional risk maps are not available it is possible for projects to conduct Tier 3 assessments of the risk of loss of biocarbon to natural forests. This section provides a step-by-step guide to conducting Tier 3 assessments. The methodology is compatible with the Natural Forest Standard (NFS) risk assessment categories and is intended for use in setting baselines for the estimation of carbon and biodiversity benefits of forest conservation. The output from the risk assessment methodology will be a risk map of the assessed area, with areas stratified into the five NFS risk-model categories:

Step 1: Define project boundaries and key features

The first step of the Tier 3 risk mapping exercise is to map the project area and accurately define the boundaries. The map should include relevant geo-information such as the location of roads, settlements, rivers, protected areas, indigenous lands or private land outside the control of the project.

Areas that may be at affected by leakage from the project should also be defined and included in risk assessments. This area is important to define because land use changes occurring in this zone will need to be assessed to determine whether they are the result of project activities.

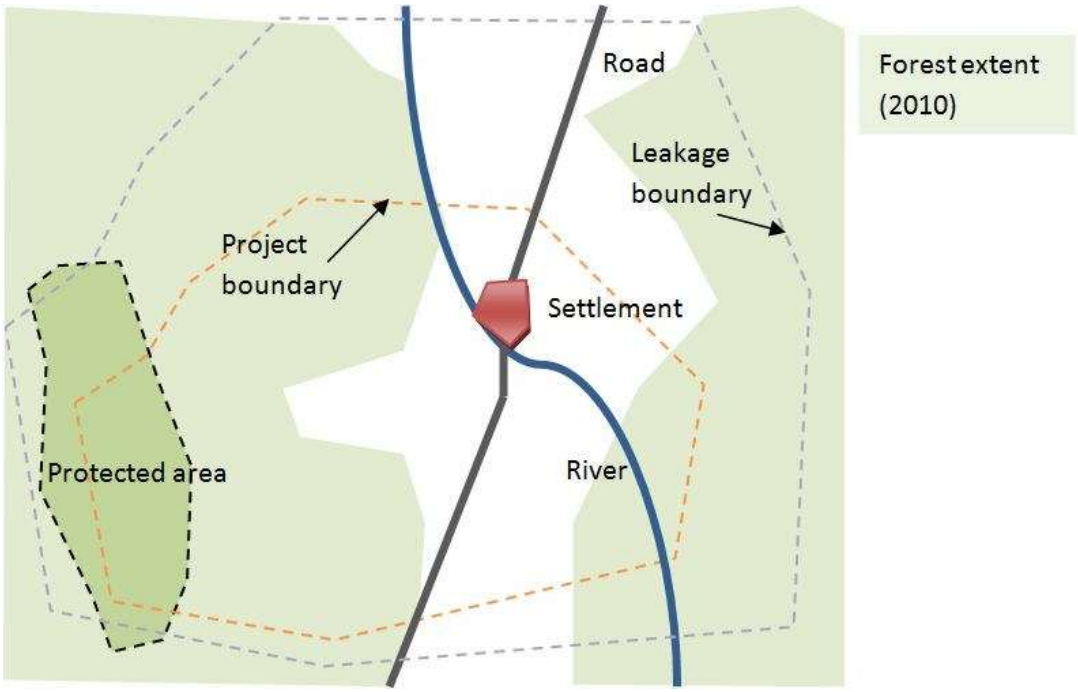

Figure 9: Example output, showing hypothetical forest (shaded light green) areas near to road, river and settlement. Project boundary is dashed orange line and leakage boundary is dashed blue line.

Step 2: Document the relevant historical context

An understanding of current threats within the project area should be viewed within the context of historical information of land use and land use change in the region. Land use change is often associated with periods of social, economic and demographic change, such as waves of migration, agricultural investment or growth in infrastructure. Analysing past trends in deforestation can help inform projects of likely drivers of deforestation within the project area.

The information compiled on historical context should be concise but informative, and should provide a timeline of key events and trends over the past 20 years, including:

- Major periods of development in the area, e.g. waves of migration, road building, agricultural investment, conflicts, extractive industries.
- Population trends.
- Types of activities associated with land use change, e.g. cattle ranching, subsistence agriculture, fuelwood/charcoal collection and notes on their extent at different periods – in particular, rapid growth of a sector or activity should be noted.

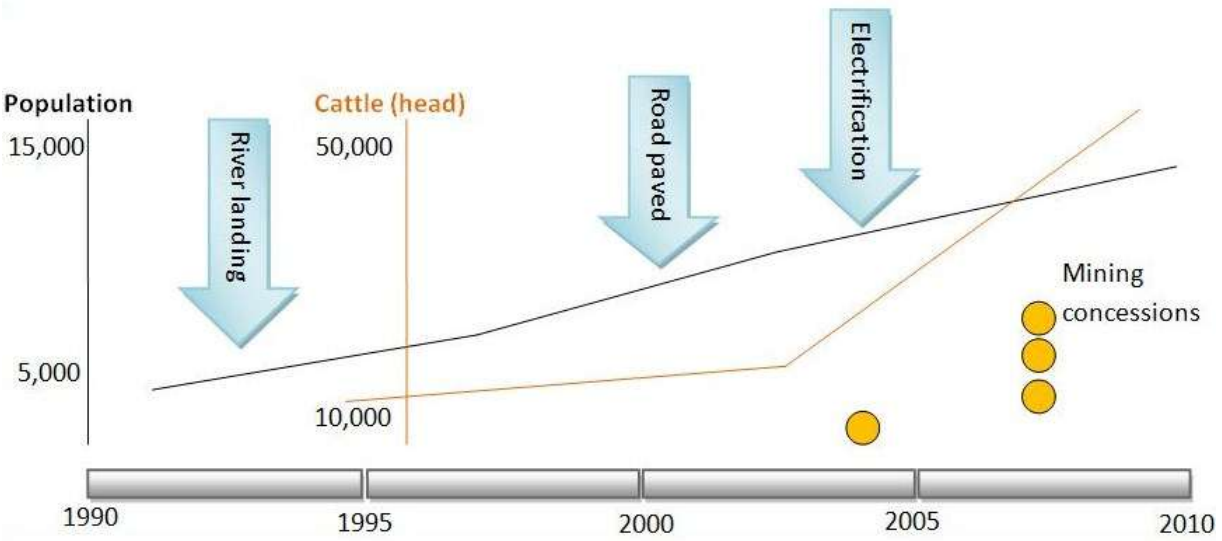

Figure 10: Example infographic illustrating some key hypothetical events and trends relevant to the drivers of land use change within a project area.

Step 3: Identify and map potential threats

From historical information and maps of land use change over the past 20 years an understanding of the main threats to the project area, and within the leakage boundary, should be derived.

Communication with local communities, local government officials, conservation agencies, and other relevant stakeholders should be used to provide more information on the significance and location of different threats. Threats that are declining or of limited relevance should not be included.

The severity of each threat should be estimated in terms of the percentage above-ground biomass typically lost when an impact occurs (see figure 11 below). Demand should be listed as Rising, Steady or Falling (as indicated by prices and activity levels within the region.

Threat	Severity (% biomass loss)	Demand
Illegal selective logging of hardwoods	Low impact (10% biomass)	Steady
Forest conversion to ranching	Sever (80% biomass)	Steady
Mining	Severe (100% biomass)	Rising
Extraction of wood for fish curing	Moderate (20% biomass)	Steady

Figure 11: Hypothetical threats for example project area.

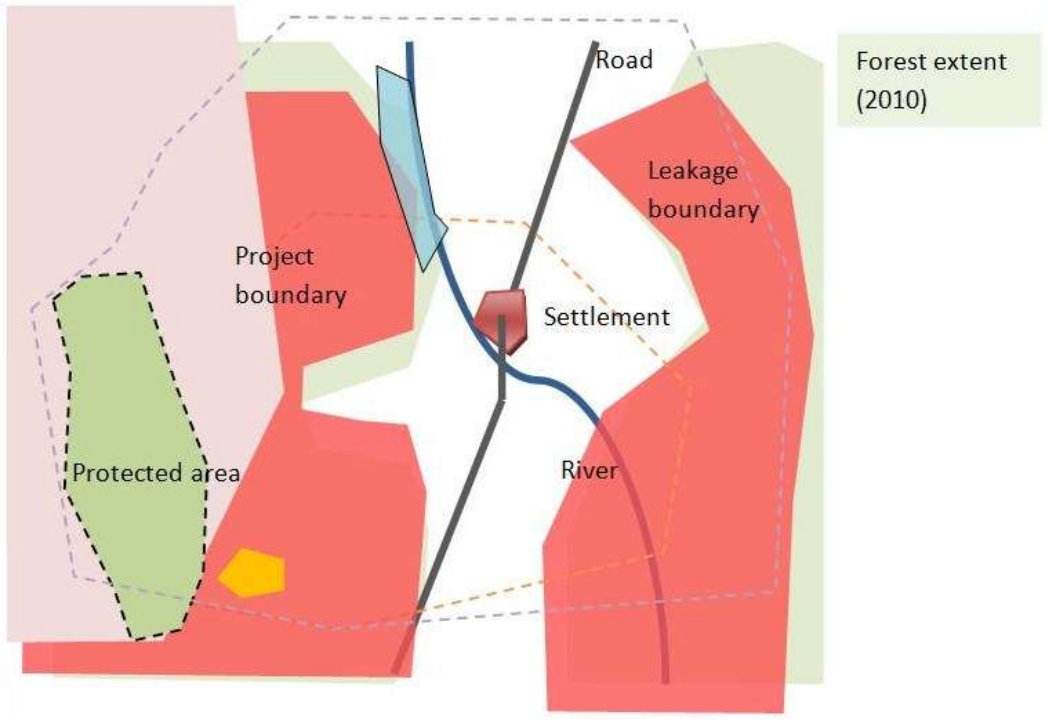

Figure 12: Map showing areas affected by threats listed in the table above. Lilac = illegal logging; Pink = conversion to ranching; Orange = mining; Blue = wood extraction for fish curing.

Step 4: Set criteria for suitability, accessibility and protection

The criteria for accessibility, suitability and protection should be set for each relevant threat within the project and leakage areas. This should be done with reference to literature and local knowledge. Good practice and methods for categorising risk criteria will be developed and shared between the users of the NFS.

The following two tables are examples of criteria for suitability, accessibility and protection for risk of charcoal extraction in woodlands of central Mozambique[44].

Accessibility	Inaccessible	>10km from a paved road, steep or rocky slopes
	Accessible	Within 10m from a paved road or 5km from a track, gently undulating terrain
	Easy Access	Within 5km of a paved road, gently undulating terrain
Suitability (Cultivable/Extractable value)	Unsuitable	Less than $10m^3$/ha charcoal suitable trees
	Suitable	Less than 10 to $30m^3$/ha charcoal suitable trees
	Highly Suitable	More than $30m^3$/ha charcoal suitable trees
Protection	Protected	National Parks
	Unprotected	Outside National Parks

Figure 13: Example of criteria for suitability, accessibility and protection for risk of charcoal extraction in woodlands of central Mozambique

Setting these criteria should be done based on consideration of the nature of each of these individual threats, as in the table below:

[44] N'hambita Community Carbon Project, 2009. [online] Available at:http://www.miombo.org.uk/

Setting Accessibility Criteria	Process
Does threat utilise vehicular access on a paved road?	Map paved road network, consider future plans for road development, estimate distance
Does threat utilise logging paths for access?	Map logging path network, consider speed at which logging path network is growing.
Is river/boat access relevant?	Map river network, consider distance from rivers which is under threat.
Is foot access from roads/settlements relevant?	Consider distance which proponents are likely/prepared to travel by foot
Is the threat such that no accessibility criteria should be applied? (for example: with mining, access will usually not affect the degree of threat)	Take no action and consider the area to be easy access

Figure 14: Example criteria for suitability, accessibility and protection for risk of charcoal extraction in woodlands of central Mozambique

Step 5: Rule out areas that are Protected, Inaccessible or Unsuitable

Map the areas that are effectively protected, inaccessible or unsuitable for the activities associated with the threats identified. These areas should be categorised as very low risk. The remaining areas should be considered as having some level of risk, and will be considered in the following steps.

Project developers may take account of planned infrastructure developments or changes to land protection status.

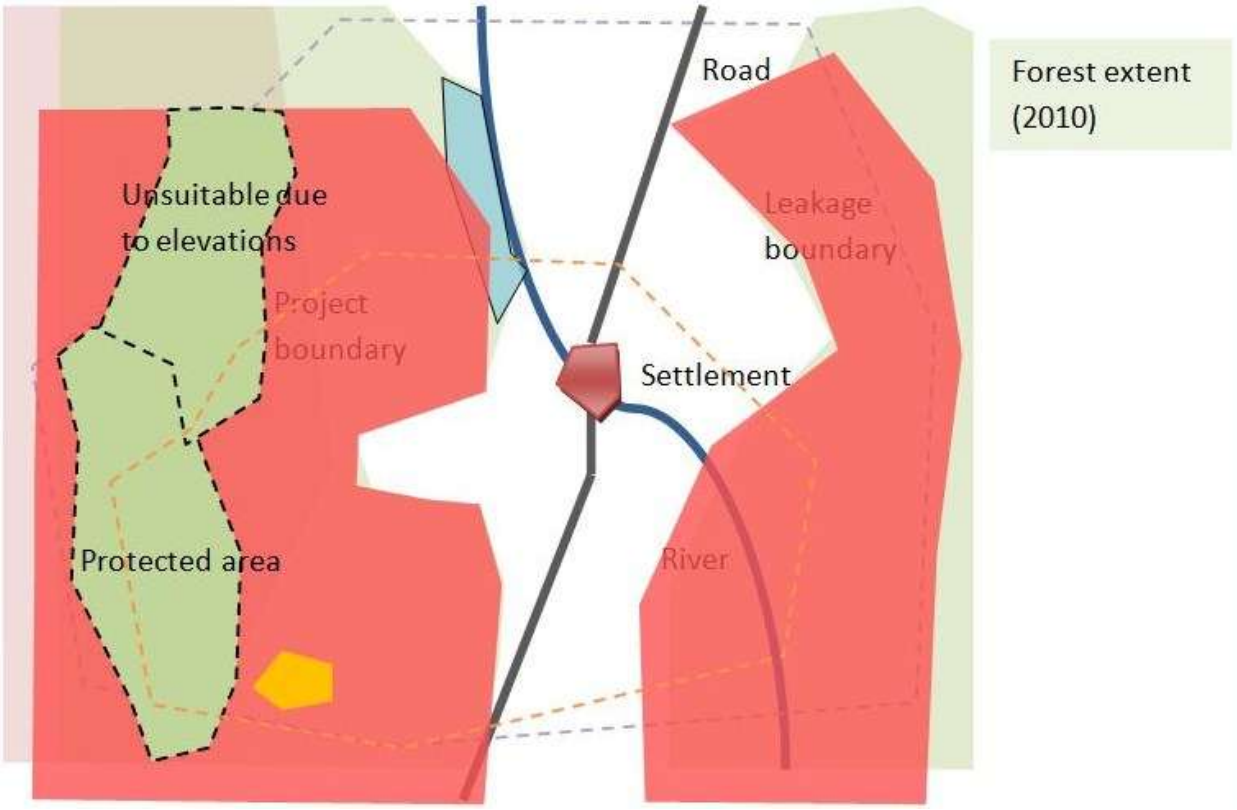

Figure 15: Areas shaded dark green categorised as very low risk, according to criteria.

Step 6. Map Risk According to Access, Suitability and Demand

Having ruled out areas at very low risk, the next step is to map the areas at risk. The flow diagram below should be used to classify areas according to accessibility, suitability and demand.

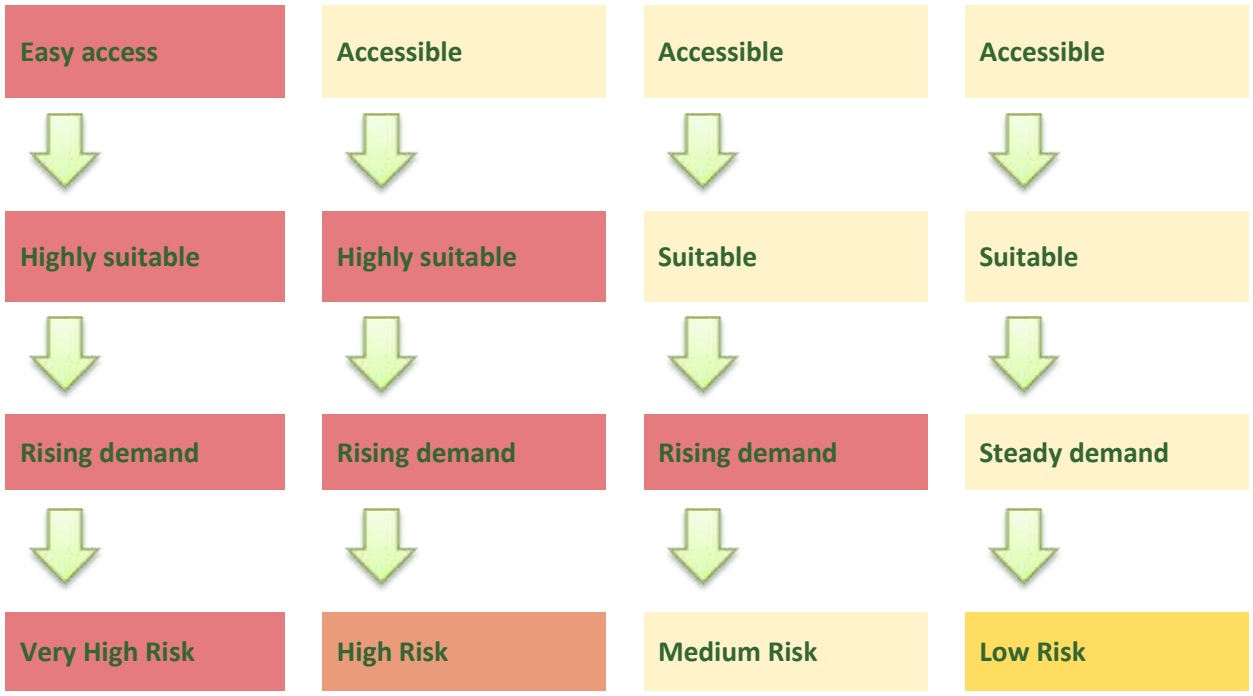

Figure 16: Classification of remaining forest areas using criteria of accessibility, suitability and demand.

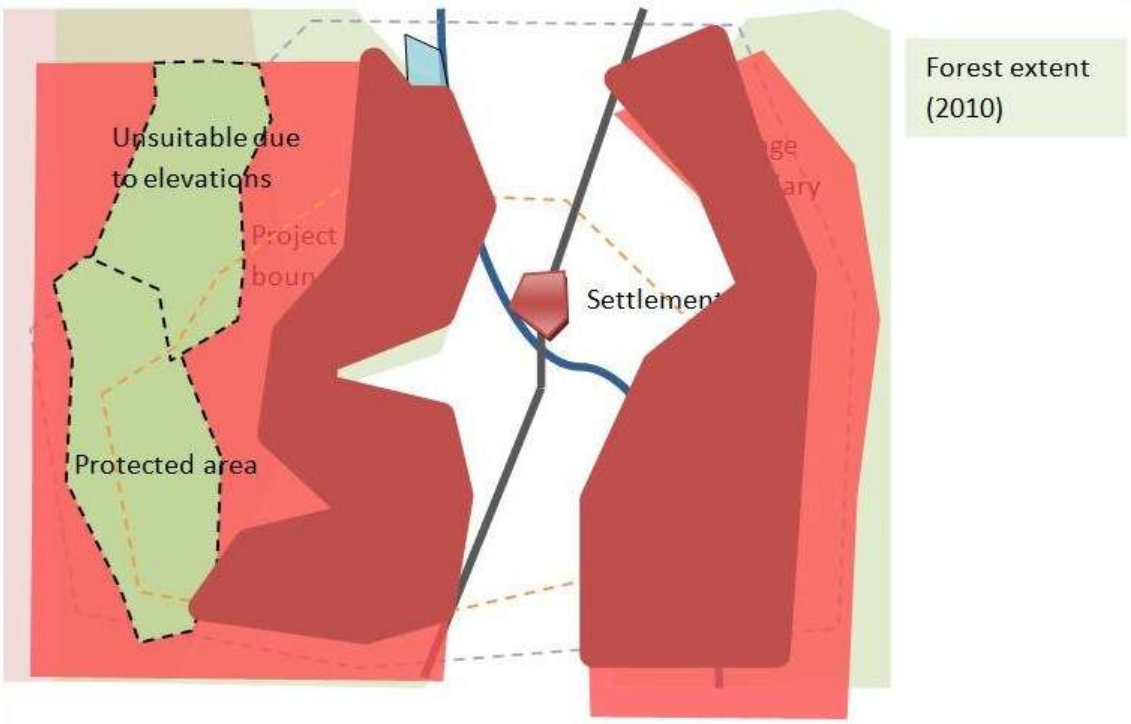

Figure 17: Classification of forest areas

Step 7: Combine and Review

Having produced preliminary map of risks for each of the identified threats, it is then necessary to combine the risk maps into a single risk map for the project and leakage area.

For areas that are affected by two distinct threats, e.g. selective logging and conversion to agriculture, take the most severe threat (usually relating to conversion to agriculture or pasture should be considered first), the risk to any remaining carbon at risk should then be calculated.

For example, a forest with 100 tC of moderate Risk of 80% loss + high risk of 20% loss:

Estimated emission baseline (tC) = 100 x {[0.25 x 0.8] + [0.7 x 0.2] x [1 - 0.25]}

The resulting maps should be sensed checked and, if necessary, adjusted to take account of other relevant factors such as expected road building or improvements to forest protection that can be reasonably anticipated.

These adjustments should be clearly justified, citing sources of evidence.

3.1.4 Monitoring of Project and Leakage Areas

3.1.4.1 Monitoring of Emissions from Deforestation and Degradation

Emissions of CO_2 from any human induced deforestation and degradation within the project area should be quantified annually for the duration of the project. It is recommended that the project should use a combination of remote sensing and ground based monitoring, as specified in the GOFC-GOLD[45].

The project should also monitor its operational emissions using a standard operational emissions assessment for Scope 1 and 2 activities (Scope 3 optional), according to the WBCSD/WRI Greenhouse Gas Protocol[46].

3.1.4.2 Monitoring of Carbon Sequestration

The quantification of carbon sequestered in areas subject to restoration and conservation should be monitored using a combination of remote sensing and ground based monitoring, according to GOFC-GOLD[47].

3.1.4.3 Monitoring of Leakage Zones

When indicators of leakage are found they should be investigated and, if possible, a negotiation to reduce or minimise these activities should occur. The project managers should where possible reduce leakage through improved project management and the encouragement of economic activities within the project area.

Any land use change and forest degradation that appears to result from displacement of activities from within the project area should be quantified using standard methods recommended in GOFC-GOLD Source Book [48], using the same methods for estimating carbon stocks within a project area.

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[45]GOFC-GOLD, 2010.*A sourcebook of methods and procedures for monitoring and reporting anthropogenic greenhouse gas emissions and removals caused by deforestation, gains and losses of carbon stocks in forests remaining forests, and forestation.*GOFC-GOLD Report version COP16-1. GOFC-GOLD Project Office, Natural Resources Canada, Alberta, Canada. Available at: http://www.gofc-gold.uni-jena.de/redd/sourcebook/Sourcebook_Version_Nov_2010_cop16-1.pdf

[46]World Business Council for Sustainable Development; World Resources Institute, 2001. The greenhouse gas protocol: a corporate accounting and reporting standard. Washington, D.C. Geneva, Switzerland. Available at: http://www.ghgprotocol.org/

[47]See footnote 27. Available at: http://www.gofc-gold.uni-jena.de/redd/sourcebook/Sourcebook_Version_Nov_2010_cop16-1.pdf

[48]See footnote 27. Available at: http://www.gofc-gold.uni-jena.de/redd/sourcebook/Sourcebook_Version_Nov_2010_cop16-1.pdf

3.1.5 Permanence

NFS projects should be designed and implemented to promote permanent conservation of carbon stocks and biodiversity. The aim is to build resilient conservation areas that are well governed, locally supported and aligned to economic development.

The relevance and appropriateness of specific measures to deliver permanence varies between project locations, so the NFS is not prescriptive about the measures to be implemented. This section provides some general guidance on how permanence can be promoted and how verifiers and risk assessors may evaluate the adequacy of these measures.

1. Understanding the nature of the threats
Projects should seek to understand of the nature of threats to the forest within the project area. Specifically, projects should identify and seek to understand the behaviour and motives of groups that present threats. Projects should consider whether the planned protection measures are likely to provide temporary respite or a long-term solution to the issues affecting these groups. Projects should consider the extent to which underlying problems such as income security and access to resources may be resolved in a way that provides a stable long-term relationship between these groups and the forest area.

2. Strengthening of legal frameworks protecting Natural Forests
Projects should consider the potential for using and strengthening local legal frameworks for protecting Natural Forests. The establishment of areas protected by local laws can, in some places, be an effective protection measure.

3. Sustainable Financial Models for Implementation
Projects should consider what the requirements will be for monitoring and enforcement of protection measures over the long term. Sustainable funding models for monitoring and enforcement should be created so that monitoring and protection can continue beyond the timeline of carbon credit sales.

4. Effective, Durable Governance Structures
Projects should establish effective, durable governance structures that can continue beyond the timeline of carbon credit sales. Governance structures need to have sufficient buy-in and authority to be sustainable. The FAO's "framework for assessing and monitoring forest governance"[49], while aimed at national level, provides a useful guide for assessing areas of weakness that may require attention.

5. Alignment of conservation with economic development
Projects should seek to develop an alignment between conservation of natural forests and economic development. Projects should consider how revenues from carbon credit sales can be invested in economic activities that are consistent with forest conservation.

[49] http://www.fao.org/climatechange/27526-0cc61ecc084048c7a9425f64942df70a8.pdf

3.2 Biodiversity Assessment

The project's biodiversity impacts should be assessed using the Normative Biodiversity Metric, following the steps described in this Biodiversity Assessment section.

Normative Biodiversity Metric

The Normative Biodiversity Metric (NBM) is a practical method used to provide a quantified assessment of the biodiversity value of any given area under ownership or management control. The NBM is similar to the concepts of habitat hectares and mean species abundance which are also designed to provide quantified information on the biodiversity value of an area.

3.2.1 Step-by-step Biodiversity Assessment

The Normative Biodiversity Metric (NBM)[50] is a practical method used to provide an assessment of the biodiversity value of any given area under ownership or management control. The NBM is similar to the concepts of habitat hectares[51] and mean species abundance [52] which are also designed to provide quantified information on the biodiversity value of an area.

This section provides a step-by-step guide to carrying out an NBM assessment in an area subject to an NFS project, to calculate a 'biodiversity rating' of carbon credits originating from the project. After reading this section, the project proponents should complete the associated NBM assessment template.

The NBM is designed to assess the habitat quality of all the land within the project zone, providing a quantified rating of the biodiversity value of the carbon credits. When these carbon credits are sold on the NFS registry, potential buyers will be able to use this information on the NBM score of the carbon credit to inform their buying decision. This assessment process will be used to verify that the project is meeting the 'no net loss' biodiversity commitment of NFS projects.

[50] Jarrett, D, 2011. Assessing Organisational Biodiversity Performance. Available at: http://ecometrica-cms-media.s3.amazonaws.com/assets/media/pdf/assessing_organisational_performance.pdf

[51] Parkes, D et al., 2003. Assessing the quality of native vegetation: The 'habitat hectares' approach. *Ecological Management & Restoration,* 4 Available at: http://www.forest-trends.org/documents/files/doc_578.pdf

[52] Alkemade, R *et al.* 2009. Globio3: A Framework to Investigate Options for Reducing Global Terrestrial Biodiversity Loss. *Ecosystems 12(3), pp. 374-390.*Available at: http://www.globio.info/downloads/14/fulltext%20%28artikel%20GLOBIO%29.pdf

Step 1: Identifying Eco-floristic zones

The metric is based on a scale of ecosystem intactness, specific to the ecosystems within the project area. The first step in the assessment process is therefore to define the eco-floristic zone specific categories (see table below which will be used in the metric, so which eco-floristic zone(s)/eco-region the assessed land is in must be established.

The FAO (Food and Agriculture Organisation) eco-floristic zones [53] definitions are a useful source with which to identify the different habitats present within each eco-floristic zone. Other sources which provide similar information are the 'Bailey Eco-regions of the continent' map[54], or the WWF's terrestrial eco-regions map[55].

These bio-geographical maps will allow the assessor to identify the habitat(s) which should be considered 'pristine' in each region. This may also be done in conjunction with local or regional ecological knowledge. For example, within the tropical rainforest eco-zone, the FAO analysis suggests 6 different habitats which may be typical to this eco-floristic zone as a result of variations in the meteorology, hydrology or altitude within the zone.

Step 2: Defining the NBM scale

Having identified the habitats within the project area which are pristine within the eco-floristic zone, the NBM assessment scale should be produced. Using the generic descriptors of each category, the eco-floristic zone specific scale should be produced. Identifying the likely occurrences of habitats within the eco-floristic zone is important for simplifying the classification process.

NBM eco-floristic zone specific scales will be developed over time, and will be collated and available on www.ecometrica.com, streamlining the assessment process.

Below is an example of a completed pristineness scale for a project operating in the 'tropical rainforest' eco-floristic zone:

[53] Food and Agriculture Organisation of the United Nations, 2000. *Global Ecological Zones*. Available at: http://www.fao.org/geonetwork/srv/en/metadata.show?id=1255

[54] ftp://ftp.ngdc.noaa.gov/Solid_Earth/Ecosystems/CEOS_Ecoregions/datasets/b03/reprints/bec1.htm#topBailey, R.G. and H.C. Hogg, 1986.A world eco-regions map for resource reporting.*Environmental Conservation*,13, (3) pp. 195-202

[55] Olson, D et al., 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. *Bioscience*, 51, (11). Available at: http://www.worldwildlife.org/science/ecoregions/WWFBinaryitem6498.pdf

Category	Generic Descriptors	Likely occurrences in Tropical Rainforest Eco-floristic Zone
5 – Pristine	Land is inaccessible, no roads or navigable rivers. Can be small, indigenous communities present	**Tropical Rainforest** Areas of primary rainforest where there are only small indigenous communities present. The inaccessibility of the forest precludes the possibility of access from loggers or commercial hunters, or tourists. The indigenous communities may use forest resources but species populations are stable.
4 – Minimal use	Original habitat and species distributions mostly intact; however, the area is subject to minor human activity which has a small impact on ecosystem functions.	**Disturbed Rainforest** Areas of primary rainforest which have been impacted on in relatively minor ways by human activity. Hunting, harvesting of non-timber forest products, evidence of selective logging, or high levels of tourist activity in the area.
3 – Impacted	These areas are notionally still natural areas, but degraded such that many indigenous species are not present.	**Rainforest fragments, degraded forest** In vicinities or roads and towns, strips of original forest will remain, but cut-off from main areas of habitat. Areas subject to high levels of hunting, such that many species and ecological functions are absent.
2 – Converted	Areas of habitat which have been converted to a different type of land cover. Gardens, parklands, grazing areas, low-intensive farmlands for example.	**Low secondary vegetation** Secondary vegetation such as scrub, thicket, brush which occurs when the original rainforest is removed/burned/destroyed and the soil does not recover its potential for regrowth of the rainforest. **Grazing grasslands** Former rainforest land now bearing grasses and possibly undergoing periodic burning and grazing, e.g. Imperata grasslands. Some of these grasslands provide useful environmental functions such as maintaining water regimes and soil stability, but only provide habitat for a small number of generalist species.
1 – Monoculture	High intensity production of one crop which causes the homogenisation of large areas of landscape.	**Monocultures** Intensive agriculture areas, normally soybean production in the Amazon. These areas do not provide natural habitat for any species. Other monoculture plantations common in converted Amazon land include eucalyptus, sugar cane and corn.

		Barren unused land Barren land devoid of plants or vegetation which can provide habitat for indigenous species. Following the closure of a mine, or the abandonment of some man-made structure, this is the first step in the process of rehabilitation and natural reclamation of land.
0 - Artificial	Areas which have been developed, built up areas, or areas where no organic vegetation remains.	**Roads** Tarmac roads which have been constructed through the rainforest. **Active mines** Open-cast mines currently in operation.

Figure 18: Example completed pristineness scale

Step 3: Classifying habitat zones

The next step is to classify the habitat zones into the pristineness categories of the table above. Initially, remote sensed images will be used to identify the distinct habitat zones within the project area. This should include all areas within the defined project boundaries. Artificial areas (0) and monoculture areas (1) will be straightforward to identify in most cases using the designed scale.

Following the desk-based assessment, there will be a ground-truthing stage which will involve:

- Survey areas which were identified as having a high degree of ecosystem intactness at the remote imaging stage, to establish whether there are any signs of hunting, or resource harvesting in the area which has affected the ecosystem function – if these are found the area should be considered a minimal impact area (4) – if these are not present, the area should be considered a pristine area (5).
- Survey areas initially thought to be impacted (3) and converted (2) to establish that the initial assessment was correct. For areas to be considered converted the original land cover must have been removed and replaced with another land cover. An impacted area still retains the initial land cover, but human activities have significantly degraded the land – these areas should have restoration potential, whereas converted areas may be more difficult to restore, and take longer to return to a high degree of intactness.

Each distinct project zone will then be assigned to a pristineness class.

Step 4: Endangered species presence

The next stage is to assess and document presence of endangered species in project areas. The project will have more value for biodiversity if the conservation of natural forest also contributes to the

protection of endangered species - the IUCN red list[56] classifications will be used to define what is and isn't an endangered species - initially mammals will be used, because the red list data is most complete for mammals.

For each endangered mammal species present within a distinct habitat zone, the NBM score for that area will be subject to an uplift of 0.5, up to a maximum uplift of 5.

Initially, the NFS will only consider the distribution of endangered mammals (in very small project areas, the presence of amphibians may be more indicative of localised biodiversity value, because amphibians do not travel over large ranges, so can be more indicative of ecosystem function), although where a project wishes to use an alternative 'endangered species' indicator to mammals, justification for this can be given.

Information on which threatened, endangered, critically endangered species are present in the area may already be available if the area has been subject to regular ecological surveys from other organisations; if this data is considered reliable, it may be used to complete the NBM endangered species assessment. If such information is not available, it is recommended that the project first uses the IUCN red list species distribution maps to get an initial impression of which endangered species are likely to be present within the project area. This data is imprecise and general however – the project must then verify and evidence the presence of these endangered species within the project area. Where species which move over large areas are spotted within the project area, it can be assumed that they are present within all of the project area which is of a similar type of habitat. Only areas of degraded, converted, monoculture or artificial land should be excluded from the endangered species uplift to the NBM score in this case.

Step 5: Finalising NBM score

The project should finalise the NBM template document, generating a project NBM score on a scale of 0 – 10, combining the 0 - 5 pristineness score and the 0 - 5 endangered mammals score.

Each carbon credit originating from the project will be assigned this NBM score. This NBM score will be listed on the NFS registry entry with the credit, to allow buyers to select high/low value biodiversity carbon credits as they wish. High biodiversity risk areas and restoration potential habitat zones should also be identified on the NBM template document so that project managers and validators can track the project biodiversity performance in sensitive areas over time, giving a better understanding of the progress and impact of the project.

[56] International Union for the Conservation of Nature. [online] Available at: http://www.iucnredlist.org/

Step 6: Monitoring of biodiversity

The on-going biodiversity performance of the project should be monitored; as such it will be a requirement at the verification stage that the NBM assessment be carried out again. This should have two constituent parts:

a) the annual re-assessment of the project NBM score - this includes repeating the process described above, but from the starting point of the previous year's assessment. Where there are known to be changes in project conditions, e.g. new roads being built, or known degradation activities these areas should be a priority for the annual re-assessment of the NBM score.

b) monitoring of the projects impact on important flora and fauna, and the success of the projects mitigation activities at intervals considered reasonable by the project developers. Where the project is expected to have little impact on biodiversity, relatively infrequent monitoring will be acceptable.