CCB Standards

The Climate, Community & Biodiversity Alliance

Climate, Community and Biodiversity
Project Design Standards

SECOND EDITION

About the CCBA

The Climate, Community & Biodiversity Alliance (CCBA) is a global partnership of leading companies and non-governmental organizations created in 2003. The CCBA aims to leverage policies and markets to promote the development of forest protection, restoration and agroforestry projects through high quality multiple-benefit land-based carbon projects. CCBA members include Conservation International, CARE, Rainforest Alliance, The Nature Conservancy, Wildlife Conservation Society, BP, GFA Envest, Intel, SC Johnson, Sustainable Forestry Management Ltd., Weyerhaeuser, and advising institutions. For more information about the CCBA, please visit www.climate-standards.org or contact *info@climate-standards.org*.

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Preface to the Second Edition

The First Edition of the CCB Standards was released in May 2005 after a rigorous two year development process based on input from community and environmental groups, companies, academics, project developers and others with expert knowledge or affected by the standards. The Standards were then tested on projects in Asia, Africa, Europe and the Americas and peer reviewed by the world's leading tropical forestry institutes: the Center for International Forestry Research (CIFOR) in Indonesia, the Tropical Agricultural Research and Higher Education Center (CATIE) in Costa Rica and the World Agroforestry Centre (ICRAF) in Kenya.

The CCB Standards have become the most widely used and respected international standard for the multiple-benefits of land-based carbon projects. As of November 2008, six projects had completed the validation process and ten projects were in the public comment phase. These 16 CCB projects aim to reduce greenhouse gas emissions by over 4.4 million tons of CO_2e per year and cover 1,385,190 ha. Around 100 additional projects have indicated to the CCBA their intent to use the CCB Standards. Of these, approximately 40% are in Latin America, 35% in Africa, 20% in Asia and a few projects each in Europe, Australasia and North America. Around 43% of these projects will involve reduced emissions from deforestation or forest degradation (REDD), 30% will include reforestation, 30% will include native forest restoration, 16% will include agroforestry, 14% will include sustainable forest management and 3% afforestation. Many projects are combining several of these project activities to help optimize their multiple benefits.

This rapid and broad uptake across geographic areas and project types is a testament to the utility and flexibility of the CCB Standards. The preponderance of projects in tropical developing country regions, and particularly in Africa, where there have been relatively few projects registered under the Clean Development Mechanism, suggests that the CCB Standards are playing a role to stimulate project and market development to channel carbon market investments to areas where funding is most greatly needed for sustainable development, improved livelihoods and biodiversity conservation. The relatively large number of REDD projects reflects the high potential for multiple benefits associated with REDD and the growing interest in this project type in response to the increasingly favorable international policy environment. A number of investors have declared their intention to give a preference to, give a premium to, or exclusively purchase land-based carbon offsets derived from CCB projects. From the other side, some project developers are charging and receiving price premiums for the offsets created by their CCB projects. Much remains to be done to further stimulate the multiple-benefit forest carbon market and bring these multiple-benefit projects to scale, but the rapid developments to date indicate that the CCB Standards are making important contributions towards their goal of catalyzing a robust carbon market for multiple-benefit forest carbon projects.

In order to retain this influence, CCBA launched a revision of the CCB Standards in February 2008 to enable the CCB Standards to continue to respond to investor and other stakeholder interests in the rapidly evolving policy and market environment. The CCBA adopted an inclusive and participatory process by giving responsibility for the revision to a Standards Committee composed of a diverse range of interested parties with expertise relevant to the subject matter of the standards and/or materially affected by them. They consulted widely before developing two draft versions that were posted on www.climate-standards.org for public comment: Version 1.0 for 60 days from June 14 to August 11, 2008 and Version 2.0 for 30 days from Oct 9 to Nov 8, 2008 . All comments received were evaluated and a written synopsis has been published of how each material issue has been addressed in the standards. This process led to the finalization of the Second Edition for a launch at Forest Day 2 organized by CIFOR in Poznan, Poland on December 6, 2008.

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Introduction

The Intergovernmental Panel on Climate Change's Fourth Assessment Report[1] documents the dramatic effects of human-induced climate change on ecosystems, productivity and the global economy. These impacts, which are expected to worsen in the coming decades, will fall disproportionately on the world's most vulnerable people and ecosystems. Poor communities often rely on natural resources but lack the reserves and capacity to cope with changes in their environment. Meanwhile, the ongoing losses of biological diversity threaten the ecosystems upon which all life depends.

Land use change is a major part of humans' impact on the world's climate. Greenhouse gas emissions from deforestation, agriculture and other land use conversion activities are responsible for 30% of total human emissions.[2] Population growth and economic development—and the inability of institutions to ensure adequate safeguards and enforcement—are the primary drivers of these significant and widespread impacts.

Well designed land-based climate change mitigation activities are therefore an essential component of climate change mitigation. Reducing deforestation and forest degradation can help reduce greenhouse gas emissions, while reforestation and agroforestry activities can remove carbon dioxide from the atmosphere. When sensitively designed, these projects also protect biodiversity and promote the sustainable economic and social development of communities. Such projects can bring sustainable livelihoods to local people through the diversification of agriculture, soil and water protection, direct employment, the use and sale of forest products and ecotourism. In the process, communities can also build their capacity to adapt to the effects of climate change. Well-designed projects also contribute to biodiversity conservation by restoring and protecting the world's natural ecosystems, saving threatened animal and plant species from extinction and maintaining resilient and productive natural life-support for humankind. Through effective planning and implementation, all of these positive outcomes can be achieved cost-effectively.

The Climate, Community & Biodiversity (CCB) Standards were created to foster the development and marketing of projects that deliver credible and significant climate, community and biodiversity benefits in an integrated, sustainable manner. Projects that meet the Standards adopt best practices to deliver robust and credible greenhouse gas reductions while also delivering net positive benefits to local communities and biodiversity.

The CCB Standards are beneficial to a variety of users, including:

> *1) Project Developers and Other Stakeholders* – Communities, NGOs, agencies and others use the CCB Standards to guide the development of projects that deliver a suite of environmental and community benefits. From an early stage, the Standards can be used to demonstrate a project's high quality and multiple benefits of their project to potential investors and other stakeholders. Projects that meet the CCB Standards are likely to garner preferential investment and even a price premium from investors or offset buyers who support multiple-value projects and best-practice projects. Multiple-benefit projects also are more likely to attract a diverse portfolio of investors. For example, a reforestation project that provides the environmental and social co-benefits identified by the Standards may attract funds from a variety of groups: private investors for the carbon credits, governments for sustainable development and philanthropic organizations for biodiversity conservation.

[1] Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf
[2] Climate Analysis Indicators Tool version 5.0, http://cait.wri.org/cait.php

2) Project Investors and Offset Buyers – Private companies, multilateral agencies and other funders investing in carbon credits can use the CCB Standards as a project screen. The Standards identify projects that actively address environmental and social performance factors, thereby lowering the risks to effective project implementation and permanence of the climate benefits that are posed by environmental degradation and resistance from local communities and governments. In this way, the Standards help investors to minimize risks by identifying high-quality projects that are unlikely to become implicated in controversy. Multiple-benefit projects also create valuable goodwill and other ancillary returns for investors. Social and environmental benefits and sustainability are also an important means to reduce risks to the permanence of the climate benefits.

3) Governments – Governments can use the CCB Standards to ensure that projects within their boundaries will contribute to national sustainable development goals. Also, donor governments can use the Standards to identify Official Development Assistance (ODA) projects that efficiently satisfy multiple international obligations, such as the Millennium Development Goals and the UN conventions on Climate Change and Biological Diversity.

The Role of the CCB Standards

The CCB Standards identify land-based projects that are designed to deliver robust and credible greenhouse gas reductions while also delivering net positive benefits to local communities and biodiversity. The Standards can be applied to any land-based carbon projects including both projects that reduce greenhouse gas emissions through avoided deforestation and forest degradation (REDD) and projects that remove carbon dioxide by sequestering carbon (e.g., reforestation, afforestation, revegetation, forest restoration, agroforestry and sustainable agriculture). The CCB Standards are important for all phases of project planning and management, from design through implementation and monitoring.

The CCB Standards perform two important roles:

- **Project design standard**: The CCB Standards provide rules and guidance to encourage effective and integrated project design. The Standards can be applied early on during a project's design phase to validate projects that have been well designed, are suitable to local conditions and are likely to achieve significant climate, community and biodiversity benefits. This validation helps to build support for the project at a crucial stage and attract funding or other assistance from key stakeholders, including investors, governments and other important local, national and international partners. This early project support and funding can be particularly important for multiple-benefit land-based carbon projects, which often require considerable investment and effort for project development before greenhouse gas emissions reductions can be generated.

- **Multiple-benefit standard**: The CCB Standards can be applied throughout the project's life to evaluate the social and environmental impacts of a land-based carbon project. The Standards can be combined very effectively with a carbon accounting standard such as, for example, the Clean Development Mechanism (CDM) or the Voluntary Carbon Standard (VCS). In this case, the CCB Standards provide a basis for evaluating a project's social and environmental impacts while the carbon accounting standard enables verification and registration of quantified greenhouse gas emissions reductions or removals. In this way, the CCB Standards verify the social and environmental

benefits generated by a project, enabling investors to select carbon credits with additional benefits, while screening out projects with unacceptable social and environmental impacts.

The CCB Standards can be employed regardless of a project's geographical location, start date, or size. The Standards can be used for projects funded with either private or public investment, and they apply to projects that generate carbon credits for either compliance or voluntary markets. It is important to note that the CCBA does not issue quantified emissions reductions certificates and therefore encourages the use of a carbon accounting standard (such as CDM or VCS) in combination with CCB Standards.

Validation and Verification using the CCB Standards

Use of the CCB Standards requires that independent, accredited auditors determine conformance with the CCB Standards at two stages, **validation** and **verification**. A CCB validation is an assessment of the design of a land-based carbon project against each of the CCB Standards criteria. A CCB verification is an evaluation of a project's delivery of net climate, community, and biodiversity benefits against the project's validated design and monitoring plan. Verification must be performed at least every five years.

Project design documents submitted for audit, those approved by the audit process, any public comments received, the name of the auditor, the audit report and their validation or verification statement including date, approved or gold level and date of validation or verification along with any validations or certifications achieved by the project against other relevant standards are published on www.climate-standards.org/projects. Information regarding accreditation of auditors, a list of accredited auditors and guidelines for the use of the standards are also available at www.climate-standards.org.

Project Checklist

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Y	**B3. Biodiversity Impact Monitoring**	Required

Y	?	N	**GL1. Climate Change Adaptation Benefits**	Optional
Y	?	N	**GL2. Exceptional Community Benefits**	Optional
Y	?	N	**GL3. Exceptional Biodiversity Benefits**	Optional

CCB Standards Validation Levels

✓ **APPROVED** – All requirements met

✓ **GOLD** – All requirements and also at least one optional Gold Level criterion met

Gen	Clim	Comm	Bio
G1.		**Required**	

GENERAL SECTION

G1. Original Conditions in the Project Area

Concept

The original conditions at the project area[3] and the surrounding project zone[4] before the project commences must be described. This description, along with baseline projections (**G2**), will help to determine the likely impacts of the project.

Indicators

The project proponents must provide a description of the project zone, containing all the following information:

General Information

1. The location of the project and basic physical parameters (e.g., soil, geology, climate).
2. The types and condition of vegetation within the project area.
3. The boundaries of the project area and the project zone.

Climate Information

4. Current carbon stocks within the project area(s), using stratification by land-use or vegetation type and methods of carbon calculation (such as biomass plots, formulae, default values) from the Intergovernmental Panel on Climate Change's 2006 Guidelines for National GHG Inventories for Agriculture, Forestry and Other Land Use[5] (IPCC 2006 GL for AFOLU) or a more robust and detailed methodology.[6]

Community Information

5. A description of communities[7] located in the project zone, including basic socio-economic and cultural information that describes the social, economic and cultural diversity within communities (wealth, gender, age, ethnicity etc.), identifies specific groups such as Indigenous Peoples[8] and describes any community characteristics.[9]

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[3] The 'project area' is defined as the land within the carbon project boundary and under the control of the project proponent.
[4] The 'project zone' is defined as the project area and the land within the boundaries of the adjacent communities potentially affected by the project.
[5] Volume 4 Agriculture, Forestry and Other Land Use http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html
[6] In cases where a published methodology is used, the full reference must be given and any variations from the published methodology must be explained.
[7] 'Communities' are defined as all groups of people—including Indigenous Peoples, mobile peoples and other local communities—who live within or adjacent to the project area as well as any groups that regularly visit the area and derive income, livelihood or cultural values from the area. (See Appendix B: Glossary for more information.)
[8] 'Indigenous Peoples' are defined as distinct, vulnerable, social and cultural groups whose members identify themselves as belonging to an indigenous cultural group. (See Appendix B: Glossary for more information.)
[9] Community characteristics may include shared history, culture, livelihood systems, relationships with one or more natural resources, or the customary institutions and rules governing the use of resources.

6. A description of current land use and customary and legal property rights including community property[10] in the project zone, identifying any ongoing or unresolved conflicts or disputes and identifying and describing any disputes over land tenure that were resolved during the last ten years (see also **G5**).

Biodiversity Information

7. A description of current biodiversity within the project zone (diversity of species and ecosystems[11]) and threats to that biodiversity, using appropriate methodologies, substantiated where possible with appropriate reference material.

8. An evaluation of whether the project zone includes any of the following High Conservation Values (HCVs) and a description of the qualifying attributes:[12]

   8.1. Globally, regionally or nationally significant concentrations of biodiversity values;
   a. protected areas[13]
   b. threatened species[14]
   c. endemic species[15]
   d. areas that support significant concentrations of a species during any time in their lifecycle (e.g. migrations, feeding grounds, breeding areas).

   8.2. Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;

   8.3. Threatened or rare ecosystems;[16]

   8.4. Areas that provide critical ecosystem services (e.g., hydrological services, erosion control, fire control);

   8.5. Areas that are fundamental for meeting the basic needs of local communities (e.g., for essential food, fuel, fodder, medicines or building materials without readily available alternatives); and

   8.6. Areas that are critical for the traditional cultural identity of communities (e.g., areas of cultural, ecological, economic or religious significance identified in collaboration with the communities).

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[10] Including lands that communities have traditionally owned, occupied or otherwise used or acquired.
[11] Equates to habitat types, biotic communities, ecoregions, etc.
[12] These high conservation value criteria are based on those defined by the High Conservation Value (HCV) Resource Network http://hcvnetwork.org/. Practical help is available for using HCVs in each region, including generic guidance documents (Toolkits) and Country Pages.
[13] Legally protected areas equivalent to IUCN Protected Area Management Categories I-VI (see http://www.iucn.org/about/union/commissions/wcpa/wcpa_work/wcpa_strategic/wcpa_science/wcpa_categories/index.cfm for definitions) as well as areas that have been proposed for protected area status by the relevant statutory body but have not yet been officially declared, and including areas protected under international conventions (e.g., Ramsar sites, World Heritage Sites, UNESCO Man-and-Biosphere Reserves, etc.).
[14] Species that qualify for the IUCN Red List threat categories of Critically Endangered (CR), Endangered (EN) and Vulnerable (VU). (See www.iucnredlist.org and Appendix B: Glossary for more information.) Additional national or regional listings should also be used where these may differ from the IUCN Red List.
[15] Species for which the entire global range is restricted to the site, the region or the country (the level of endemicity must be defined).
[16] Includes ecosystems (intact or not) or associations of species that have always been rare, those which are now rare or greatly reduced, and those for which intact examples are very rare even if heavily disturbed or degraded.

Gen	Clim	Comm	Bio
G2.		**Required**	

G2. Baseline Projections

Concept

A baseline projection is a description of expected conditions in the project zone in the absence of project activities. The project impacts will be measured against this 'without-project' reference scenario.

Indicators

The project proponents must develop a defensible and well-documented 'without-project' reference scenario that must:

1. Describe the most likely land-use scenario in the absence of the project following IPCC 2006 GL for AFOLU or a more robust and detailed methodology,[17] describing the range of potential land-use scenarios and the associated drivers of GHG emissions and justifying why the land-use scenario selected is most likely.

2. Document that project benefits would not have occurred in the absence of the project, explaining how existing laws or regulations would likely affect land use and justifying that the benefits being claimed by the project are truly 'additional' and would be unlikely to occur without the project.[18]

3. Calculate the estimated carbon stock changes associated with the 'without project' reference scenario described above. This requires estimation of carbon stocks for each of the land-use classes of concern and a definition of the carbon pools included, among the classes defined in the IPCC 2006 GL for AFOLU.[19] The timeframe for this analysis can be either the project lifetime (see **G3**) or the project GHG accounting period, whichever is more appropriate.[20] Estimate the net change in the emissions of non-CO_2 GHG emissions such as CH_4 and N_2O in the 'without project' scenario. Non-CO_2 gases must be included if they are likely to account for more than 5% (in terms of CO_2-equivalent) of the project's overall GHG impact over each monitoring period.[21]

   Projects whose activities are designed to avoid GHG emissions (such as those reducing emissions from deforestation and forest degradation (REDD), avoiding conversion of non-forest land, or certain improved forest management projects) must include an analysis of the relevant drivers and rates of deforestation and/or degradation and a description and justification of the approaches,

[17] In cases where a published methodology is used, the full reference must be given and any variations from the published methodology must be explained.
[18] Project proponents must demonstrate that project activities would not have been implemented under business as usual due to significant financial, technological, institutional or capacity barriers. Actions implemented by the project must not be required by law, or project proponents must demonstrate that the pertinent laws are not being enforced. Project proponents must provide credible and well-documented analyses (e.g., poverty assessments, farming knowledge assessments, or remote sensing analysis) to demonstrate that the 'without project' reference scenario reflects land-use practices that are likely to continue or that otherwise differ from the land-use practices expected as a result of project activities.
[19] Above-ground biomass, below-ground biomass, deadwood, litter, soils.
[20] In some cases, the project lifetime and the project GHG accounting period may be different.
[21] The following CDM Executive Board tool can be used to test the significance of emissions sources: http://cdm.unfccc.int/EB/031/eb31_repan16.pdf.

assumptions and data used to perform this analysis.[22] Regional-level estimates can be used at the project's planning stage as long as there is a commitment to evaluate locally-specific carbon stocks and to develop a project-specific spatial analysis of deforestation and/or degradation using an appropriately robust and detailed carbon accounting methodology before the start of the project.[23]

4. Describe how the 'without project' reference scenario would affect communities in the project zone, including the impact of likely changes in water, soil and other locally important ecosystem services.

5. Describe how the 'without project' reference scenario would affect biodiversity in the project zone (e.g., habitat availability, landscape connectivity and threatened species).

[22] The analysis may use a model that is based on historical rates and patterns of deforestation and degradation or predict the expected increases or decreases in deforestation and degradation.
[23] The 'start of the project' is defined as the start of implementation of activities that will directly cause the project's expected GHG emissions reductions or removals.

Gen	Clim	Comm	Bio
G3.		**Required**	

G3. Project Design and Goals

Concept

The project must be described in sufficient detail so that a third-party can adequately evaluate it.

Projects must be designed to minimize risks to the expected climate, community and biodiversity benefits and to maintain those benefits beyond the life of the project. Effective local participation in project design and implementation is key to optimizing multiple benefits, equitably and sustainably. Projects that operate in a transparent manner build confidence with stakeholders and outside parties and enable them to contribute more effectively to the project.

Indicators

The project proponents must:

1. Provide a summary of the project's major climate, community and biodiversity objectives.

2. Describe each project activity with expected climate, community and biodiversity impacts and its relevance to achieving the project's objectives.

3. Provide a map identifying the project location and boundaries of the project area(s), where the project activities will occur, of the project zone and of additional surrounding locations that are predicted to be impacted by project activities (e.g. through leakage).

4. Define the project lifetime and GHG accounting period and explain and justify any differences between them. Define an implementation schedule, indicating key dates and milestones in the project's development.

5. Identify likely natural and human-induced risks to the expected climate, community and biodiversity benefits during the project lifetime and outline measures adopted to mitigate these risks.

6. Demonstrate that the project design includes specific measures to ensure the maintenance or enhancement of the high conservation value attributes identified in **G1** consistent with the precautionary principle.[24]

7. Describe the measures that will be taken to maintain and enhance the climate, community and biodiversity benefits beyond the project lifetime.

8. Document and defend how communities and other stakeholders[25] potentially affected by the project activities have been identified and have been involved in project design through effective

[24] The 'precautionary principle' is defined in the Preamble to the *Convention on Biological Diversity* (1992): '[W]here there is a threat of **significant reduction** or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.'

[25] 'Other stakeholders' are defined as the main groups potentially affected by the project activities that are not living on or adjacent to the project site.

consultation,[26] particularly with a view to optimizing community and stakeholder benefits, respecting local customs and values and maintaining high conservation values. Project developers must document stakeholder dialogues and indicate if and how the project proposal was revised based on such input.[27] A plan must be developed to continue communication and consultation between project managers and all community groups about the project and its impacts to facilitate adaptive management throughout the life of the project.

9. Describe what specific steps have been taken, and communications methods used, to publicize the CCBA public comment period[28] to communities and other stakeholders and to facilitate their submission of comments to CCBA. Project proponents must play an active role in distributing key project documents to affected communities and stakeholders and hold widely publicized information meetings in relevant local or regional languages.

10. Formalize a clear process for handling unresolved conflicts and grievances that arise during project planning and implementation. The project design must include a process for hearing, responding to and resolving community and other stakeholder grievances within a reasonable time period. This grievance process must be publicized to communities and other stakeholders and must be managed by a third party or mediator to prevent any conflict of interest. Project management must attempt to resolve all reasonable grievances raised, and provide a written response to grievances within 30 days. Grievances and project responses must be documented.

11. Demonstrate that financial mechanisms adopted, including projected revenues from emissions reductions and other sources, are likely to provide an adequate flow of funds for project implementation and to achieve the anticipated climate, community and biodiversity benefits.

[26] Effective consultation requires project proponents to inform and engage broadly with all community groups and other stakeholders using socially and culturally appropriate methods. Consultations must be gender and inter-generationally inclusive and must be conducted at mutually agreed locations and through representatives who are designated by the communities themselves in accordance with their own procedures. Stakeholders affected by the project must have an opportunity to evaluate impacts and raise concerns about potential negative impacts, express desired outcomes and provide input on the project design, both before the project design is finalized and during implementation.

[27] In cases where it is unclear whether a project will be implemented or not, it is acceptable to start with a preliminary community consultation, provided there are plans for appropriate full engagement before the start of the project. Where conformance with the Standards is being applied to a project already under implementation, project proponents must either provide documentation of appropriate consultation during the project design phase or demonstrate how more recent consultations have been effective in evaluating community benefits and adapting project design and implementation to optimize community and stakeholder benefits and respect local customs.

[28] 'The CCBA public comment period' is the process whereby CCBA posts project documents that are under evaluation by an auditor for conformance with the Standards on www.climate-standards.org for at least 30 days with an invitation and link for public comments to which the auditor must respond in the audit report.

Gen	Clim	Comm	Bio
G4.		**Required**	

G4. Management Capacity and Best Practices

Concept

The success of a project depends upon the competence of the implementing management team. Projects that include a significant capacity-building (training, skill building, etc.) component are more likely to sustain the positive outcomes generated by the project and have them replicated elsewhere.

Best practices for project management include: local stakeholder employment, worker rights, worker safety and a clear process for handling grievances.

Indicators

The project proponents must:

1. Identify a single project proponent which is responsible for the project's design and implementation. If multiple organizations or individuals are involved in the project's development and implementation the governance structure, roles and responsibilities of each of the organizations or individuals involved must also be described.

2. Document key technical skills that will be required to implement the project successfully, including community engagement, biodiversity assessment and carbon measurement and monitoring skills. Document the management team's expertise and prior experience implementing land management projects at the scale of this project. If relevant experience is lacking, the proponents must either demonstrate how other organizations will be partnered with to support the project or have a recruitment strategy to fill the gaps.

3. Include a plan to provide orientation and training for the project's employees and relevant people from the communities with an objective of building locally useful skills and knowledge to increase local participation in project implementation. These capacity building efforts should target a wide range of people in the communities, including minority and underrepresented groups. Identify how training will be passed on to new workers when there is staff turnover, so that local capacity will not be lost.

4. Show that people from the communities will be given an equal opportunity to fill all employment positions (including management) if the job requirements are met. Project proponents must explain how employees will be selected for positions and where relevant, must indicate how local community members, including women and other potentially underrepresented groups, will be given a fair chance to fill positions for which they can be trained.

5. Submit a list of all relevant laws and regulations covering worker's rights in the host country. Describe how the project will inform workers about their rights. Provide assurance that the project meets or exceeds all applicable laws and/or regulations covering worker rights[29] and, where relevant, demonstrate how compliance is achieved.

[29] 'Workers' are defined as people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

6. Comprehensively assess situations and occupations that pose a substantial risk to worker safety. A plan must be in place to inform workers of risks and to explain how to minimize such risks. Where worker safety cannot be guaranteed, project proponents must show how the risks will be minimized using best work practices.

7. Document the financial health of the implementing organization(s) to demonstrate that financial resources budgeted will be adequate to implement the project.

G5. Legal Status and Property Rights

Concept

The project must be based on a solid legal framework (e.g., appropriate contracts are in place) and the project must satisfy applicable planning and regulatory requirements.

During the project design phase, the project proponents should communicate early on with relevant local, regional and national authorities in order to allow adequate time to earn necessary approvals. The project design should be sufficiently flexible to accommodate potential modifications that may arise as a result of this process.

In the event of unresolved disputes over tenure or use rights to land or resources in the project zone, the project should demonstrate how it will help to bring them to resolution so that there are no unresolved disputes by the start of the project.

Indicators

Based on information about current property rights provided in **G1**, the project proponents must:

1. Submit a list of all relevant national and local laws[30] and regulations in the host country and all applicable international treaties and agreements. Provide assurance that the project will comply with these and, where relevant, demonstrate how compliance is achieved.

2. Document that the project has approval from the appropriate authorities, including the established formal and/or traditional authorities customarily required by the communities.

3. Demonstrate with documented consultations and agreements that the project will not encroach uninvited on private property, community property,[31] or government property and has obtained the free, prior, and informed consent of those whose rights will be affected by the project.[32]

4. Demonstrate that the project does not require the involuntary relocation of people or of the activities important for the livelihoods and culture of the communities.[33] If any relocation of habitation or activities is undertaken within the terms of an agreement, the project proponents must demonstrate that the agreement was made with the free, prior, and informed consent of those concerned and includes provisions for just and fair compensation.[34]

[30] Local laws include all legal norms given by organisms of government whose jurisdiction is less than the national level, such as departmental, municipal and customary norms.
[31] Including lands that communities have traditionally owned, occupied or otherwise used or acquired.
[32] In conformance with the United Nations Declaration on the Rights of Indigenous Peoples.
[33] Restricting the evaluation to activities that comply with statutory laws or conform with customary rights. 'Customary rights' to lands and resources refers to patterns of long-standing community land and resource usage in accordance with Indigenous Peoples' and local communities' customary laws, values, customs, and traditions, including seasonal or cyclical use, rather than formal legal title to land and resources issued by the State.
[34] In conformance with the United Nations Declaration on the Rights of Indigenous Peoples.

5. Identify any illegal activities that could affect the project's climate, community or biodiversity impacts (e.g., logging) taking place in the project zone and describe how the project will help to reduce these activities so that project benefits are not derived from illegal activities.

6. Demonstrate that the project proponents have clear, uncontested title to the carbon rights, or provide legal documentation demonstrating that the project is undertaken on behalf of the carbon owners with their full consent. Where local or national conditions preclude clear title to the carbon rights at the time of validation against the Standards, the project proponents must provide evidence that their ownership of carbon rights is likely to be established before they enter into any transactions concerning the project's carbon assets.

Gen	Clim	Comm	Bio
CL1.		**Required**	

CLIMATE SECTION

CL1. Net Positive Climate Impacts

Concept

The project must generate net positive impacts on atmospheric concentrations of greenhouse gases (GHGs) over the project lifetime from land use changes within the project boundaries.

Indicators

The project proponents must:

1. Estimate the net change in carbon stocks due to the project activities using the methods of calculation, formulae and default values of the IPCC 2006 GL for AFOLU or using a more robust and detailed methodology.[35] The net change is equal to carbon stock changes *with* the project minus carbon stock changes *without* the project (the latter having been estimated in **G2**). This estimate must be based on clearly defined and defendable assumptions about how project activities will alter GHG emissions or carbon stocks over the duration of the project or the project GHG accounting period.

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2. Estimate the net change in the emissions of non-CO_2 GHG emissions such as CH_4 and N_2O in the *with* and *without* project scenarios if those gases are likely to account for more than a 5% increase or decrease (in terms of CO_2-equivalent) of the project's overall GHG emissions reductions or removals over each monitoring period.

3. Estimate any other GHG emissions resulting from project activities. Emissions sources include, but are not limited to, emissions from biomass burning during site preparation, emissions from fossil fuel combustion,[36] direct emissions from the use of synthetic fertilizers,[37] and emissions from the decomposition of N-fixing species.

4. Demonstrate that the net climate impact of the project is positive. The net climate impact of the project is the net change in carbon stocks plus net change in non-CO_2 GHGs where appropriate minus any other GHG emissions resulting from project activities minus any likely project-related unmitigated negative offsite climate impacts (see CL2.3).

5. Specify how double counting of GHG emissions reductions or removals will be avoided, particularly for offsets sold on the voluntary market and generated in a country with an emissions cap.

[35] In cases where a published methodology is used, the full reference must be given and any variations from the published methodology must be explained.

[36] The following CDM Executive Board tool can be used to quantify these emissions: http://cdm.unfccc.int/EB/033/eb33_repan14.pdf

[37] The following CDM Executive Board tool can be used to quantify these emissions: http://cdm.unfccc.int/EB/033/eb33_repan16.pdf

CL2. Offsite Climate Impacts ('Leakage')

Concept

The project proponents must quantify and mitigate increased GHG emissions that occur beyond the project area and are caused by project activities (commonly referred to as 'leakage').

Indicators

The project proponents must:

1. Determine the types of leakage[38] that are expected and estimate potential offsite increases in GHGs (increases in emissions or decreases in sequestration) due to project activities. Where relevant, define and justify where leakage is most likely to take place.

2. Document how any leakage will be mitigated and estimate the extent to which such impacts will be reduced by these mitigation activities.

3. Subtract any likely project-related unmitigated negative offsite climate impacts from the climate benefits being claimed by the project and demonstrate that this has been included in the evaluation of net climate impact of the project (as calculated in **CL1.4**).

4. Non-CO_2 gases must be included if they are likely to account for more than a 5% increase or decrease (in terms of CO_2-equivalent) of the net change calculations (above) of the project's overall off-site GHG emissions reductions or removals over each monitoring period.

[38] Offsite changes in GHG emissions can result from a variety of causes including:
- activity shifting or displacement;
- market effects (particularly when timber harvest volumes are reduced by the project);
- increased investment in the project zone;
- decreased investment in the project zone; and
- alternative livelihood programs or other leakage prevention activities.

Gen	Clim	Comm	Bio
CL3.		**Required**	

CL3. Climate Impact Monitoring

Concept

Before a project begins, the project proponents must have an initial monitoring plan in place to quantify and document changes (within and outside the project boundaries) in project-related carbon pools, project emissions, and non-CO_2 GHG emissions if appropriate. The monitoring plan must identify the types of measurements, the sampling method, and the frequency of measurement.

Since developing a full monitoring plan can be costly, it is accepted that some of the plan details may not be fully defined at the design stage, when projects are being validated against the Standards. This is acceptable as long as there is an explicit commitment to develop and implement a monitoring plan.

Indicators

The project proponents must:

1. Develop an initial plan for selecting carbon pools and non-CO_2 GHGs to be monitored, and determine the frequency of monitoring. Potential pools include aboveground biomass, litter, dead wood, belowground biomass, wood products, soil carbon and peat. Pools to monitor must include any pools expected to decrease as a result of project activities, including those in the region outside the project boundaries resulting from all types of leakage identified in CL2. A plan must be in place to continue leakage monitoring for at least five years after all activity displacement or other leakage causing activity has taken place. Individual GHG sources may be considered 'insignificant' and do not have to be accounted for if *together* such omitted decreases in carbon pools and increases in GHG emissions amount to less than 5% of the total CO_2-equivalent benefits generated by the project.[39] Non-CO_2 gases must be included if they are likely to account for more than 5% (in terms of CO_2-equivalent) of the project's overall GHG impact over each monitoring period. Direct field measurements using scientifically robust sampling must be used to measure more significant elements of the project's carbon stocks. Other data must be suitable to the project site and specific forest type.

2. Commit to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.

[39] The following CDM Executive Board tool can be used to test the significance of emissions sources: http://cdm.unfccc.int/EB/031/eb31_repan16.pdf

Gen	Clim	Comm	Bio
CM1. **Required**			

COMMUNITY SECTION

CM1. Net Positive Community Impacts

Concept

The project must generate net positive impacts on the social and economic well-being of communities and ensure that costs and benefits are equitably shared among community members and constituent groups during the project lifetime.

Projects must maintain or enhance the High Conservation Values (identified in **G1**) in the project zone that are of particular importance to the communities' well-being**.**

Indicators

The project proponents must:

1. Use appropriate methodologies[40] to estimate the impacts on communities, including all constituent socio-economic or cultural groups such as indigenous peoples (defined in **G1**), resulting from planned project activities. A credible estimate of impacts must include changes in community well-being due to project activities and an evaluation of the impacts by the affected groups. This estimate must be based on clearly defined and defendable assumptions about how project activities will alter social and economic well-being[41], including potential impacts of changes in natural resources and ecosystem services identified as important by the communities (including water and soil resources), over the duration of the project. The 'with project' scenario must then be compared with the 'without project' scenario of social and economic well-being in the absence of the project (completed in **G2**). The difference (i.e., the community benefit) must be positive for all community groups.

2. Demonstrate that no High Conservation Values identified in **G1.8.4-6**[42] will be negatively affected by the project.

[40] See Appendix A Potential Tools and Strategies.

[41] Restricting the evaluation to well-being based on activities that comply with statutory laws or conform with customary rights.

[42] **G1.8.4** Areas that provide critical ecosystem services (e.g., hydrological services, erosion control, fire control);
G1.8.5 Areas that are fundamental for the livelihoods of local communities (e.g., for essential food, fuel, fodder, medicines, or building materials without readily available alternatives); and,
G1.8.6 Areas that are critical for the traditional cultural identity of communities **(e.g.,** areas of cultural, ecological, economic or religious significance identified in collaboration with the communities).
Note that High Conservation Values G1.8.1-3 that are more related to biodiversity conservation are covered in B1.

CM2. Offsite Stakeholder Impacts

Concept

The project proponents must evaluate and mitigate any possible social and economic impacts that could result in the decreased social and economic well-being of the main stakeholders living outside the project zone resulting from project activities. Project activities should at least 'do no harm' to the well-being of offsite stakeholders[43].

Indicators

The project proponents must:

1. Identify any potential negative offsite stakeholder impacts that the project activities are likely to cause.

2. Describe how the project plans to mitigate these negative offsite social and economic impacts.

3. Demonstrate that the project is not likely to result in net negative impacts on the well-being of other stakeholder groups.

[43] Restricting the evaluation to well-being based on activities that comply with statutory or conform with customary rights.

CM3. Community Impact Monitoring

Concept

The project proponents must have an initial monitoring plan to quantify and document changes in social and economic well-being resulting from the project activities (for communities and other stakeholders). The monitoring plan must indicate which communities and other stakeholders will be monitored, and identify the types of measurements, the sampling method, and the frequency of measurement.

Since developing a full community monitoring plan can be costly, it is accepted that some of the plan details may not be fully defined at the design stage, when projects are being validated against the Standards. This is acceptable as long as there is an explicit commitment to develop and implement a monitoring plan.

Indicators

The project proponents must:

1. Develop an initial plan for selecting community variables to be monitored and the frequency of monitoring and reporting to ensure that monitoring variables are directly linked to the project's community development objectives and to anticipated impacts (positive and negative).[44]

2. Develop an initial plan for how they will assess the effectiveness of measures used to maintain or enhance High Conservation Values related to community well-being (G1.8.4-6) present in the project zone.

3. Commit to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.

[44] Potential variables may include but are not limited to: income, employment generation, health, market access, schools, food security and education.

Gen	Clim	Comm	Bio
B1. **Required**			

BIODIVERSITY SECTION

B1. Net Positive Biodiversity Impacts

Concept

The project must generate net positive impacts on biodiversity within the project zone and within the project lifetime, measured against the baseline conditions.

The project should maintain or enhance any High Conservation Values (identified in **G1**) present in the project zone that are of importance in conserving globally, regionally or nationally significant biodiversity**.**

Invasive species populations[45] must not increase as a result of the project, either through direct use or indirectly as a result of project activities.

Projects may not use genetically modified organisms (GMOs)[46] to generate GHG emissions reductions or removals. GMOs raise unresolved ethical, scientific and socio-economic issues. For example, some GMO attributes may result in invasive genes or species.

Indicators

The project proponents must:

1. Use appropriate methodologies[47] to estimate changes in biodiversity as a result of the project in the project zone and in the project lifetime. This estimate must be based on clearly defined and defendable assumptions. The 'with project' scenario should then be compared with the baseline 'without project' biodiversity scenario completed in **G2**. The difference (i.e., the net biodiversity benefit) must be positive.

2. Demonstrate that no High Conservation Values identified in **G1.8.1-3**[48] will be negatively affected by the project.

[45] 'Invasive species' are defined as non-native species that threaten ecosystems, habitats or species in the project zone as identified in the Global Invasive Species Database: http://www.issg.org/database, from scientific literature, and from local knowledge.

[46] 'Genetically modified organisms' are defined as any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology and which is capable of transferring or replicating genetic material.

[47] See Appendix A Potential Tools and Strategies.

[48] **G1.8.1** Globally, regionally or nationally significant concentrations of biodiversity values, including protected areas, threatened species, endemic species and areas that support significant concentrations of a species during any time in their lifecycle(e.g., migrations, feeding grounds, breeding areas);
G1.8.2 Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;
G1.8.3 Threatened or rare ecosystems.
Note that High Conservation Values G1.8.4-6 that are more related to community well-being are covered in CM1.

3. Identify all species to be used by the project and show that no known invasive species will be introduced into any area affected by the project and that the population of any invasive species will not increase as a result of the project.

4. Describe possible adverse effects of non-native species used by the project on the region's environment, including impacts on native species and disease introduction or facilitation. Project proponents must justify any use of non-native species over native species.

5. Guarantee that no GMOs will be used to generate GHG emissions reductions or removals.

Gen	Clim	Comm	Bio
B2. **Required**			

B2. Offsite Biodiversity Impacts

Concept

The project proponents must evaluate and mitigate likely negative impacts on biodiversity outside the project zone resulting from project activities.

Indicators

The project proponents must:

1. Identify potential negative offsite biodiversity impacts that the project is likely to cause.

2. Document how the project plans to mitigate these negative offsite biodiversity impacts.

3. Evaluate likely unmitigated negative offsite biodiversity impacts against the biodiversity benefits of the project within the project boundaries. Justify and demonstrate that the net effect of the project on biodiversity is positive.

B3. Biodiversity Impact Monitoring

Concept

The project proponents must have an initial monitoring plan to quantify and document the changes in biodiversity resulting from the project activities (within and outside the project boundaries). The monitoring plan must identify the types of measurements, the sampling method, and the frequency of measurement.

Since developing a full biodiversity-monitoring plan can be costly, it is accepted that some of the plan details may not be fully defined at the design stage, when projects are being validated against the Standards. This is acceptable as long as there is an explicit commitment to develop and implement a monitoring plan.

Indicators

The project proponents must:

1. Develop an initial plan for selecting biodiversity variables to be monitored and the frequency of monitoring and reporting to ensure that monitoring variables are directly linked to the project's biodiversity objectives and to anticipated impacts (positive and negative).[49]

2. Develop an initial plan for assessing the effectiveness of measures used to maintain or enhance High Conservation Values related to globally, regionally or nationally significant biodiversity (**G1.8.1-3)** present in the project zone.

3. Commit to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.

[49] Potential variables may include but are not limited to: species abundance; population size, range, trends and diversity; habitat area, quality and diversity; landscape connectivity; and forest fragmentation.

Gen	Clim	Comm	Bio	Gold
GL1. **Optional**				

GOLD LEVEL SECTION

GL1. Climate Change Adaptation Benefits

Concept

This Gold Level Climate Change Adaptation Benefits criterion identifies projects that will provide significant support to assist communities and/or biodiversity in adapting to the impacts of climate change. Anticipated local climate change and climate variability within the project zone could potentially affect communities and biodiversity during the life of the project and beyond. Communities and biodiversity in some areas of the world will be more vulnerable to the negative impacts of these changes due to: vulnerability of key crops or production systems to climatic changes; lack of diversity of livelihood resources and inadequate resources, institutions and capacity to develop new livelihood strategies; and high levels of threat to species survival from habitat fragmentation. Land-based carbon projects have the potential to help local communities and biodiversity adapt to climate change by: diversifying revenues and livelihood strategies; maintaining valuable ecosystem services such as hydrological regulation, pollination, pest control and soil fertility; and increasing habitat connectivity across a range of habitat and climate types.

Indicators

The project proponents must:

1. Identify likely regional climate change and climate variability scenarios and impacts, using available studies, and identify potential changes in the local land-use scenario due to these climate change scenarios in the absence of the project.

2. Identify any risks to the project's climate, community and biodiversity benefits resulting from likely climate change and climate variability impacts and explain how these risks will be mitigated.[50]

3. Demonstrate that current or anticipated climate changes are having or are likely to have an impact on the well-being of communities[51] *and/or* the conservation status of biodiversity[52] in the project zone and surrounding regions.

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[50] Examples of how risks from climate change can be mitigated include the choice of species (adapted to various temperatures, precipitation, seasonality, salinity of water table, diseases/pests, etc.), the methods used to implement GHG emissions reduction activities, certainty of water sources critical for project success and location of activities in relation to anticipated land cover changes (e.g. flooding) expected as a result of climate change.

[51] Project proponents can demonstrate, for example, evidence of decreased access to natural resources of importance for communities' livelihoods and overall well-being. Climate change models that detail the predicted effects on these natural resources, such as freshwater, and participatory evaluations can be used to demonstrate anticipated impacts on communities.

[52] Project proponents can demonstrate evidence of a change in actual range, phenology or behavior of a species found within the project zone. For a range change, the project proponents should demonstrate that the change affects the entire range of the species and not just a subset of the range (which might be part of natural variation and offset by gains in other parts of the species range). Alternatively, the project proponents can demonstrate anticipated negative changes in the range of one or more species found in the project area using modeling techniques. The recommended modeling tool is Maxent because of its ease of implementation and performance (http://www.cs.princeton.edu/~schapire/maxent/). Recommended climatologies are IPCC4 A1 or A2 scenarios,

4. Demonstrate that the project activities will assist communities[53] *and/or* biodiversity[54] to adapt to the probable impacts of climate change.

Hadley or Japan high resolution GCM, downscaled to 1km (also available on the internet at http://www.worldclim.org). Best practice is to have this analysis conducted by a researcher who has published on climate and species distribution modeling using Maxent in the peer-review literature.

[53] Where communities are predicted to experience or are experiencing decreased access to natural resources because of climate change, project proponents must demonstrate that activities are likely to decrease communities' dependence on these natural resources. For example, where freshwater access is affected by climate change, a project can improve water management for maximum efficiency or provide alternative agricultural methods or products that require less water. Project activities may also help communities adapt to new planting and harvesting schedules to ensure maximum yields. Other climate change adaptation assistance can involve helping communities prepare for 'extreme events' such as floods, droughts and mudslides.

[54] Where an actual range or phenology change in a species is identified, project proponents must demonstrate that the project activities will make a significant contribution to mitigating this impact of climate change. Examples include: creating suitable habitat in an area that is becoming climatically suitable for a species that is losing climatically suitable habitats in other parts of its range; and providing a native food source for a species that is suffering population declines because of timing mismatches between its food needs and food availability linked to climate change (such as spring emergence of vegetation or insects). Where a modeled range impact is demonstrated, project proponents should demonstrate that the project significantly contributes to improving species' ability to occupy a new range or creates habitat in areas to which the species is migrating.

Gen	Clim	Comm	Bio	Gold
GL2. **Optional**				

GL2. Exceptional Community Benefits

Concept

This Gold Level Exceptional Community Benefits criterion recognizes project approaches that are explicitly pro-poor in terms of targeting benefits to globally poorer communities **and** the poorer, more vulnerable households and individuals within them. In so doing, land-based carbon projects can make a significant contribution to reducing the poverty and enhancing the sustainable livelihoods of these groups. Given that poorer people typically have less access to land and other natural assets, this optional criterion requires innovative approaches that enable poorer households to participate effectively in land-based carbon activities. Furthermore, this criterion requires that the project will 'do no harm' to poorer and more vulnerable members of the communities, by establishing that no member of a poorer or more vulnerable social group will experience a net negative impact on their well-being or rights.

Indicators

Project proponents must:

1. Demonstrate that the project zone is in a low human development country OR in an administrative area of a medium or high human development[55] country in which at least 50% of the population of that area is below the national poverty line.

2. Demonstrate that at least 50% of households within the lowest category of well-being (e.g., poorest quartile) of the community are likely to benefit substantially from the project.

3. Demonstrate that any barriers or risks that might prevent benefits going to poorer households have been identified and addressed in order to increase the probable flow of benefits to poorer households.

4. Demonstrate that measures have been taken to identify any poorer and more vulnerable households and individuals whose well-being or poverty may be negatively affected by the project, and that the project design includes measures to avoid any such impacts. Where negative impacts are unavoidable, demonstrate that they will be effectively mitigated.

5. Demonstrate that community impact monitoring will be able to identify positive and negative impacts on poorer and more vulnerable groups. The social impact monitoring must take a differentiated approach that can identify positive and negative impacts on poorer households and individuals and other disadvantaged groups, including women.

[55] Low, Medium, and High Human Development Countries defined in the latest UNDP Human Development Report http://hdr.undp.org/en/media/hdr_20072008_en_complete.pdf

Gen	Clim	Comm	Bio	Gold
GL3. **Optional**				

GL3. Exceptional Biodiversity Benefits

Concept

All projects conforming to the Standards must demonstrate net positive impacts on biodiversity within their project zone. This Gold Level Exceptional Biodiversity Benefits criterion identifies projects that conserve biodiversity at sites of global significance for biodiversity conservation. Sites meeting this optional criterion must be based on the Key Biodiversity Area (KBA) framework of vulnerability and irreplaceability.[56] These criteria are defined in terms of species and population threat levels, since these are the most clearly defined elements of biodiversity. These scientifically based criteria are drawn from existing best practices that have been used, to date, to identify important sites for biodiversity in over 173 countries.

Indicators

Project proponents must demonstrate that the project zone includes a site of high biodiversity conservation priority by meeting either the vulnerability *or* irreplaceability criteria defined below:

1. Vulnerability

   Regular occurrence of a globally threatened species (according to the IUCN Red List) at the site:

   1.1. Critically Endangered (CR) and Endangered (EN) species - presence of at least a single individual; or

   1.2. Vulnerable species (VU) - presence of at least 30 individuals or 10 pairs.

Or,

2. Irreplaceability

   A minimum proportion of a species' global population present at the site at any stage of the species' lifecycle according to the following thresholds:[57]

   2.1. Restricted-range species - species with a global range less than 50,000 km^2 *and* 5% of global population at the site; or

   2.2. Species with large but clumped distributions - 5% of the global population at the site; or

   2.3. Globally significant congregations - 1% of the global population seasonally at the site; or

   2.4. Globally significant source populations - 1% of the global population at the site;

[56] See Appendix A Potential Tools and Strategies for further guidance.

[57] While there is wide consensus on the need for a sub-criterion for bioregionally restricted assemblages, this sub-criterion has been excluded from the Standards until guidelines and thresholds have been agreed.

Appendix A
Potential Tools & Strategies

This section is a list of references and suggestions which may help project developers to design projects that will comply with the CCB Standards. Not all of these references are relevant to all projects, and it is the responsibility of the project developer to consult these or other sources as needed to satisfy Standards criteria.

G1. Original Conditions in the Project Area

a) Intergovernmental Panel on Climate Change (IPCC), 2006. *Guidelines for National Greenhouse Gas Inventories Volume 4 Agriculture, Forestry and Other Land Use.* http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html

b) Rapid Rural Assessment methodologies, including:

   1. Chambers, R. 1992. *Rural Appraisal: Rapid, Relaxed, and Participatory*. Institute of Development Studies Discussion Paper 311. Sussex: HELP;

   2. McCracken, A., W. Pretty and G. Conway. 1988. *An Introduction to Rapid Rural Appraisal For Agricultural Development*. International Institute for Environment and Development, London; and

   3. Food & Agriculture Organization. 1997. *Rapid Rural Appraisal. Marketing Research and Information Systems, Chapter 8*. Rome. http://www.fao.org/docrep/W3241E/w3241e09.htm

c) Ravi Jayakaran. 2002. *The Ten Seed Technique: a modified participatory learning and action (PLA) technique.* http://www.entrepreneursdumonde.org/pratiques/files/Ten-Seed%20Technique.pdf

d) Rapid Biodiversity Assessment methodologies, including:

   1. Ramsar. 2005. Resolution IX.1 Annex E i Guidelines for the rapid assessment of inland, coastal and marine wetland biodiversity. Kampala. http://www.ramsar.org/res/key_res_ix_01_annexei_e.pdf; and

   2. Biodiversity Survey Network. http://biosurvey.conservation.org/portal/server.pt

e) High Conservation Value Resource Network. http://hcvnetwork.org/

f) Global HCVF Toolkits. http://hcvnetwork.org/resources/global-hcv-toolkits

g) European Bank for Reconstruction and Development (EBRD). 2007. Biodiversity Conservation and Sustainable Management of Living Natural Resources, Performance Requirement 6. Draft revised Environmental Policy. London.

h) Inter-American Development Bank (IADB). 2006. Natural Habitats and Cultural Sites. Environment and Safeguards Compliance Policy, Policy Directive B.9. Sector Strategy and Policy Papers Series ENV-148. Washington, DC, USA.

i) International Finance Corporation (IFC). 2006. Biodiversity Conservation and Sustainable Natural Resource Management, Performance Standard 6. *International Finance Corporation's Performance Standards on Social & Environmental Sustainability.* Washington, DC.

j) Langhammer, P.F., Bakarr, M.I., Bennun, L.A., Brooks, T.M., Clay, R.P., Darwall, W., De Silva, N., Edgar, G.J., Eken, G., Fishpool, L.D.C., Fonseca, G.A.B. da, Foster, M.N., Knox, D.H., Matiku, P., Radford, E.A., Rodrigues, A.S.L., Salaman, P., Sechrest, W., and Tordoff, A.W. 2007. Identification and gap analysis of Key Biodiversity Areas: Targets for comprehensive protected area systems. *Best Practice Protected Areas Guidelines Series No. 15.* International Union for the Conservation of Nature (IUCN), Gland, Switzerland.

k) The World Bank Group. World Bank Operational Policy 4.01 Environmental Assessment, OP 4.10. Indigenous Peoples, OP 4.12 Involuntary Resettlement, OP 4.36 Forests, OP 4.04 Natural Habitats and OP 4.11 Physical Cultural Resources. *Operational Manual*. Washington DC, USA. http://go.worldbank.org/DZDZ9038D0

l) Asian Development Bank (ADB). 2007. Safeguard Requirements for borrowers/clients – Environment (Attachment A). Consultation Draft of the Safeguard policy Statement. Metro Manila, Philippines, http://www.adb.org/Documents/Policies/Safeguards/Consultation-Draft.pdf

m) UN Permanent Forum on Indigenous Issues (UNPFII) brochure. http://www.un.org/esa/socdev/unpfii/documents/unpfiibrochure_en07.pdf

n) ENvironment and COmmunity based framework for designing afFORestation, reforestation and revegetation projects in the CDM (ENCOFOR) toolkit. http://www.joanneum.at/encofor/index.html

G2. Baseline Projections

a) Additionality – Various economic and financial tools can be used to prove additionality, including: pay-back period with and without carbon financing; economic analyses showing that, without carbon financing, the project would be less profitable than other competing land-uses; analyses showing that the project would not be realized because of barriers such as lack of financial capital, prevailing practices, lack of capacity or knowledge, and institutional or market barriers. Project proponents can also describe if there are similar projects in the area. If yes, are the projects financed privately or publicly? Is climate change financing used to make the comparable projects viable?

b) Use of peer-reviewed programs for: calculating changes in carbon stocks (e.g., FullCAM, CO2FIX, GORCAM, CAMFor, TimberCAM): and predicting future land use trends (GEOMOD[58] or FRCA[59]).

c) Other tools may include local models, default baseline factors for the region, analysis of historical data, published deforestation rates, existing development plans, or other peer-reviewed models.

d) Remote sensing techniques and Geographical Information Systems (GIS) can detect and measure past and current rates of land cover change and project rates and types of change into the future.

e) Hamburg Institute of International Economics (HWWA). *Baselines for CDM and JI Projects – Standardisation of Select Baseline Aspects*. http://jiq.wiwo.nl/probase/prob_fr.pdf

f) The UN Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM) has published approved methodologies for land use baselines:[60] http://cdm.unfccc.int/methodologies/ARmethodologies

g) Wollenberg, L., D. Edmunds and L. Buck. 2000. *Anticipating Change: Scenarios as a Tool for Adaptive Forest Management*. Center for International Forestry Research (CIFOR). www.cifor.cgiar.org/acm/methods/fs.html

h) GOFC-GOLD Project Office. 2008. *Reducing greenhouse gas emissions from deforestation and degradation in developing countries: a sourcebook of methods and procedures for monitoring, measuring and reporting, GOFC-GOLD Report version COP13-2*. Natural Resources Canada. Alberta, Canada. http://www.gofc-gold.uni-jena.de/redd/

i) Brown, S., M. Hall, K. Andrasko, F. Ruiz, W. Marzoli, G. Guerrero, O. Masera, A. Dushku, B. DeJong, and J. Cornell, 2007. Baselines for land-use change in the tropics: application to avoided deforestation projects. *Mitigation and Adaptation Strategies for Global Change*, 12 (6):1001-1026.

[58] GEOMOD is now available as a module through IDRISI, www.clarklabs.org

[59] For more information on FRCA please contact the Global Climate Change Initiative at The Nature Conservancy, http://nature.org/initiatives/climatechange/.

[60] For the CDM and other regulatory schemes, the 'baseline' often refers to both the state of an area before the project and what would likely happen in the absence of the project.

j) CATIE and World Bank BioCarbon Fund. 2008. *Tool For Afforestation Reforestation Approved Methodologies (TARAM).* http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=40526&zrzs=1

k) Salinas, Z. and Hernández, P. eds. 2008. A Guide for Forestry and Bioenergy CDM Project Design (In spanish). *Guía para el diseño de Proyectos MDL Forestales y de Bioenergía*. CATIE. Turrialba Costa Rica. 232 p.

l) Also see references under G1.

G3. Project Design and Goals

a) SouthSouthNorth CDM Practical toolkit. http://www.cdmguide.org

b) Forest Stewardship Council (FSC) *Principles and Criteria for Forest Stewardship*. 2002. Forest Stewardship Council. Bonn, Germany http://www.fsc.org/fileadmin/web-data/public/document_center/international_FSC_policies/standards/FSC_STD_01_001_V4_0_EN_FSC_Principles_and_Criteria.pdf

c) Sustainable Forestry Initiative. http://www.sfiprogram.org/sfi-standard.php

d) IUCN World Commission on Protected Areas, 2003. *A Guide to Securing Protected Areas in the Face of Global Change: Options and Guidelines*. http://biodiv.wri.org/pubs_description.cfm?PubID=3904

e) Pearson, T., S. Walker and S. Brown. 2006. *Afforestation and Reforestation under the Clean Development Mechanism: Project Formulation Manual*. ITTO and Winrock International. http://www.winrock.org/ecosystems/tools.asp?BU=9086

f) Walker, S., T. Pearson, S. Petrova and P. Munishi. 2008. Carbon market opportunities for the forestry sector of Africa. Winrock and FAO. Presented at 16th Session of African Forestry and Wildlife Commision, Khartoum, Sudan. http://www.winrock.org/ecosystems/files/Winrock_FAO_Carbon_opportunities_in_Africa.pdf

g) Cock, M.J.W. 2004. *Biosecurity and Forests: An Introduction - with particular emphasis on forest pests.* FAO Forest Health and Biosecurity Working Paper FBS/2E. ftp://ftp.fao.org/docrep/fao/006/J1467E/J1467E.pdf

h) Parrotta, J.A., J.W. Turnbull, N. Jones. 1997. *Catalyzing native forest regeneration on degraded tropical lands*. *Forest Ecology and Management* 99 (1-2): 1-7.

i) World Agroforestry Centre: Tree Database. http://www.worldagroforestry.org/sites/TreeDBS/TreeDatabases.asp

j) Diversified project activities may include: primary or secondary forest conservation; reforestation or re-vegetation; agro-forestry plantations; densification; enrichment planting; introduction of new cultivation practices; introduction of new timber harvesting and/or processing practices (e.g., reduced impact logging); reduced tillage on cropland; improved livestock management; soil conservation; bio-energy production, improved fodder bank for livestock production, etc.

k) Scott, D.F., L.A. Bruijnzeel, and J. Mackensen. 2004. *The hydrological and soil impacts of forestation in the Tropics*. In M Bonell & LA Bruijnzeel (eds.) 2004. *Forests, water and people in the humid tropics*. CUP.

l) FAO Land and Water Division. http://www.fao.org/landandwater/default.stm

m) FAO Soils Bulletins. For instance: N°57 'Soil and water conservation in semi-arid areas', N°64 'A study of the reasons for success or failure of soil conservation projects', N°68 'Field measurement of soil erosion and runoff', N°50 'Keeping the land alive. Soil erosion: its causes and cures.' http://www.fao.org/documents

n) R.J. Klein, E.L. Schipper, & S. Dessai. 2003. *Integrating Mitigation and Adaptation into Climate and Development Policy: Three Research Questions*. Tyndall Centre Research Paper #40. www.tyndall.ac.uk/publications/working_papers/wp40.pdf

a) Madlener, R. Robledo, C. Muys, B. and J. Blanco Freja. 2006. A Sustainability Framework for Enhancing the Long-Term Success of LULUCF Projects. *Climatic Change* 75(1-2):241-271.

h) Stand Management Cooperative, University of Washington, College of Forest Resources. This cooperative is an example of a regional database focused on high quality information on long-term effects of silvicultural treatments, treatment regimes on stand and tree growth and development and wood and product quality. www.cfr.washington.edu/research.smc

G4. Management Capacity and Best Practices

a) Livernash, Bob (ed). 2002. *Closing the Gap: Information, Participation, and Justice in Decision-Making for the Environment*. WRI, Washington DC (USA). http://pubs.wri.org/pubs_description.cfm?PubID=3759

b) National Natural Resource Management Capacity Building Framework. Australian Natural Heritage Trust. http://www.nrm.gov.au/publications/frameworks/pubs/capacity-building-framework.pdf

c) Walker, B., S. Carpenter, J. Anderies, N. Abel, G. S. Cumming, M. Janssen, L. Lebel, J. Norberg, G. D. Peterson, and R. Pritchard. 2002. *Resilience management in social-ecological systems: a working hypothesis for a participatory approach*. *Conservation Ecology* **6**(1):14. www.consecol.org/vol6/iss1/art14/

d) International Labor Organization Declaration on Fundamental Principles and Rights at Work. www.ilo.org/public/english/standards/decl/index.htm

G5. Legal Status and Property Rights

a) Centro de Derecho Ambiental y de los Recursos Naturales (CEDARENA). 2004. *Study of Land Tenure and a Conservation Strategy for Private Lands in the Core Area of the Osa Biological Corridot, Costa Rica*. Key lessons learned at: http://www.eco-index.org/search/results.cfm?projectID=701.

b) March Colchester (ed.). 2001. *A Survey of Indigenous Land Tenure*. A Report for the Land Tenure Service of the Food and Agricultural Organisation. http://www.forestpeoples.org/publications/survey_indig_land_ten.shtml

c) Bruce J.W., 1998. *Review of Tenure Terminology*. Tenure Brief 1, Land Tenure Center, University of Wisconsin-Madison. http://pdf.wri.org/ref/bruce_98_review_tenure.pdf (In Spanish 'Conceptos sobre tenencia de la tierra' http://minds.wisconsin.edu/handle/1793/22007)

d) Land Tenure Center, University of Wisconsin-Madison. http://www.ies.wisc.edu/ltc/

e) World Bank. 2004. *Involuntary Resettlement Sourcebook: Planning and Implementation in Development Projects* . Washington. http://publications.worldbank.org/ecommerce/catalog/product?item_id=2444882

f) The project design should be flexible enough to accommodate potential modifications required to secure regulatory approval.

g) UN Environment Programme (UNEP). *Legal Issues Guidebook to the Clean Development Mechanism*. http://www.cd4cdm.org/Publications/CDM%20Legal%20Issues%20Guidebook.pdf

h) Certified Emission Reductions Sale and Purchase Agreement (CERSPA). This is a free, open-source contract template for buying and selling Certified Emission Reductions (CERs) generated under the Kyoto Protocol's Clean Development Mechanism (CDM). http://www.cerspa.org

i) UN Treaty database. http://untreaty.un.org

j) UN Declaration on the Rights of Indigenous Peoples. http://www.un.org/esa/socdev/unpfii/en/declaration.html

CL1. Net Positive Climate Impacts

a) Intergovernmental Panel on Climate Change, 2006. *Guidelines for National Greenhouse Gas Inventories Volume 4 Agriculture, Forestry and Other Land Use* http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html

b) *Good Practice Guidance for Land Use, Land-Use Change, and Forestry* (especially Chapter 4.3 on LULUCF projects). IPCC. http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_contents.htm. Also, see other references therein.

c) The Land Use, Land-Use Change, and Forestry (LULUCF) Guidance for GHG Project Accounting (LULUCF Guidance). http://www.ghgprotocol.org/files/lulucf-final.pdf

d) California Climate Action Registry Protocols for measuring carbon fluxes. http://www.climateregistry.org/tools/protocols.html.

e) UNFCCC Clean Development Mechanism (CDM) website. http://cdm.unfccc.int

f) CDM and Joint Implementation (JI) Validation & Verification Manual, developed by the International Emissions Trading Association (IETA) and the World Bank Carbon Finance Group. http://www.ieta.org/ieta/www/pages/index.php?IdSiteTree=1146

g) Brown S., 1997. *Estimating Biomass and Biomass Change of Tropical Forests: a Primer*. FAO Forestry Paper - 134. http://www.fao.org/docrep/W4095E/W4095E00.htm

h) Pearson, T., Walker, S., and Brown, S. 2006. Guidebook for the formulation of afforestation and reforestation projects under the Clean Development Mechanism. http://www.itto.or.jp/live/Live_Server/2863/ts25e.pdf

i) CATIE and World Bank BioCarbon Fund. 2008. *Tool For Afforestation Reforestation Approved Methodologies (TARAM).* http://carbonfinance.org/Router.cfm?Page=BioCF&ItemID=9708&FID=9708

CL2. Offsite Climate Impacts ('Leakage')

a) Control plots can be used to compare carbon stock changes within a project area to those on surrounding lands.

b) Monitoring changes in areas without fixed plots can also provide insight into potential leakage.

c) Leakage contracts can be used, e.g., requiring timber concessionaires not to exceed logging quotas on non-project lands and to adopt sustainable harvesting regimes.

d) Projects that incorporate a variety of activities in an integrated and holistic manner may reduce the likelihood of generating negative leakage (see G3).

e) Schwarze, R., J. Niles, & J. Olander. 2002. *Understanding and Managing Leakage in Forest-Based Greenhouse Gas Mitigation Projects*. *Philosophical Transactions of the Royal Society, Series A* 1797:1685-1703. http://pdf.dec.org/pdf_docs/Pnacy489.pdf

f) Auckland, L., P. Moura Costa and S. Brown. 2003. A conceptual framework for addressing leakage on avoided deforestation projects. http://www.ecosecurities.com/Assets/3151/Pubs_A%20conceptual%20framework%20for%20addressing%20leakage%20on%20avoided%20deforestation%20projects.pdf

g) Murray, B.C., McCarl, B.A., and Lee. H. 2004. Estimating Leakage from Forest Carbon Sequestration Programs. *Land Economics* 80(1):109-124. http://le.uwpress.org/cgi/content/abstract/80/1/109

h) Tool For Afforestation Reforestation Approved Methodologies (TARAM). CATIE and World Bank BioCarbon Fund. 2008. http://carbonfinance.org/Router.cfm?Page=BioCF&ItemID=9708&FID=9708

CL3. Climate Impact Monitoring

a) Standard techniques for field measurements of vegetation and soil should be used based on accepted protocols.

b) Intergovernmental Panel on Climate Change. *Good Practice Guidance for Land Use, Land-Use Change, and Forestry*, http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_contents.htm. Also, see other references therein.

c) Pearson, T., S. Walker and S. Brown. 2006. *Sourcebook for Land use, Land use change, and Forestry Projects.* BioCarbon Fund, World Bank, http://www.winrock.org/ecosystems/tools.asp?BU=9086

d) Pearson, T.R.H., S. Brown and R. Birdsey. 2007. *Measurement guidelines for the sequestration of forest carbon*. USDA Forest Service General Technical Report NRS-18. http://www.nrs.fs.fed.us/pubs/gtr/gtr_nrs18.pdf

e) The following CDM Executive Board tool can be used to test the significance of emissions sources: http://cdm.unfccc.int/EB/031/eb31_repan16.pdf

CM1. Net Positive Community Benefits

a) Colfer, C. J. P. (ed.). 2005. *The Equitable Forest: Diversity, Community, and Resource Management.* RFF, Washington DC (USA).

b) The International Council on Mining and Metals (ICMM) indicators on community engagement. http://www.icmm.com/page/629/community-development-toolkit-

c) World Resources Institute (WRI). 2003. *Assessing Access to Information, Participation, and Justice for the Environment: A Guide*. Washington DC, USA, http://pubs.wri.org/pubs_description.cfm?PubID=3814

d) Stec, S. 2003. *Handbook on Access to Justice under The Aarhus Convention*. REC, Szentendre (Hungary). http://www.elaw.org/system/files/aarhus.Access.Justice.pdf

e) Ellis, F. *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press, 2000.

f) Livelihoods Connect: *Sustainable Livelihoods ToolBox*, Learning Guide, Key Documents. http://www.livelihoods.org/info/info_toolbox.html

g) The Sustainable Livelihoods Approach. www.ifad.org/sla/

h) Pasteur, K. *Tools for Sustainable Livelihoods: Livelihoods Monitoring and Evaluation*. IDS, 2001. http://www.livelihoods.org/info/tools/Pas-ME01.rtf

i) Case Studies of Monitoring Livelihoods Impact. http://www.livelihoods.org/lessons/lessons.html

j) Smith, J., Scherr, S.J. 2002. *Forest carbon and local livelihoods: assessment of opportunities and policy recommendations.* CIFOR Occasional Paper. No. 37. 45p. http://www.cifor.cgiar.org/publications/pdf_files/OccPapers/OP-037.pdf

k) Rezende, D. and S. Merlin. 2002. *Social Carbon: Adding value to sustainable development*. Instituto Ecológica, Palmas, Brazil. http://www.ecologica.org.br/downloads/publicacoes/livro_social_carbon.pdf

l) CARE. 2002. *Household Livelihood Security Assessments. A Toolkit for Practitioners.* http://pqdl.care.org/pv_obj_cache/pv_obj_id_8A7F2883250B950EFE54587EE785726E169E2B00

m) PROFOR Program on Forests -The World Bank: The Poverty-Forest Linkages Toolkit. http://www.profor.info/content/livelihood_poverty.html

CM2. Offsite Stakeholder Impacts

a) Borrini-Feyerabend, G. (ed.) 1997. *Beyond Fences: Seeking Social Sustainability in Conservation.* IUCN, Gland (Switzerland). http://www.iucn.org/about/work/initiatives/sp_cprihome/sp_cpri_othersites/index.cfm

b) Also, see references under CM1.

CM3. Community Impact Monitoring

a) Jain, S.P. and W. Polman. 2003. *A Handbook for Trainers on Participatory Local Development.* FAO, RAP publication 2003/07. http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/AD346E/ad346e0e.htm

b) WWF Biodiversity Support Program. *Lessons from the Field. Linking Theory and Practice in Biodiversity Conservation.* Issue 1, 1998. http://www.worldwildlife.org/bsp/bcn/learning/Lessons/lesson1/bsp.htm#Keeping

c) Community Based Natural Resource Management (CBNRM) toolkit http://www.cbnrm.net/index.html

d) World Bank. 2003. *A Users guide to Poverty and Social Impact Assessment*. Annex: Economic and Social Tools for Poverty and Social Analysis. http://siteresources.worldbank.org/EXTSOCIALDEV/Resources/3177394-1167940794463/PSIAUsersGuideAnnexEnglishMay_2003.pdf

e) Also, see references under CM1.

B1. Net Positive Biodiversity Impacts

a) D. B. Lindenmayer and J. F. Franklin (eds.). 2002.*Conserving Forest Biodiversity: A Comprehensive Multiscaled Approach*. Island Press, Washington DC.

b) G. K. Meffe and C. R. Carroll. 1997. *Principles of Conservation Biology, 2nd Edition*. Sinauer Associates, Inc. Sunderland, MA.

c) B. G. Savistsky and T. E. Lacher, Jr. (eds.). 1998. *GIS Methodologies for Developing Conservation Strategies*. Colombia University Press, NY.

d) G.M. Mace, A. Balmford, J.R. Ginsberg, 1999. *Conservation in a Changing World*. Cambridge University Press.

e) IUCN. The IUCN Red List Categories and Criteria, Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK. http://www.iucnredlist.org/static/categories_criteria_3_1

f) IUCN Red List (searchable by country). http://www.iucnredlist.org

g) CITES (searchable by country for species threatened through international trade). http://www.cites.org

h) Talk to appropriate regulatory groups and consult national databases for additional lists of threatened species.

i) Global Invasive Species Database, developed by the IUCN/SSC Invasive Species Specialist Group (ISSG) as part of the global initiative on invasive species led by the Global Invasive Species Programme (GISP). http://www.issg.org/database/welcome

j) Center for Invasive Plant Management http://weedcenter.org/index.html

k) Morse, L.E., J.M. Randall, N. Benton, R. Hiebert, and S. Lu. 2004. *An Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on Biodiversity. Version 1*. NatureServe, Arlington, Virginia. http://www.natureserve.org/getData/plantData.jsp

l) Haysom, K.A. and Murphy, S.T. 2003. *The status of invasiveness of forest tree species outside their natural habitat: a global review and discussion paper*. Forest Health and Biosecurity Working Paper FBS/3E. Forestry Department. FAO, Rome (unpublished). http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/J1583E/J1583E00.HTM

m) US Geological Survey – invasive species reports and links: http://biology.usgs.gov/cro/invasive.htm

n) Hagan, John M. 2004. *Identification of core biodiversity indicators to apply to sustainable forestry*. National Council on Science for Sustainable Forestry, Washington, D.C. http://www.ncseonline.org/ewebeditpro/items/O62F3301.pdf

o) National Council for Air and Stream Improvement, Inc. (NCASI). 2003. *Wildlife and Biodiversity Metrics in Forest Certification Systems*. Technical Bulletin No. 0857. Research Triangle Park, NC: National Council for Air and Stream Improvement, Inc. http://www.ncasi.org//Publications/Detail.aspx?id=81

B2. Offsite Biodiversity Impacts

a) Lambeck, R. and Hobbs, R.J. 2002. *Landscape and regional planning for conservation: Issues and practicalities*, in Applying Landscape Ecology in Biological Conservation. New York, USA: Springer-Verlag, pp.360-380.

b) Van der Sluis, T., M. Bloemmen, I.M. Bouwma, 2004. *European Corridors: Strategies for corridor development for target species*. Alterra, Wageningen University and Research Centre, Netherlands. http://www2.alterra.wur.nl/webdocs/internet/corporate/prodpubl/boekjesbrochures/ecnc_compleet.pdf

c) Opdam P., Foppen R., Vos C, 2002. *Bridging the gap between ecology and spatial planning in landscape ecology*. Landscape Ecology 16: 767–779, 2002. http://www.springerlink.com/content/bubk9bk4v5208dvd/

d) D. B. Lindenmayer and J. F. Franklin (eds.). 2002. *Conserving Forest Biodiversity: A Comprehensive Multiscaled Approach*. Island Press, Washington DC.

B3. Biodiversity Impact Monitoring

a) NHM. *Biodiversity: measuring the variety of nature and selecting priority areas for conservation*. Natural History Museum (NHM), UK, http://www.nhm.ac.uk/science/projects/worldmap/index.html

b) NCASI. 2004. *Managing Elements of Biodiversity in Sustainable Forestry Programs: Status and Utility of NatureServe's Information Resources to Forest Managers*. NCASI Tech. Bull. 0885. Research Triangle Park, NC. http://www.ncasi.org/Publications/Detail.aspx?id=2603

c) Tucker, G., Bubb P., de Heer M., Miles L., Lawrence A., Bajracharya S. B., Nepal R. C., Sherchan R., Chapagain N.R. 2005. *Guidelines for Biodiversity Assessment and Monitoring for Protected Areas.* KMTNC, Kathmandu, Nepal. http://www.unep-wcmc.org/collaborations/BCBMAN/PDF/PA_Guidelines_BMA.pdf

GL1. Climate Change Adaptation Benefits

a) Although the magnitude of the impacts of climate change remains speculative, there are several scientific tools that predict regional impacts from likely future climate change. For particular regions, these models may show, for instance, increased flooding or droughts, more extreme weather events, changes in temperature and rainfall, and other stresses to ecosystems. Regional climate projection tools may be available for some areas.

b) The recommended modeling tool is Maxent because of its ease of implementation and performance. http://www.cs.princeton.edu/~schapire/maxent/

c) Recommended climatologies are IPCC4 A1 or A2 scenarios, Hadley or Japan high resolution GCM, downscaled to 1km (also available on the internet at http://www.worldclim.org).

d) Materials on FAO website on climate change adaptation http://www.fao.org/climatechange/home/en/.

e) CHF – Partners in Rural Development. July 2007. Ethiopia, the path to self resiliency. http://www.chf-partners.ca/publications/documents/Report.pdf

GL2. Exceptional Community Benefits

a) Poverty Mapping: PovertyNet, The World Bank http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/0,,contentMDK:21517522~isCURL:Y~menuPK:336998~pagePK:148956~piPK:216618~theSitePK:336992,00.html

b) Poverty Measurement and Analysis: PovertyNet, The World Bank http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPRS/0,,contentMDK:20177055~pagePK:210058~piPK:216618~theSitePK:384201,00.html

c) Inter-country Comparisons of Poverty Based on a Capability Approach: An Empirical Exercise. http://www.undp-povertycentre.org/pub/IPCWorkingPaper27.pdf

d) Introduction to Poverty Analysis. The World Bank Institute, 2005. http://siteresources.worldbank.org/PGLP/Resources/PovertyManual.pdf

a) World Bank. 2003. *A Users guide to Poverty and Social Impact Assessment.* Annex: Economic and Social Tools for Poverty and Social Analysis. http://siteresources.worldbank.org/EXTSOCIALDEV/Resources/3177394-1167940794463/PSIAUsersGuideAnnexEnglishMay_2003.pdf

b) Maxwell, S. and T.Frankenberger. 1992. *Household Food Security: Concepts, Indicators and Measurement.* UNICEF/IFAD, http://www.ifad.org/gender/tools/hfs/hfspub/

c) Beerlandt, H. and S. Huysman. 1999. *Manual for the Bottom-up-Approach in Food Security Interventions: Analysis of Target Groups.* IFAD/Belgian Survival Fund. http://www.ifad.org/gender/tools/hfs/bsfpub/manual_toc.htm

d) CARE. 2002. *Household Livelihood Security Assessments. A Toolkit for Practitioners*. http://pqdl.care.org/pv_obj_cache/pv_obj_id_8A7F2883250B950EFE54587EE785726E169E2B00

e) Maxwell, D., B.Watkins, R. Wheeler and G. Collins. 2003. *The Coping Strategies Index: Field Methods ManualCARE/WFP*. http://www.fao.org/crisisandhunger/root/pdf/cop_strat.pdf

f) Community Vulnerability to Food Insecurity: Assessment Methodology. Food for the Hungry, 2006. http://www.foodsecuritynetwork.org/resources/foodsecurity/fh_community_vulnerability_to_food_insecurity_assessment_methodology.doc

g) New Approaches for Measuring Household Food Insecurity and Poverty: Adaptation of US Household Food Security Scale to Developing Country Contexts. Food and Nutrition Analysis (FANTA). http://www.fantaproject.org/publications/hfss.shtml

h) Food Security Network (Food for the Hungry and USAID) resource page. http://www.foodsecuritynetwork.org/resources/foodsecurity.html

i) Food Insecurity and Vulnerability Information and Mapping Systems (FAO website dedicated to larger scale mapping of poverty and vulnerability). http://www.fivims.net/

j) Ravi Jayakaran. 2002. *The Ten Seed Technique: a modified participatory learning and action (PLA) technique.* http://www.entrepreneursdumonde.org/pratiques/files/Ten-Seed%20Technique.pdf

GL3. Exceptional Biodiversity Benefits

a) Langhammer, P.F., Bakarr, M.I., Bennun, L.A., Brooks, T.M., Clay, R.P., Darwall, W., De Silva, N., Edgar, G.J., Eken, G., Fishpool, L.D.C., Fonseca, G.A.B. da, Foster, M.N., Knox, D.H., Matiku, P., Radford, E.A., Rodrigues, A.S.L., Salaman, P., Sechrest, W., and Tordoff, A.W. 2007. *Identification and gap analysis of Key Biodiversity Areas: Targets for comprehensive protected area systems.* Best Practice Protected Areas Guidelines Series No. 15. IUCN, Gland, Switzerland, http://www.iucn.org/dbtw-wpd/edocs/PAG-015.pdf

b) Ricketts, T.H., Dinerstein, E., Boucher, T., Brooks, T.M., Butchart, S.H.M., Hoffmann, M., Lamoreux, J., Morrison, J., Parr, M., Pilgrim, J.D., Rodrigues, A.S.L., Sechrest, W., Wallace, G.E., Berlin, K., Bielby, J., Burgess, N.D., Church, D.R., Cox, N., Knox, D., Loucks, C., Luck, G.W., Master, L.L., Moore, R., Naidoo, R., Ridgely, R., Schatz, G.E., Shire, G., Strand, H., Wettengel, W. and Wikramanayake, E. 2005. Pinpointing and preventing imminent extinctions. *Proceedings of the National Academy of Sciences* 51: 18497-18501

c) Integrated Biodiversity Assessment Tool (IBAT) (for maps of Key Biodiversity Areas and protected areas). http://www.ibatforbusiness.org/ibat/

d) Alliance for Zero Extinction. http://www.zeroextinction.org/

e) For the purposes of GL2, 2.5, bioregions at a minimum should follow the ecoregional classifications defined by the following references:

For terrestrial: Olson, D.M., Dinerstein, E., Wikramanaya, K.E., Burgess, N.D., Powell, G.V., Underwood, E.C., D'Amico, J.A., Itoua, I., Strand, H.E., Morrison, J.C., Loucks, C.J., Allnutt, T.F., Ricketts, T.H., Kura, Y., Lamoreux, J.F., Wettengel, W.W., Hedao, P. and Kassem, K.R. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. *Bioscience*, Vol. 51, No 11: 933-938. http://www.worldwildlife.org/science/ecoregions/WWFBinaryitem6498.pdf;

For freshwater: Abell, R., Thieme, M.L., Revenga, C., Bryer, M., Kottelat, M., Bogutskaya, N., Mandrak, N., Balderas, S.C., Bussing, W., Staissny, M.J., Skelton, P., Allen, G.R., Unmack, P., Naseka, A., Ng, R., Sindorf, N., Robertson, J., Armijo, E., Higgins, J.V., Heibel, T.J., Wikramanayake, E., Olson, D., Lopez, H.L., Reis, R.E., Lundberg, J.G., Perez, M.H.S., Petry, P. 2008. Freshwater Ecoregions of the World: A New Map of Biogeographic Units for Freshwater Biodiversity Conservation. *Bioscience*, Vol. 58, No. 5.: 403-414. http://www.worldwildlife.org/science/ecoregions/WWFBinaryitem8903.pdf;

For marine: Spalding, M., Fox, H.E., Allen, G.R., Davidson, N., Ferdana, Z.A., Finlayson, M., Halpern, B.S., Jorge, M.A., Lombana, A., Lourie, S.A., Martin, K.D., McManus, E., Molnar, J., Recchia, C.A., and Robertson, J. 2007. Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas. *Bioscience*, Vol. 57, No. 7: 573-583. http://www.worldwildlife.org/science/ecoregions/marine/WWFBinaryitem6091.pdf.

f) Further information and maps are available at:
Terrestrial: http://www.worldwildlife.org/science/ecoregions/item1267.html
Freshwater: http://www.worldwildlife.org/science/ecoregions/freshwater.html
Marine: http://www.worldwildlife.org/science/ecoregions/marine/item1266.html

Appendix B
Glossary

Adaptive Management – Is a philosophy that accepts that management must proceed even without complete information. It views management not only as a way to achieve objectives, but also as a process for probing to learn more about the resource or system being managed. Learning is an inherent objective of adaptive management. Adaptive management is a process where policies and activities can adapt to future conditions to improve management success.

Additionality – Environmental or emissions additionality refers to the carbon accounting procedures whereby projects must demonstrate real, measurable, and long-term results in reducing or preventing carbon emissions that would not have occurred in the absence of CDM activities. Proof of additionality is critical because developing countries do not have legally binding reduction commitments by which to judge changes in national baselines.

AFOLU – Agriculture, Forestry and Other Land Use.

Auditor – A recognized, qualified and independent professional who evaluates which of the individual CCB Standards criteria are satisfied by the project in question. Based on this determination, the project may earn CCB Standards approval or, in exceptional cases, achieve Gold Level status. Given that investments in carbon offset projects are likely to take place before projects are initiated, it is important that *ex ante (i.e., 'beforehand')* validation assessments are performed, such as through the use of the CCB Standards.

Baseline – The baseline represents forecasted conditions (whether carbon-, community- or biodiversity-related) under a business-as-usual or 'without project' scenario (i.e., had the project activities not been implemented). Often referred to as the 'baseline scenario' or 'reference scenario.'

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[61].

Carbon Dioxide (CO_2) – 3.666 units of CO_2 equal one unit of carbon (C). CO_2 plays a critical role in creating and regulating the earth's climate (see Greenhouse Gas).

Carbon Dioxide Equivalent (CO_2e) – Is the universal unit of measurement used to indicate the global warming potential of each of the seven greenhouse gases. It is used to evaluate the impacts of releasing (or avoiding the release of) different greenhouse gases. The Global Warming Potentials (GWP) of the three GHGs associated with forestry are as follows. CO_2 persists in the atmosphere for about 200-450 years and its GWP is defined as 1. Methane persists for 9-15 years and has a GWP of 22 (meaning that it has 22 times the warming ability of carbon dioxide). Nitrous oxide persists for about 120 years and has a GWP of 310.

Carbon Pools – A reservoir of carbon. A system that has the capacity to accumulate or release carbon. Carbon pools are measured in terms of mass (e.g., metric tons of carbon). The major carbon pools associated with forestry projects are: live biomass (including above and below ground components, i.e., roots), dead biomass, soil, and wood products.

Carbon Stocks – The quantity of carbon held within a pool at a specified time.

Carbon Sink – Any process, activity or mechanism that results in the net removal of greenhouse gases from the atmosphere.

[61] Article 2. Use of terms. Definition of biological diversity. Convention on Biological Diversity. http://www.cbd.int/convention/convention.shtml

Carbon Source – Opposite of carbon sink. A carbon pool is a net source of carbon to the atmosphere if less carbon is flowing into it than is flowing out of it.

CCBA public comment period – Is the process in which CCBA posts project documents that are under evaluation by an auditor for conformance with the Standards on www.climate-standards.org for at least 30 days with an invitation and link for public comments to which the auditor must respond in the audit report.

Clean Development Mechanism (CDM) – Is a mechanism established by Article 12 of the Kyoto Protocol for project-based emission reduction activities in developing countries. The CDM is designed to meet two main objectives: to address the sustainable development needs of the host country, and to increase the opportunities available to Treaty Parties to meet their reduction commitments. Under the CDM, Annex I (industrialized) countries can accrue 'certified emission reduction units (CERs), which are tradable carbon 'credits', in return for financing carbon reduction project activities in non-Annex I (developing countries) that help further their sustainable development. http://cdm.unfccc.int

Climate Change Mitigation – The reduction of greenhouse gas (GHG) emissions to achieve stabilization of GHG concentrations in the atmosphere and subsequently a cessation of further warming.

Communities – For the purposes of the CCB Standards, 'communities' are defined as all groups of people including Indigenous Peoples, mobile peoples and other local communities, who live within or adjacent to the project area as well as any groups that regularly visit the area and derive income, livelihood or cultural values from the area. This may include one or more groups that possess characteristics of a community, such as shared history, shared culture, shared livelihood systems, shared relationships with one or more natural resources (forests, water, rangeland, wildlife etc), and shared customary institutions and rules governing the use of resources.

Customary rights – 'Customary rights' to lands and resources refers to patterns of long-standing community land and resource usage in accordance with Indigenous Peoples' and local communities' customary laws, values, customs, and traditions, including seasonal or cyclical use, rather than formal legal title to land and resources issued by the State.

Criteria (singular **Criterion**) **–** A standard on which a judgment or decision can be based. The CCB Standards are comprised of 17 discrete criteria, including 14 required criteria and three optional Gold Level criteria.

Ecosystem – A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.[62]

Endemic species – Species for which the entire global range is restricted to the site, the region or the country (the level of endemicity must be defined).

GMO – Genetically Modified Organism. GMO's are defined as any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology and which is capable of transferring or replicating genetic material.

Greenhouse Gases (GHG) – Greenhouse gases are gaseous components of the atmosphere that trap infrared heat and contribute to the Earth's greenhouse effect. In addition to carbon dioxide (CO_2), prominent GHGs related to forests include methane (CH_4) and nitrous oxides (N_2O).

High Conservation Values - There are six main High Conservation Values, based on the definition originally developed by the Forest Stewardship Council for certification of forest ecosystems, but now increasingly expanded to apply to assessments of other ecosystems http://hcvnetwork.org/.

1. Globally, regionally or nationally significant concentrations of biodiversity values;
    a. protected areas

[62] Article 2. Use of terms. Convention on Biological Diversity. http://www.cbd.int/convention/articles.shtml?a=cbd-02

b. threatened species
c. endemic species
d. areas that support significant concentrations of a species during any time in their lifecycle (e.g. migrations, feeding grounds, breeding areas)

2. Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;
3. Threatened or rare ecosystems;
4. Areas that provide critical ecosystem services (e.g., hydrological services, erosion control, fire control);
5. Areas that are fundamental for meeting the basic needs of local communities (e.g., for essential food, fuel, fodder, medicines or building materials without readily available alternatives); and
6. Areas that are critical for the traditional cultural identity of local communities (areas of cultural, ecological, economic or religious significance identified in collaboration with the local communities).

Indicators – Agreed list of quantitative markers for monitoring progress towards desired goals and targets. The CCB Standards include indicators under each criterion that third-party auditors must use to determine whether the project in question satisfies that particular criterion.

Indigenous Peoples – The term 'Indigenous Peoples' is used in a generic sense to refer to a distinct, vulnerable social and cultural group possessing the following characteristics in varying degrees:

a) self identification as members of a distinct indigenous cultural group and recognition of this identity by others;
b) collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
c) customary cultural, economic, social, or political institutions that are separate from those of the dominant society or culture; and
d) an indigenous language, often different from the official language of the country or the region.[63]

Intergovernmental Panel on Climate Change (IPCC) – Established in 1988 as a special body by the UN Environment Programme and the World Meteorological Organization to provide assessments to policymakers of the results of ongoing climate change research. The IPCC is responsible for providing the scientific and technical foundation for the United Nations Framework Convention on Climate Change (UNFCCC), primarily through the publication of periodic assessment reports (see 'Second Assessment Report' and 'Third Assessment Report'). http://www.ipcc.ch/

Invasive Species – 'Invasive species' are defined as non-native species that threaten ecosystems, habitats or species in the project zone as identified in the Global Invasive Species Database: http://www.issg.org/database, from scientific literature, and from local knowledge.

IPCC 2006 GL for AFOLU – The Intergovernmental Panel on Climate Change's 2006 Guidelines for National GHG Inventories for Agriculture, Forestry and Other Land Use Volume 4 Agriculture, Forestry and Other Land Use. http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html.

Key Biodiversity Areas – sites of global significance for biodiversity conservation that satisfy criteria based on a framework of vulnerability and irreplaceability defined in terms of species and population threat levels www.iucn.org/dbtw-wpd/edocs/PAG-015.pdf.

Vulnerability

Regular occurrence of a globally threatened species (according to the IUCN Red List) at the site:

a) Critically Endangered (CR) and Endangered (EN) species – presence of at least a single individual; or
b) Vulnerable species (VU) – presence of at least 30 individuals or 10 pairs.

[63] The World Bank Operational Manual, OP 4.10, July 2005, Article 4.

Irreplaceability
A minimum proportion of a species' global population at any stage of the species' lifecycle at the site. These thresholds vary based on the following sub-criteria:

a) Restricted-range species - species with a global range less than 50,000 km *and* 5% of global population at the site; or
b) Species with large but clumped distributions - 5% of global population at the site; or
c) Globally significant congregations -1% of global population seasonally at the site; or
d) Globally significant source populations -1% of global population at the site; or
e) Bioregionally restricted assemblages.

Kyoto Protocol to the UNFCCC – Establishes legally binding commitments for Annex I ('developed') countries to collectively reduce GHG emissions by more than 5 percent below 1990 levels by 2008 to 2012. The Kyoto Protocol includes a set of mechanisms in addition to domestic mitigation —such as International Emissions Trading, Joint Implementation, and the Clean Development Mechanism—that allow countries to achieve their commitments.

Land Use, Land-Use Change and Forestry (LULUCF) – The Kyoto Protocol rubric for land-based activities that have the potential to impact carbon stocks and emissions.

Leakage – Any increase in emissions of GHGs outside the project boundary as a result of project activities.

Local laws – Local laws include all legal norms given by organisms of government whose jurisdiction is less than the national level, such as departmental, municipal and customary norms.

Native – Native species are considered those that are part of the composition of a natural representative ecosystem of the area where the project site is located.

Non-native – Species occurring outside their natural range, whether accidentally or intentionally introduced.

Other stakeholders – The main groups potentially affected by the project activities that are not living on or adjacent to the project site.

Permanence – The longevity of a carbon pool and the stability of its stocks, given the management and disturbance environment in which it occurs. A feature of land-based carbon projects is the possibility of a reversal of carbon benefits from either natural disturbances (e.g., fires, disease, pests, and unusual weather events), or from the lack of reliable guarantees that the original land use activities will not return after the project concludes. Strategies have been identified that mitigate potential reversals such as the non-permanence risk analysis and buffer approach adopted by the Voluntary Carbon Standard or the establishment of contingency carbon credits, insurance, conservation easements and mixed portfolios of projects.

Precautionary principle – is defined in the Preamble to the *Convention on Biological Diversity* (1992): '[W]here there is a threat of **significant reduction** or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.'

Project – A set of actions or activities applied to a defined geographical area for specific purposes.

Project area – The land within the carbon project boundary and under the control of the project proponent.

Project GHG accounting period – The time period over which the project will quantify net changes in GHG emissions reductions or removals.

Project lifetime – The time period over which project activities will be implemented.

Project start date – For the purposes of the CCB Standards the 'start of the project' is defined as the start of implementation of activities that will directly cause the project's expected GHG emissions reductions or removals.

Project zone – The project area and the land within the boundaries of the adjacent communities potentially affected by the project.

Project Proponents – the entities or individuals organizing, proposing or advocating a particular carbon offset project. The project proponents could be the project designer(s), developer(s) and/or investor(s), or other parties working on behalf of the project.

Protected Area - An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means

REDD – Reduced Emissions from Deforestation and Forest Degradation

Reforestation – Is the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land. According to the language of the Kyoto Protocol, for the first commitment period (2008-2012), reforestation activities are limited to reforestation occurring on lands that did not contain forest at the start of 1990.

Sequestration – The process of increasing the carbon content of a carbon pool other than the atmosphere. There are various opportunities to remove atmospheric CO_2, either through biological processes (e.g. the growth of plants and trees), or geological processes (e.g., storage of CO_2 in underground reservoirs).

Threatened species – The term 'threatened' is used to describe species at risk of extinction, specifically those falling into IUCN's threat categories of Critically Endangered (CR), Endangered (EN) and Vulnerable (VU). The IUCN Red List of Threatened Species is the most comprehensive global standard on the status and distribution of globally threatened species. Individual species are assigned threat categories by a network of specialist groups which convene workshops to compile and review the best available information on species. The categorization of species is based on a set of explicit quantitative criteria and standards which are subject to review and continuous appraisal. Many national and local governments have developed complementary listings of threatened species, many of which contribute towards or are informed by the IUCN Red List. These are often available in national or regional reports, legislation or related policies. Where species have not been evaluated by IUCN Red List or national lists, the criteria for global (IUCN, 2001) or regional (IUCN, 2003) assessments could be used to assign a threat category to them. http://www.iucnredlist.org. Additional national or regional listings should also be used where these may differ from the IUCN Red List.

United Nations Framework Convention on Climate Change (UNFCCC) – The UNFCCC, along with the Convention on Biological Diversity (CBD), were two agreements to emerge from the 1992 U.N. Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil. The Kyoto Protocol emerged out of the UNFCCC and sets specific timelines and timetables for reducing industrialized nations' GHG emissions and allows some international trading in carbon credits. http://unfccc.int

Voluntary Carbon Standard (VCS) - The Climate Group, the International Emissions Trading Association, the World Economic Forum and the World Business Council for Sustainable Development developed the Voluntary Carbon Standard to provide a robust, global standard and program for approval of credible voluntary offsets. http://www.v-c-s.org

Workers – Workers are defined as people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.