MANUAL FOR SOCIAL IMPACT ASSESSMENT OF LAND-BASED CARBON PROJECTS:

PART II – TOOLBOX OF METHODS AND SUPPORT MATERIALS

VERSION 1.0

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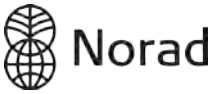

A Note about this Version:

This version is being for the purpose of gathering feedback from project developers. An updated version will be published in early 2011. Please send any suggestions to improve this document to Michael Richards (mrichards@forest-trends.org) or Steve Panfil (spanfil@climate-standards.org).

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Forest Trends' mission is to maintain, restore, and enhance forests and connected natural ecosystems, life-sustaining processes, by promoting incentives stemming from a broad range of ecosystem services and products.

Specifically, Forest Trends seeks to catalyze the development of integrated carbon, water, and biodiversity incentives that deliver real conservation outcomes and benefits to local communities and other stewards of our natural resources.

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List of Acronyms (Core Guidance and Toolbox)

A/R	Afforestation/Reforestation
BNS	Basic Necessities Survey
CCB	Climate, Community and Biodiversity (Standards)
CCBA	Climate, Community and Biodiversity Alliance
CDM	Clean Development Mechanism
CMP	Conservation Measures Partnership
FUG	Forest User Group (Nepal)
GEB	Global environmental benefit
GEF	Global Environment Facility
GFI	Governance of Forests Initiative
IAIA	International Association for Impact Assessment
INAFI	International Network of Alternative Financial Institutions
ISEAL	International Social and Environmental Accreditation and Labeling (Alliance)
LOAM	Landscape Outcome Assessment Methodology
M&E	Monitoring and Evaluation
MEA	Millennium Ecosystem Assessment
MFI	Micro-Finance Institution
MPA	Marine Protected Area
MSC	Most Significant Change (method)
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Product
PDD	Project Design Document
PEV	Participatory Economic Valuation
PIA	Participatory Impact Assessment
PIPA	Participatory Impact Path Analysis
PLA	Participatory Learning and Action
PRA	Participatory Rural Appraisal
QPA	Quantitative Participatory Assessment
REDD	Reduced Emissions from Deforestation and forest Degradation
ROtI	Review of Outcomes to Impacts (methodology)
RRA	Rapid Rural Appraisal
SAPA	Social Assessment of Protected Areas (initiative)
SCM	Social Carbon Methodology
SEEP	Small Enterprise and Education Network
SEYMEMP	Seychelles Marine Ecosystem Management Project
SIA	Social Impact Assessment
SLF	Sustainable Livelihoods Framework
SMART	Specific, Measurable, Achievable, Realistic/Reliable, Time-bound
WTP	Willingness to Pay

Note: Only acronyms that are used more than once are listed here.

T1 Introduction to Toolbox

T1.1 Structure of Toolbox

This Toolbox comprises Part Two of the Manual for Social Impact Assessment (SIA) of Land-Based Carbon Projects. It is divided into three main areas: SIA frameworks; data collection and analysis methods; and support material including a review and typology of social impacts, and further guidance on how to select appropriate indicators.

Areas 1 and 2 of the Toolbox do not aim for a comprehensive presentation of all the possible SIA approaches and methods, but only those regarded as most relevant to the specific objectives of the Manual. Also, it only provides an introduction to the approaches and tools to help a project developer decide which approaches and methods to use. The project developer should then go to the source materials on a specific method since the guidance provided in the Toolbox is insufficient on its own for implementing a given method. Most of the source materials are available on the internet.

T1.2 Classification of SIA Approaches and Methods

SIA approaches and methods or tools can be conveniently classified according to three main challenges. These are:

- WHAT evaluation or impact assessment design approach or framework should be used to assess social change?
- WHAT should be measured to show that a positive or negative social change has occurred?
- HOW can the indicators of social change be measured cost-effectively?

There is a strong relationship between the first two issues – the evaluation design approach in general leads to the identification of what indicators should be measured. The last question is more straightforward and refers to a range of possible data collection methods for measuring indicators, including participatory methods.

Based on an earlier analysis of the literature (Richards, 2008) and other reviews (Schreckenberg et al., 2010) we have selected the approaches and methods regarded as most cost-effective, practical and useful (e.g., for showing attribution). Thus, for example, it was decided not to present evaluation design or data analysis frameworks based on the 'rights-based approach' or 'value chain analysis'. It was also felt that the more sophisticated 'matching methods' (experimental and quasi-experimental methods) are inappropriate for land-based carbon projects due to the costs and expertise required.

This resulted in three main impact assessment frameworks, although it is emphasized that these are not mutually exclusive, and may be complementary:

- Causal models or the theory of change approach (Section T2)
- Sustainability framework approaches (Section T3)
- 'Matching methods' (Section T4)

Sections T5 and T6 present a range of data collection methods, assuming that appropriate indicators have been selected based on the impact assessment framework (again these can be used in combination):

- General data collection methods (T5)
- Basic Necessities Survey (BNS) (T6.1)
- Participatory Impact Assessment (PIA) (T6.2)
- Quantitative Participatory Assessment (QPA) (T6.3)
- Participatory Economic Valuation (PEV) (T6.4)
- The Most Significant Change (MSC) method (T6.5)

Section T7 presents some other useful data collection and analysis tools, and which complement the social impact assessment frameworks and data collection methods:

- Stakeholder analysis (T7.1)
- Problem trees (T7.2)
- Scenario analysis (T7.3)

T1.3 Presentation of Methods and Examples

As far as possible, each approach or method is explained in a systematic way:

- Introduction to method
- Description of method
- Example of method (if available)
- Advantages and disadvantages of the method (or family of methods)
- Main sources and further guidance

Examples, at least in the context of land-based carbon projects, are sparse in view of the limited experience and sources of impact assessment studies of land-based carbon projects; therefore most of the examples are drawn from the biodiversity conservation and sustainable livelihoods literature.

Finally, we stress that the guidance presented here is in general only a summary of the more detailed guidance available in the source documents. While these summary descriptions should facilitate a decision by project proponents of what methods to use, users should refer to the source materials before attempting to implement them. They should also invest in some advisory inputs, ideally at the project design stage, to help design the evaluation methodology and think about appropriate tools.

TOOLBOX AREA 1: SOCIAL IMPACT ASSESSMENT FRAMEWORKS

T2 Causal Model of Theory of Change Approach

T2.1 Introduction

The causal model or theory of change approach was introduced in SIA Stage 3 of Part One of the Manual. Here we present three specific causal model or theory of change methodologies with potential for use by land-based carbon projects with some adaptation. Project developers could choose one of these as a model or template, or they may decide on a hybrid model combining elements of several of the models. The three methodologies selected for more detailed presentation are:

- The 'Open Standards' approach developed by the Conservation Measures Partnership
- The 'Review of Outcomes to Impacts' (ROtI) approach developed by the Conservation Development Centre for the Global Environment Facility (GEF) Evaluation Office
- 'Participatory Impact Pathways Analysis' (PIPA) developed by the Institutional Learning and Change Initiative (ILAC) and the International Centre for Tropical Agriculture (CIAT)

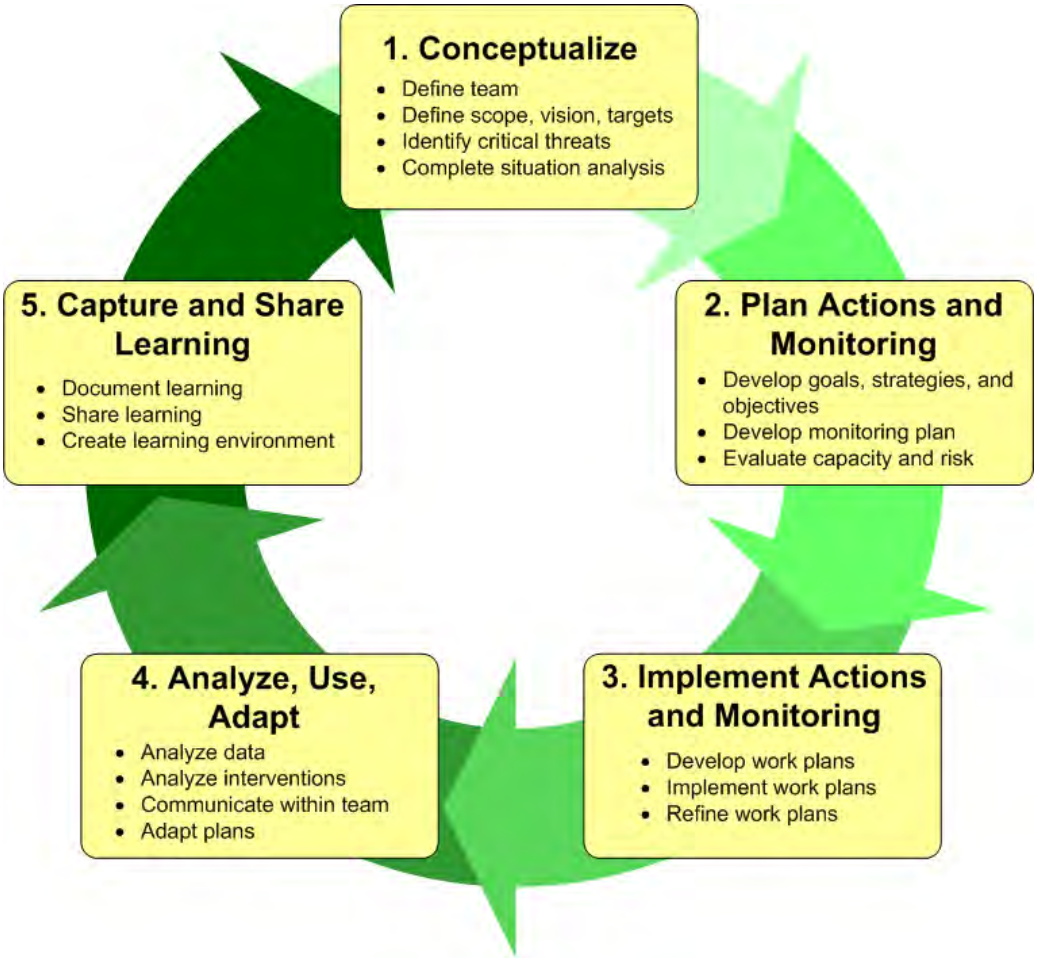
The Open Standards approach is a comprehensive and holistic approach to project design, monitoring and evaluation, so is of most value when used at the design stage (although all the variants should ideally be used at the design stage). The Review of Outcomes to Impact (ROtI) approach could be used as a more 'stand alone' approach to SIA if the project design process was robust. On the other hand it is mainly designed for ex-post evaluation so would need to be adapted for the validation stage assessment. Participatory Impact Pathways Analysis (PIPA) may be more appropriate for situations in which stakeholder relationships are complex. All three approaches require some training and/or an experienced facilitator for at least part of the process.

T2.2 The 'Open Standards' Approach

The 'Open Standards for the Practice of Conservation' have been developed by the mutli-institutional Conservation Measures Partnership (2007)[2]. They are backed up by the Miradi software package (www.miradi.org) developed specifically for project developers or managers. The Open Standards methodology views the 'conceptual model' as an integral component of project design, and more broadly of project cycle management. It is therefore presented as a complete project cycle management package consisting of five main 'Stages' as shown in Figure T1. Since the Open Standards methodology is broader than impact assessment, only the most relevant steps for SIA are more fully described.

[2] This includes The Nature Conservancy (TNC), Wildlife Conservation Society (WCS), World Wildlife Fund (WWF) and Foundations for Success (FOS). The Open Standards are also based on a long-term study of good principles for project cycle management, including results of the 'Measuring Conservation Impact Initiative' which drew on M&E experience in seven fields – conservation, public health, family planning, international development, social services, education, and business. There is also a CMP Audit Protocol for certifying organizations for their adherence to the 'Open Standards'.

Figure T1: The Main Stages and Steps of the 'Open Standards' Methodology



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Description of Method

Stage 1. 'Conceptualize'

Step 1A. Selection of the initial project team

Step 1B. Definition of scope, vision and targets

- Scope: this refers to a general description (or 'broad parameters') of what the project is trying to achieve and over what area.
- Vision: this refers to a description of the desired state or ultimate condition the project is working to achieve. A brief vision statement is recommended.
- Targets: this refers to the specific targets of the project, e.g., achievement of net positive community benefits. The current status of each target should be described.

Step 1C. Identification of critical threats

For each target, the direct threats to achieving the target should be identified. These threats come mainly from human activities; physical or natural phenomena; local power, governance or political pressures; and wider policy, legal or institutional factors. These threats should be ranked in terms of the extent of the threat and its likely severity on the targets.

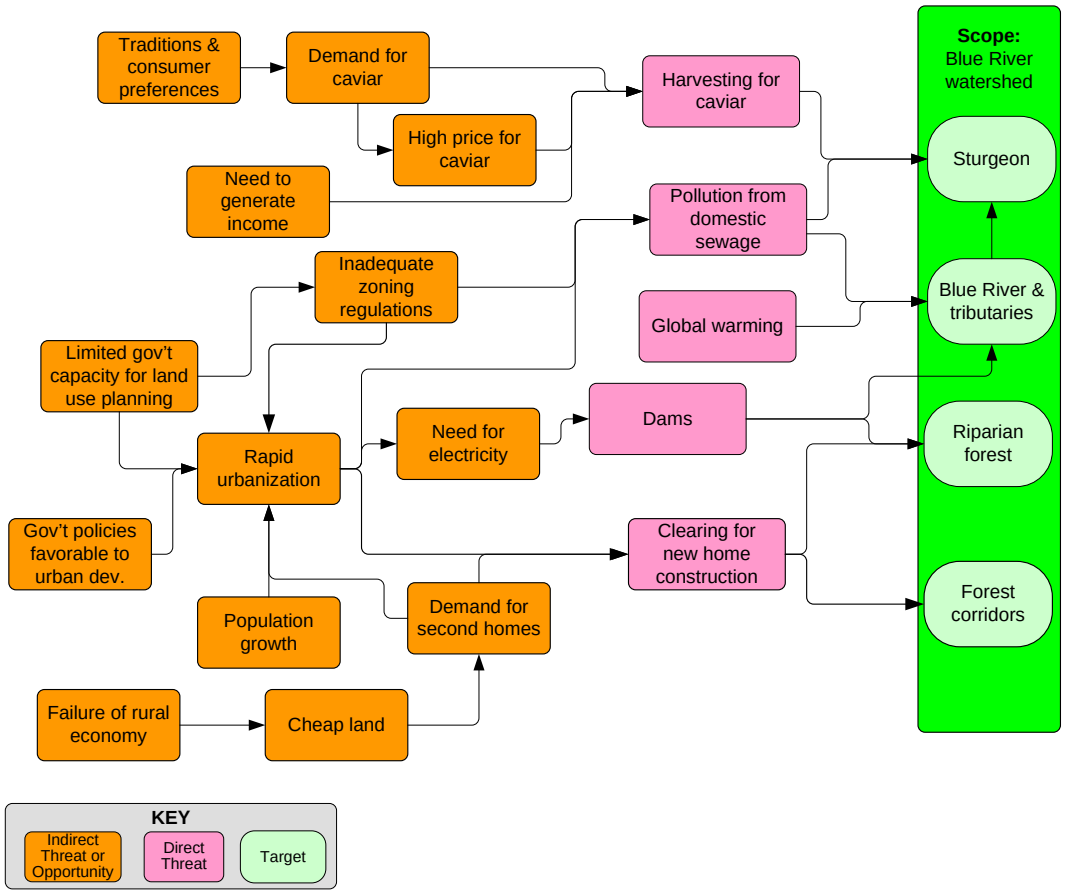
Step 1D. Situation analysis

This step involves a holistic analysis and description of the project context, including the biological, environmental, social, economic, political and institutional systems that could affect the project targets. This understanding gives the project developer a better chance of designing activities that will achieve the desired impacts.

Part of the situation analysis involves identifying the factors driving the threats identified in Step 1C. These factors can include indirect threats (also known as 'root causes' and 'drivers'), 'opportunities' and 'enabling conditions'. An opportunity (the opposite of a threat) is "a factor identified in an analysis of the project situation that potentially has a positive effect on one or more targets, either directly or indirectly" (e.g., developing nurseries provides an opportunity for enhancing female employment); and an enabling condition is a "a broad or high-level opportunity", e.g., a change in the national legal or policy framework. These opportunities and enabling conditions can range from local to global factors. Each 'factor' is then linked to one or more stakeholders (individuals, groups or institutions with an interest in or likely to be affected by the project activities). Stakeholder analysis should be used to consider potentially positively and negatively influenced stakeholders.

As part of the situation analysis, a '**conceptual model**' should be developed. This is "a tool that visually portrays the relationships among the visual factors in your situation analysis." This should illustrate the cause and effect relationships in the project area. It needs to be built up in a team exercise, and ground-truthed via discussion with key project stakeholders and partners. Figure T2 presents an example of a conceptual model for a watershed site. Finally, the conceptual model should be peer reviewed.

Figure T2: Example of a Conceptual Model for a Watershed Project



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Stage 2. Planning and Monitoring

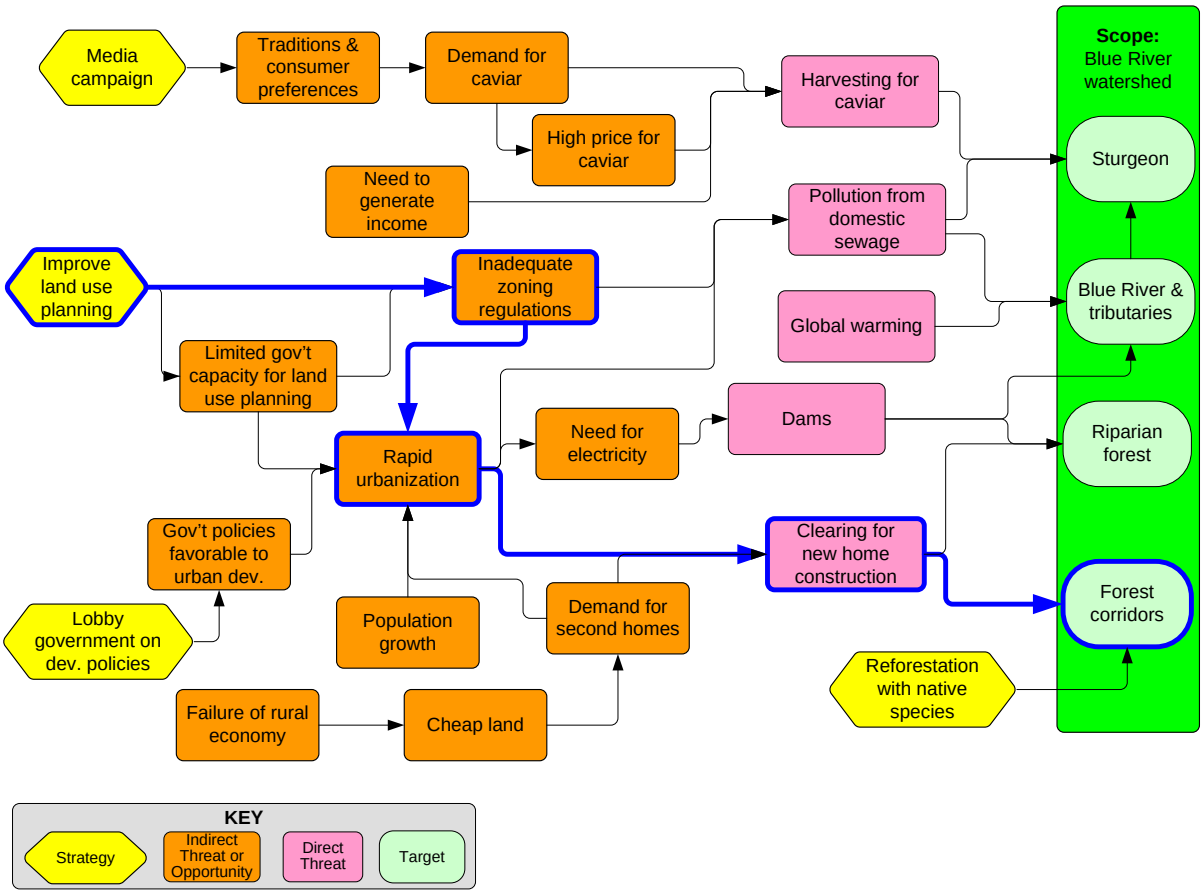
Step 2A. Development of Project Action Plan

In this stage the project logic, linkages, etc., are developed by project stakeholders, by placing colored cards on a sticky tarpaulin sheet. This step involves the development of an Action Plan (with goals, strategies and objectives), a Monitoring Plan, and an Operational Plan. These combine to form the Strategic Plan for the project. The Goals refer to the desired state of the targets over the long-term and should be SMART.

Strategic planning means deciding where to intervene. This means prioritizing the factors in the causal model where action is needed – these are the key intervention points. Interventions may aim to directly counter the direct threats, but it may be wiser to target points in the chain of factors leading to the threat. After selecting the key intervention point, there should be a brainstorm and prioritization of strategies, which are composed of multiple activities.

The strategies can now be put into the conceptual model – this will show the intervention point and the chain of factors that the project hopes to alter. For example, in Figure T3, the strategy 'improve land use planning' directly addresses two key intervention points: 'inadequate zoning regulations' and 'limited government capacity for land use planning'. It is assumed that a change in land use planning will also lead to changes in other factors.

Figure T3: Conceptual Model Example with Key Factors and Strategies Identified



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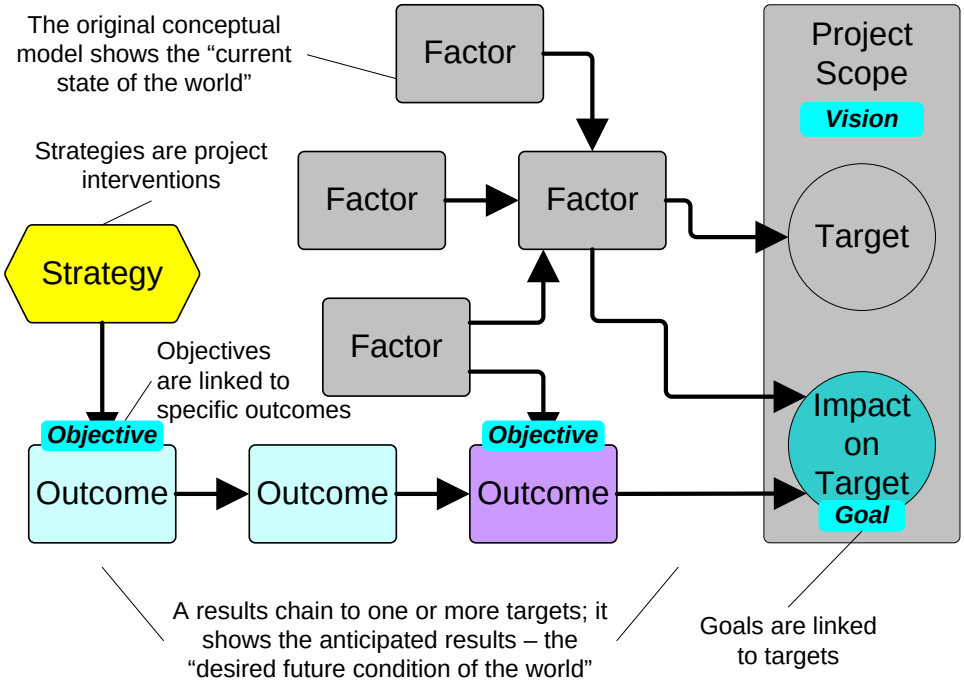
In order to be clear about how the strategy will help achieve the planned project impacts, it is necessary to be explicit about the assumptions involved in the project theory of change. A 'results chain' (equivalent to a causal model) is a graphical description of these assumptions. Figure T4 shows how the results chain relates to the action plan.

Figure T4: Generic Conceptual Model with Action Plan Components



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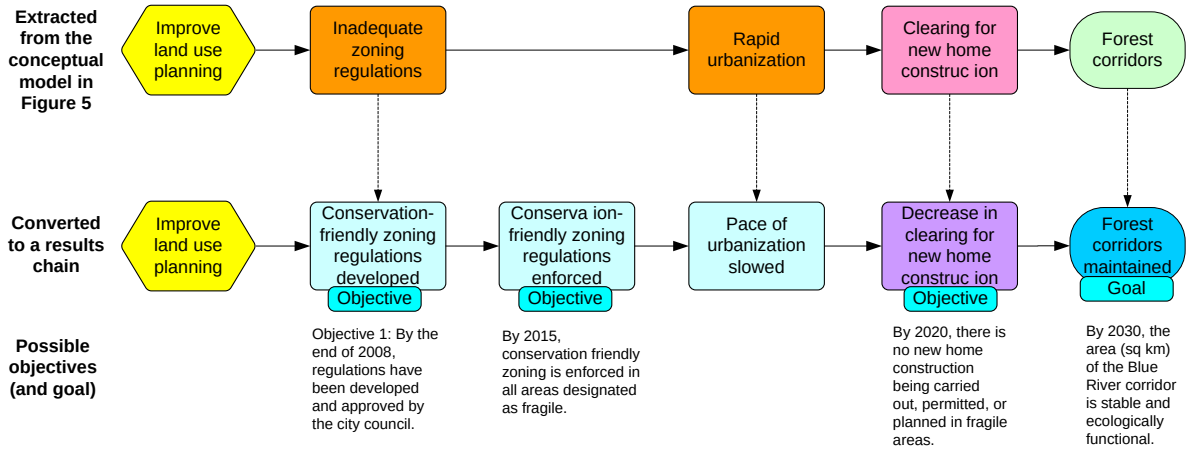
Results chains help set the objectives that specify the desired short and medium term changes (outcomes) in specific threats and opportunities. Again, these objectives should be SMART. Figure T5, which presents an example of a results chain, shows how the objectives are tied to the desired results for the factors in the results chain.

The goals and objectives specified in the results chain represent what the project hopes to achieve, and reflect the assumptions held about how the project strategy will achieve the desired results. They are the indicators of success. Together the goals, objectives, strategies and assumptions form the Action Plan.

Figure T5: Results Chain for Improved Land Use Planning in Watershed Example



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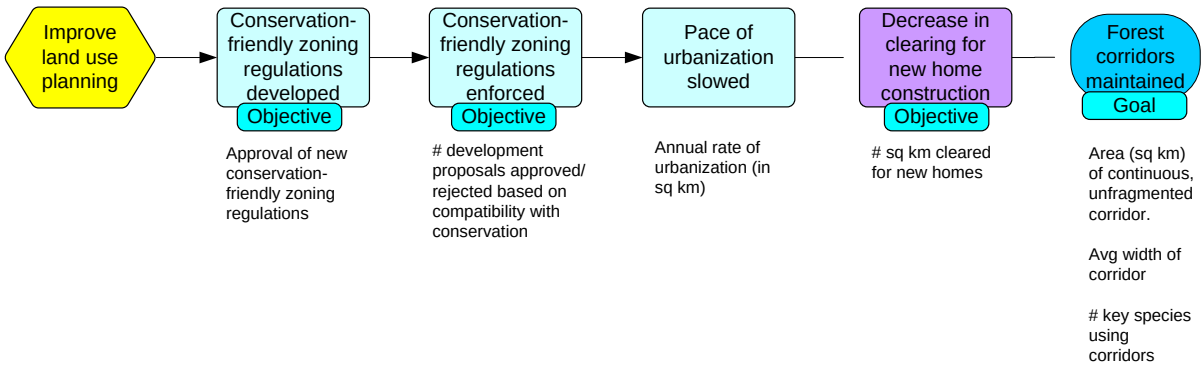
Step 2B. Development of monitoring plan

This step involves the selection of indicators based on the strategy, objectives and goals (or the linkages between them); the selection of appropriate data collection methods; and a detailed monitoring plan. These issues are covered in other sections of the Manual and Toolbox. Figure T6 presents a set of possible indicators linked to the objectives and goals of a land use planning project aiming to conserve forest corridors.

Figure T6: Land Use Planning Results Chain with Potential Indicators



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Stages 3-5 of Open Standards

The remaining stages and steps in the Open Standards involve developing an operational plan, planning, implementation and monitoring. The latter involves comparing the results of the indicators against the results chain (or causal model) to check if the project design assumptions are valid. This may lead to modification of the Strategic Plan. The final stages involve documenting and sharing the results, and creating a learning environment.

Main Sources and Further Guidance

Conservation Measures Partnership, 2007. Open Standards for the Practice of Conservation. Version 2.0. October 2007. The Conservation Measures Partnership. www.conservationmeasures.org/CMP/products.cfm

Miradi – Adaptive Management Software for Conservation Projects: http://miradi.org/

T2.3 The 'Review of Outcomes to Impacts' (ROtI) Approach

The aim of the Review of Outcomes to Impacts (ROtI) approach, designed as an *ex-post* (after the project) impact assessment method for GEF-funded projects generating local and global environmental benefits, is to trace through a cause and effect or 'results chain' from the project strategy to a set of desirable impacts. The key premise of the ROtI approach is that when the project's theory of change is mapped out, and data has been collected on appropriate indicators, it should be possible to confirm whether the project is on track to deliver its intended impacts.

Description of Method

The ROtI approach is composed of three main stages:

- Identifying the project's intended impacts
- Review of the project's logical framework
- Analysis of the project's outcome-impacts pathways

Stage 1: Identifying the project's intended impacts

This is a statement of the project's desired results or end goals.

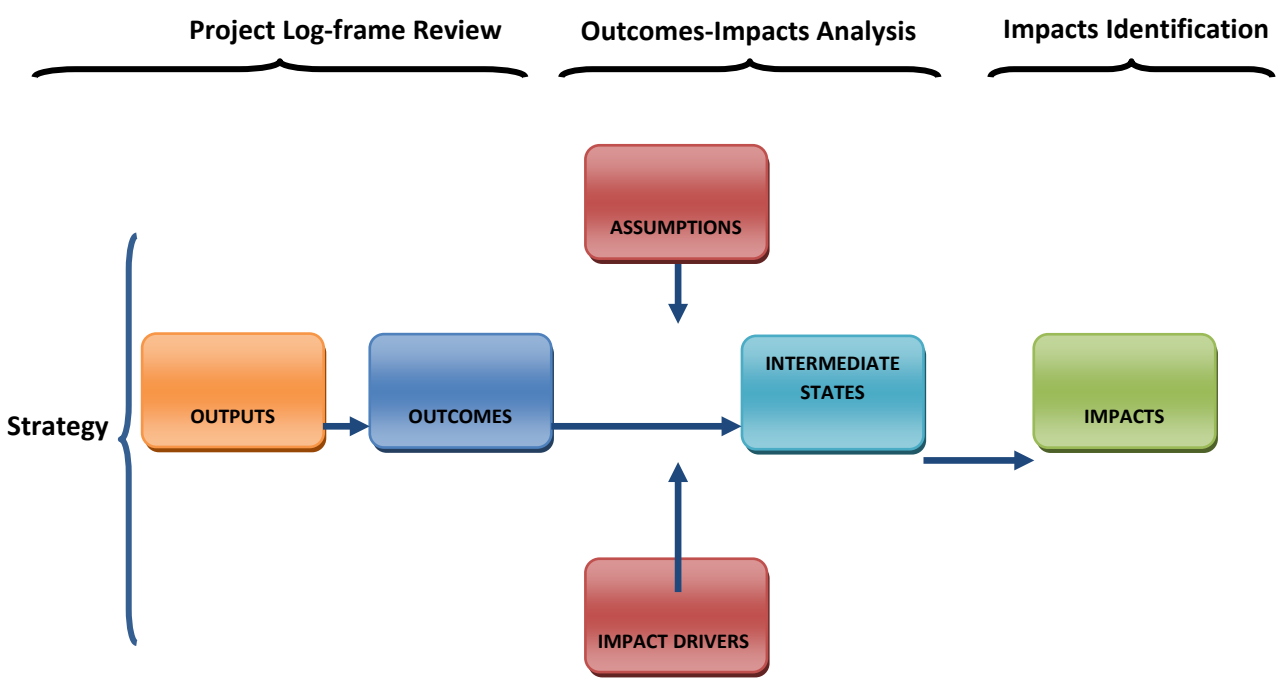
Stage 2. Revision of project's logical framework

The second step is to review and modify (if necessary) the project's logical framework, since this shows the hierarchy between the (higher level) goal, the project purpose, the outputs and the activities. The logical framework provides a good basis for developing the causal model, but it may be found that it is unclear in its logic, in which case it will be necessary to modify it – this should be possible if this exercise is undertaken at the design stage or at an early point of the implementation stage. For example, it is common that outputs and outcomes get confused in log frameworks. They need to be clearly separated for the causal model or project theory of change.

Stage 3. Analysis of the project's outcomes-impacts pathways

The ROtI analytical or causal model framework is presented in Figure T7. Once a good understanding of the project logic has been obtained, the focus becomes the processes involved in converting project outcomes into impacts. The ROtI methodology involves an analysis of 'assumptions', 'intermediate states' and 'impact drivers'.

Figure T7: Diagram of the ROtI Analytical Framework



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Intermediate States

Intermediate states can be thought of achievements that increase the likelihood of sustainable project impacts. They provide the missing middle of the "if-then" statements between outcomes and impacts. They are transitional conditions between outcomes and impacts, and must be achieved in order for the project impacts to be achieved. For example, an intermediate state was identified for improving the management capacity of a protected area in Uganda following identification of the desired outcome and impact:

- Outcome: Management capacity of Bwindi and Mgahinga National Parks improved
- Impact: Enhanced conservation status of ecosystem conservation targets
- Intermediate state: Uganda Wildlife Authority implements policies sufficient to address priority threats to conservation targets

In other words achievement of this intermediate state would ensure that the park authorities have enough resources, and receive the necessary policy support for achieving the desired impact. The key question for identifying an intermediate state is whether there is a missing gap between the project outcomes and expected impacts. In some projects, achievement of an outcome may be sufficient for the impacts to be realized, but if the outcomes have been correctly stated as short to

medium-term behavioral or systemic changes, additional factors will be needed to achieve the desired impacts.

Impact drivers

Impact drivers are factors that are within the power of the project to influence, and which if they are present would help the achievement of project objectives. They derive from the project or from associated initiatives (e.g., supportive state actions), and typically address barriers or constraints to achieving impacts. They often relate to financial, institutional, socio-economic and political sustainability, such as fundraising, quality control, institutional capacity, collaboration between government agencies and local communities, linkages between social initiatives and carbon goals, etc. An important impact driver for land-based carbon projects is an effective, transparent and accountable benefit-sharing system. They can also relate to scaling up issues, e.g., an impact driver could be an effective farmer or community aggregation strategy.

External assumptions

External assumptions are similar to project drivers, but are outside the control of the project. The assumptions column of the logical framework is a good place to start identifying external assumptions. Examples for carbon projects are a gradually increasing carbon price, or successful UNFCCC negotiations which would stimulate the demand and price of carbon.

Synthesizing the causal model with focus groups

Based on the above, it is now possible to construct the project's overall theory of change or causal model, and to assess the likelihood of achieving the desired impacts. It is necessary to assess each means-end relationship contained in the causal model independently. This should be done via a combination of desk research, consultations with focus groups composed of project stakeholders, and 'ground-truthing' at the project site. The focus group exercise is central and involves three main steps (see Figure T8):

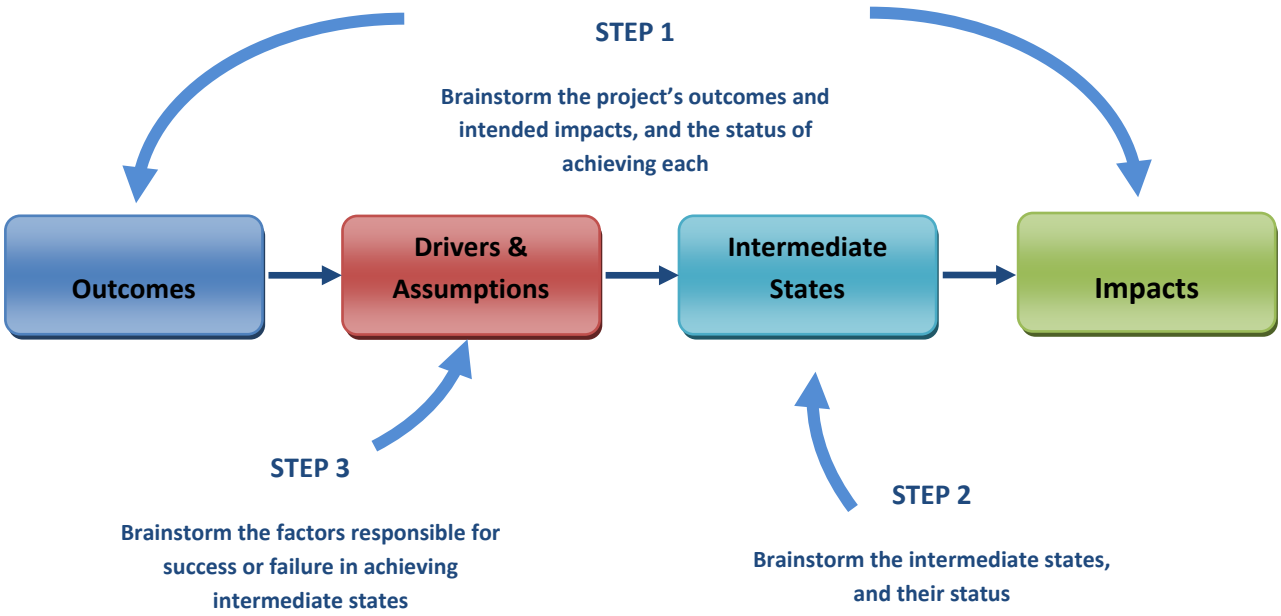
- Brainstorming around the project outcomes and impacts, and the extent to which these are being achieved. A key question is: What do you think the project has achieved so far?
- Brainstorming the intermediate states between the outcomes and impacts, and their current status. Key questions are: What has been achieved so far that has contributed to project impacts? What else must happen to achieve the intended impacts?
- Brainstorming the factors (impact drivers and external assumptions) responsible for success or failure in achieving the intermediate states (having clarified the current status of the intermediate states). The key question is: What were the reasons for success or failure in delivering the intermediate states?

It is recommended that visualization techniques are used to explain the theory of change, and to facilitate collective thinking. Thus the outputs, outcomes, desired impacts, intermediate states, impact drivers, assumptions, etc. should be written on colored cards and put on a large board or

table so they can be read, discussed, moved, amended, etc. This should continue until a consensus is achieved; if this is not possible, the differences should be acknowledged and noted.

The focus group exercise should be followed by a field-based ground-truthing exercise. Where field observations do not coincide with the findings of the focus group exercises, further stakeholder discussions are needed to clarify the situation. The main outcomes of this exercise will be a better understanding of the causal model, including the various cause-effect relationships and the key factors likely to determine success or failure.

Figure T8: Steps in the Focus Group ROtI Exercise



Source: Reproduced with permission from GEF Evaluation Office & Conservation Development Centre. 2009. The ROtI Handbook: Towards Enhancing the Impacts of Environmental Projects. Methodological Paper #2. Global Environment Facility: Washington DC. http://www.thegef.org/gef/node/2096

Applying and reporting the ROtI rating system

The final stage is to apply a rating system to three hierarchical levels of the causal model – the individual elements of the model (outcomes, impact drivers, assumptions and intermediate states), the overall strategy level, and the project level. A simple rating system is used:

Rating	Description
0	Not achieved
1	Poorly achieved
2	Partially achieved
3	Fully achieved

It is recognized that some value judgments by the auditor are inevitable, but the rating system should broadly reflect the following interpretations:

- Not achieved (0): there is no clearly recognizable theory of change, and conditions are not in place for future progress.
- Poorly achieved (1): there are no appropriate mechanisms for achieving the project theory of change, although conditions may be in place for future progress.
- Partially achieved (2): the project has a recognizable theory of change, but the mechanisms for achieving it are insufficient; moderate progress is being made towards delivery of impacts.
- Fully achieved (3): there is a clearly recognizable theory of change, and substantial progress is being made towards achieving it with appropriate mechanisms clearly in place. The project is strongly placed to deliver on its outputs.

This scoring system is used firstly to assess each project strategy and outcome, and secondly each element of that strategy/outcome as shown in Table T2 below.

Example of Method

Table T1 presents an example of a theory of change or causal model for the GEF- funded Seychelles Marine Ecosystem Management Project (SEYMEMP–GEF). This was developed following focus group discussions.Table T2 presents the detailed ROtI assessment of the project, and Table T3 shows the overall ROtI project rating.

Table T3: Overall ROtI Rating of SEYMEMP Project Impact

Outcomes-Impacts Assessment Rating	
Strategy 1: Conservation action	2
Strategy 2: Systems strengthening	1
Strategy 3: Mainstreaming	1
Overall project	1
Rating description: From a theoretical perspective, the project's design is in line with the Theory of Change, but the project did not identify mechanisms to remove barriers and continue the change process after GEF funding ended. From a delivery perspective, little progress has been made in removing barriers and delivering the Theory of Change, but conditions are in place for future progress.	

Source: Reproduced with permission from GEF Evaluation Office & Conservation Development Centre. 2009. The ROtI Handbook: Towards Enhancing the Impacts of Environmental Projects. Methodological Paper #2. Global Environment Facility: Washington DC. http://www.thegef.org/gef/node/2096

Main Source and Further Guidance

GEF Evaluation Office & Conservation Development Centre. 2009. The ROtI Handbook: Towards Enhancing the Impacts of Environmental Projects. Methodological Paper #2. Global Environment Facility: Washington DC. http://www.thegef.org/gef/node/2096

Table T1: Theory of Change for Seychelles Marine Project (SEYMEMP)

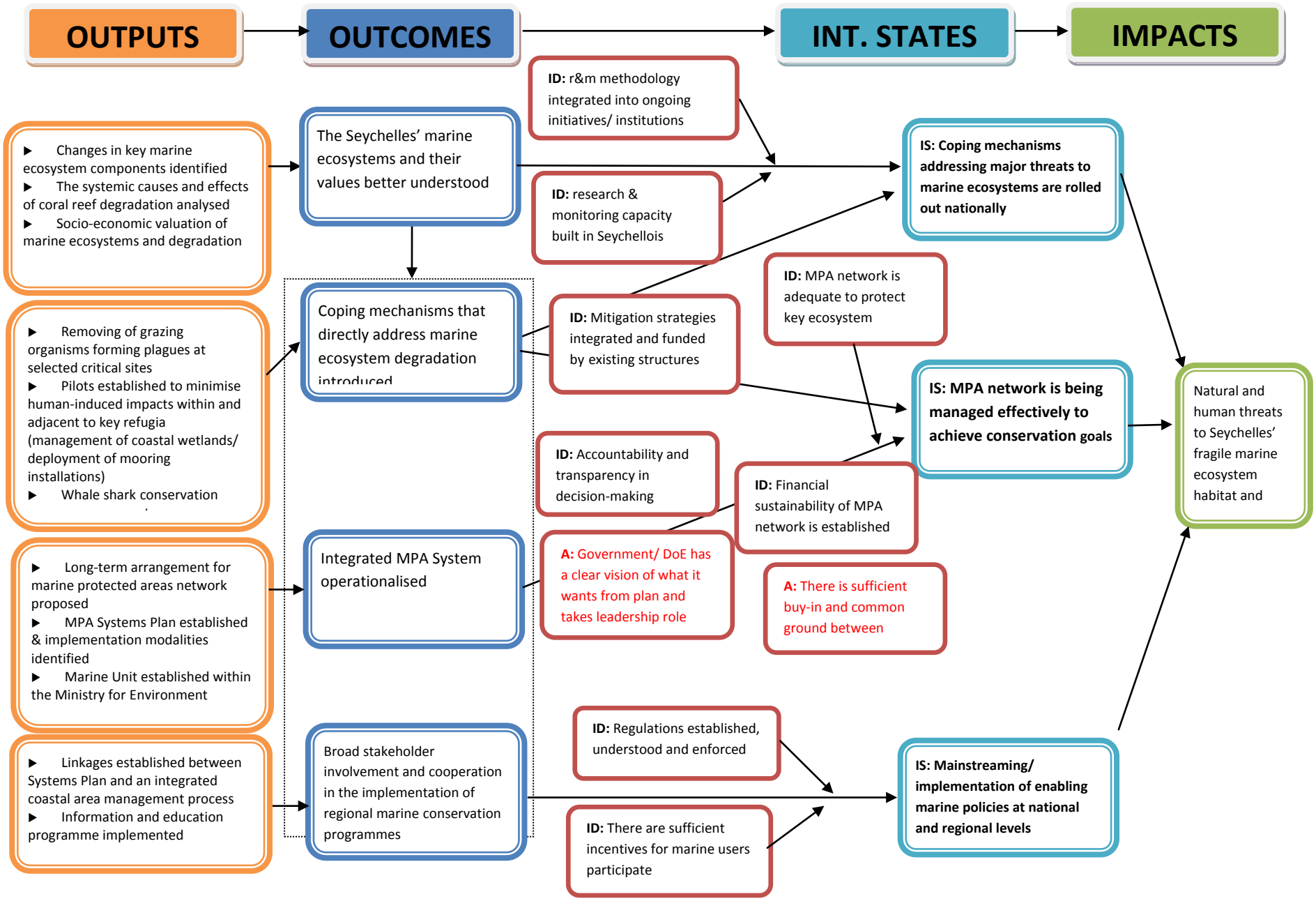


Table T2: Detailed Qualitative Assessment and Rating of the Seychelles Marine Project (SEYMEMP–GEF)

TOC Component	Qualitative Assessment	Rating
Outcome 1: Marine ecosystems understood Outcome 2: Measures addressing marine degradation introduced	Outcome 1 and 2 were well achieved by project end. Detailed research activities (focusing on ~60 protected and non protected coral reef sites and turtle nesting areas) enabled a good assessment of the impact of the 1998 coral bleaching event and established good monitoring baselines. Coping mechanisms were introduced including the management of coastal wetlands, the deployment of mooring installations and the control of plague organisms on coral reefs.	2
ID: Research and monitoring methodology integrated into ongoing initiatives/ institutions	The ecosystem monitoring protocols adopted by the project proved statistically stronger, simpler and more time efficient than previous approaches and have since been adopted more widely (e.g. by the GEF ASCLME project) Research findings have fed into Status of Coral Reefs of the World 2008 (Global Coral Reef Monitoring Network) Turtle Action Group formed at project close and continuing standardized tagging mechanism to understand turtle movements and nesting patterns New research now looking at spawning aggregations and fish behavior to assess whether the MPA network is big enough	2
ID: Research & monitoring capacity built in Seychellois institutions	Since project completion, the Wetlands Unit (now Waterways Management Section) has classified all wetlands and is using GIS mapping as an integral part of EIAs The research studies were contracted to Reefcare International and independent consultants, resulting in limited capacity built in country The Marine Unit was established in the conservation division of the MET to have responsibility for marine research, but since project closure it has not been active; lacking funds and expertise (only one person) and it is likely to be closed down in 2009.	1
ID: Mitigation strategies integrated and funded by existing structures	Whale shark program continued by MCSS following project closure The enactment of strict guidelines (Wetlands Policy 2005) has enabled Wetlands Unit to police illegal activities (dumping/ reclamation) and ensure major new developments comply with guidelines and undertake EIAs. However, capacity is insufficient to enforce guidelines at household level. Wetlands taskforce grew to 40 staff mandated to remove waste (removing 1.5 tonne/ week in Victoria) and maintain wetlands, but under recent restructuring this work is being contracted out under one or two supervisors The initial plan that MCSS monitor the managers of marine areas (i.e. SCMRT/MPA and private entities) to maintain the mooring installations has not worked. SCMRT/MPA is due to take on this responsibility? Mitigation measures to control marine grazing was stopped following project closure	2
Intermediate State: Ongoing research informing decision making and scaling up of actions to protect the marine ecosystems	Ecosystem understanding, especially the extensive research on turtle nesting areas (Dr. Mortimer) has informed decision making: E.g. the identification of new refugia for protection led to government decision not to allow increased fisheries in sensitive areas Enforcement of wetland regulations by Wetlands Unit is reducing risk of landslides and waste entering marine ecosystem, but techniques (such as grills) have not been scaled up from original project pilots Socio-economic valuation work (by Dutch consultant Herman Cesar) has not been utilised, nor integrated into development planning/ EIAs Marine Parks Authority (SCMRT/MPA) is not using research & monitoring findings to inform management of marine national parks. This is attributed to the Marine Unit being established in the conservation section of the DoE rather than the SCMRT/MPA where the current lack of scientists has restricted their activities.	2

Source for Tables T1 and T2: Reproduced with permission from GEF Evaluation Office & Conservation Development Centre. 2009. The ROtI Handbook: Towards Enhancing the Impacts of Environmental Projects. Methodological Paper #2. Global Environment Facility: Washington DC. http://www.thegef.org/gef/node/2096

T2.4 Participatory Impact Pathways Analysis (PIPA)

Designed to assess impacts in the water and food sectors, the Participatory Impact Pathways Analysis (PIPA) is based on a participatory workshop in which the project stakeholders make a set of explicit assumptions of how the project impacts will be achieved (http://www.prgaprogram.org). As with the 'Open Standards' approach, this should ideally be undertaken at the project design stage.

Description of Method

The main steps in PIPA are set out in Figure T9. PIPA starts with a 3 day participatory workshop involving 3-6 groups of 4-6 people. Participants undertake the following activities:

Problem tree and identification of outputs (day 1)

The problem tree uses a linear cause and effect logic to understand the project rationale and what needs to change. The branches of the problem tree end when it has identified a problem that the project should tackle. Once identified, these 'determinant problems' help define the project outputs needed to solve them. Outputs are defined as "things the project produces that others beyond the project use" (Douthwaite et al., 2008).

'Vision of success', 'network maps' and strategies (day 2)

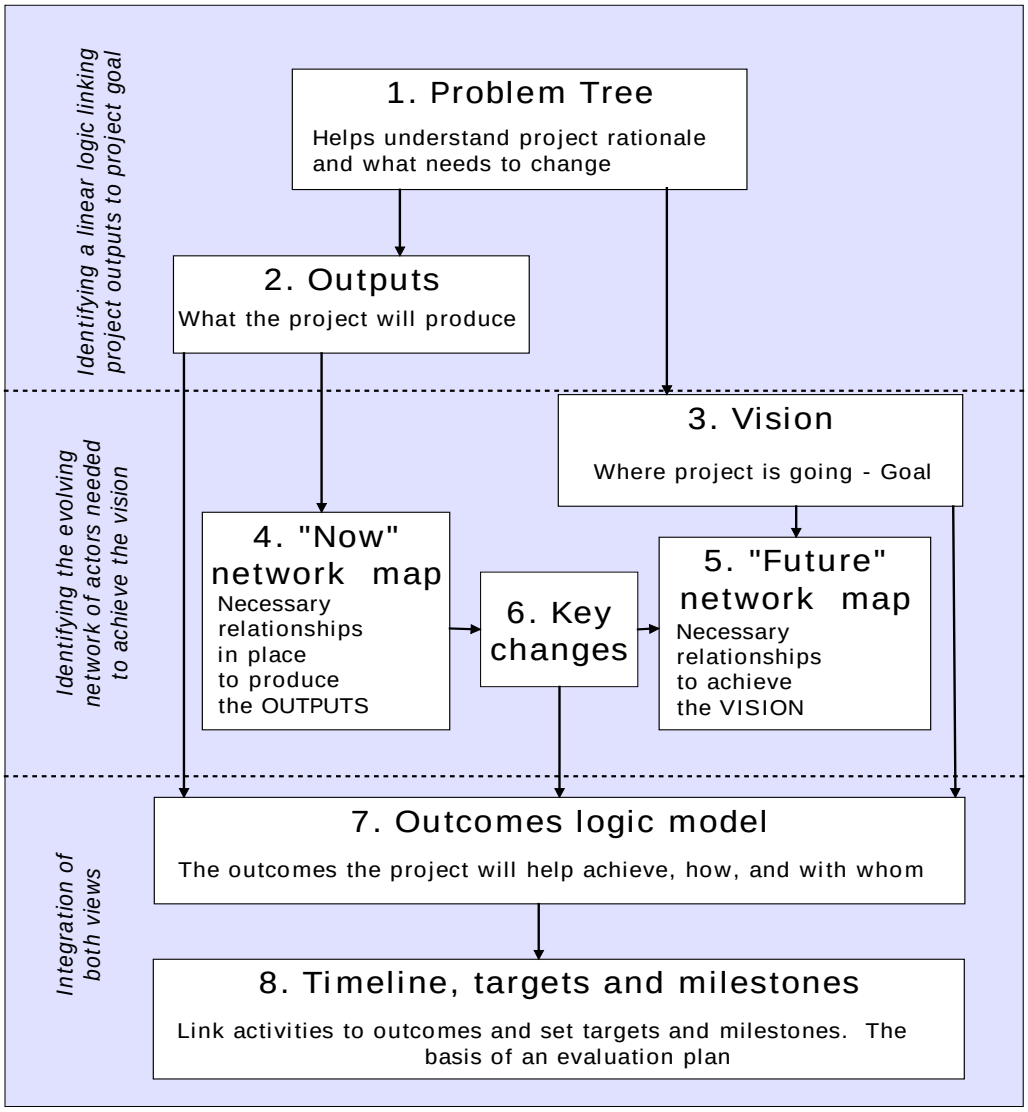
The cause and effect logic of the problem tree is balanced by a 'network perspective' in which impacts are the result of interactions between stakeholders or actors. The idea of network maps is to model the relationships between stakeholders in the 'with' and 'without project' scenarios. Participants first construct a 'vision of success' in which they try to imagine what different types of stakeholders will do in the future assuming that the project is successful. Categories of stakeholders include: project implementers; politically influential people and organizations who could help (or hinder) the project; the users of project outputs (or 'next users'); and groups who will work with the 'next users'.

Participants then draw up a 'now network map' showing current key relationships between the stakeholders, and a 'future network map' showing how the stakeholders need to link up or work together to achieve the project vision – this should show the required changes in attitudes, networks, etc. Participants then identify the strategies, activities and outputs needed to bring about the required changes.

Outcomes logic model and an M&E plan (day 3)

On the third day, the participants combine the cause-effect descriptions from the problem tree with the network maps into an 'outcomes logic model' (Table T4). This describes in tabular form how the various stakeholders need to act differently for the project to achieve its vision. The rows describe the required changes in each set of stakeholders' knowledge, attitude, skills and practice, and the project strategies to bring these changes about. The resulting changes are defined as outcomes.

Figure T9: Stages in Participatory Impact Pathways Analysis



Source: Reproduced with permission from Douthwaite, B., Alvarez, S., Thiele, G., Mackay, R., Cordoba, D. & Tehelen, K. 2008. Participatory Impact Pathways Analysis: a practical method for project planning and evaluation. Paper prepared for: 'Rethinking Impact: Understanding the Complexity of Poverty and Change' Workshop. www.prgaaprogram.org/riw/files/papers/PIPA-Impact-WS.doc

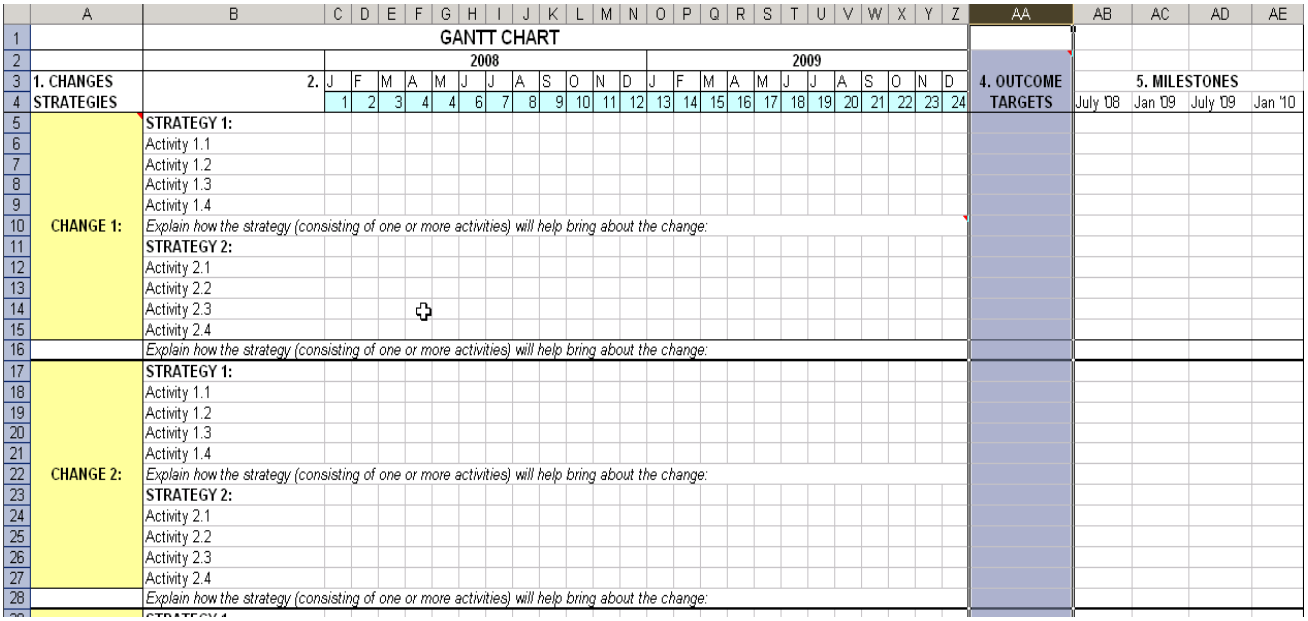
Table T4: The PIPA Outcomes Logic Model

Actor or Group of Actors Who are Expected to Change in the Same Way	Change in Practice Required to Achieve the Project Vision	Changes in Knowledge, Attitudes and Skills Required to Support this Change	Project Strategies to Bring about these Changes

Source: Douthwaite et al., 2008.

The outcomes logic model involves developing an 'outcome hypothesis' (or theory of change) in the form of 'predictions' (outcome targets) and milestones ('progress markers') in the achievement of the predictions. In this causal model approach, 'milestones' can be thought of as early outcomes, and 'predictions' as later outcomes. As in the other models, these should be SMART. Using an Excel spreadsheet, the participants then enter the key changes needed, a set of strategies and activities for achieving those changes, and the predictions and milestones, as shown in Table T5.

Table T5: Excel Spreadsheet Used in PIPA



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After the workshop, participants complete an M&E plan with key staff and stakeholders, and draft an 'impact narrative' explaining the underlying logic. Repeat workshops are held every 6 or 12 months to assess progress, and, as necessary, to adjust the strategies, activities, outcomes and milestones.

Example of Method

Figure T10 presents an example of the PIPA analysis undertaken for a dryland farming project in Ghana. The Strategic Innovations in Dryland Farming (SIDF) Project aimed to improve income, labor, land and water productivity for rural households (over 300,000 people) in an area of about 465,000 hectares in the Volta Basin in Northern Ghana.

The project theory of change was as follows: the outputs (from various R&D activities, including training, relating to crop, soils, water and fish management) will be developed, adapted and improved through participatory research. As early adopters see increases in income, time saving and other benefits, they encourage their neighbors, friends and relatives. This leads to increasing adoption and adaptation of project outputs from farmer to farmer, community to community, and service provider to service provider.

Other important project components included:

- Improving domestic water supply so that women have more time to engage in income generating activities;
- R& D efforts to reduce conflicts over communal water resources
- Development of institutional networks to extend project outputs

Key project outcomes expected were:

- Improved cropping systems and soil and water conservation practices;
- Improved utility of dugout canoes used for fishing;
- Construction and use of domestic water harvesting systems
- Improvements in the community management of water resources

It is expected that these outcomes will in turn lead to:

- Improved soil fertility and land/labor productivity;
- Women having more time for income generating activities;
- More water available for domestic needs;
- Adequate water for dry season agriculture;
- A reduction in water related diseases.

The following key risks and assumptions were identified:

- Farmer to farmer adoption occurs without the need for subsidies;
- Ministry of Food and Agriculture promotes project outputs after the project finishes;
- The National Varietal Release Committee approves the proposed project varieties.

It was reported that the PIPA exercise helped identify complementarities and synergies between the various projects in the Volta Basin.

Source: Padi et al., 2006. http://boru.pbworks.com/f/PN06 Impact Narrative-4.DOC

Main Sources and Further Guidance

http://boru.pbworks.com/ Spanish version: http://boru.pbworks.com/Antecedentes

Douthwaite, B., Alvarez, S., Thiele, G., Mackay, R., Cordoba, D. & Tehelen, K. 2008. Participatory Impact Pathways Analysis: a practical method for project planning and evaluation. Paper prepared for: 'Rethinking Impact: Understanding the Complexity of Poverty and Change' Workshop. www.prgaaprogram.org/riw/files/papers/PIPA-Impact-WS.doc

Douthwaite et al. 2008. Participatory Impact Pathways Analysis: a practical method for project planning and evaluation. ILAC Briefing 17. http://boru.pbwiki.com/f/PIPA-ILAC-Brief-pre-print.doc

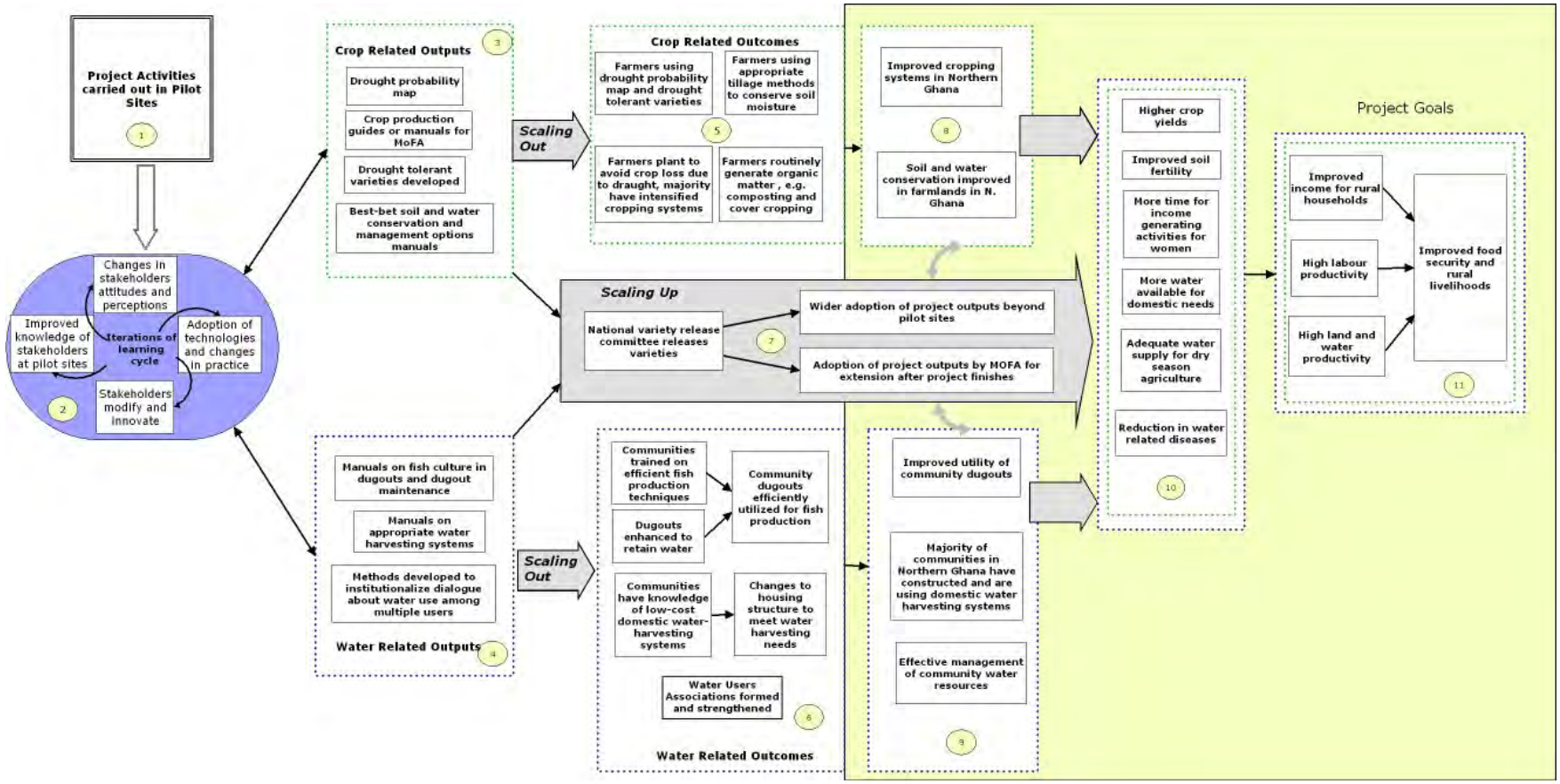
Douthwaite, B., T. Kuby, E. van de Fliert and S. Schulz. 2003. Impact Pathway Evaluation: An approach for achieving and attributing impact in complex systems. *Agricultural Systems* 78: 243-265

Padi, F., Asante, S., Fosu, M., Alvarez, S., Rubiano, J., Soto, V. & Douthwaite, B. 2006. Impact Narrative for the Strategic Innovations in Dryland Farming (SIDF) Project. BFP Impact Assessment Project, Centro Internacional para la Agricultura Tropical. Cali, Colombia http://boru.pbworks.com/f/PN06 Impact Narrative-4.DOC

T2.5 Advantages and Disadvantages of the Causal Model Approach

Main Advantages or Benefits	Main Disadvantages or Limitations
• Represents a cost-effective approach to attribution, especially if used to guide indicator selection; • Effective project design tool; • Highlights external assumptions, drivers and pressures; • Puts the focus on the process of achieving outcomes and impacts, making it easier to identify needed interventions, thereby contributing to adaptive management; • It can be peer reviewed; • On-line support and software for the 'Open Standards' approach is available (www.miradi.org)	• It is less good at picking up on unexpected or negative social impacts; • The lack of empirical or research data on the linkages between outcomes and (poverty related) impacts to support 'assumptions' (e.g., in comparison with the microfinance sector); • It is more difficult to use retrospectively (best to use at the project design phase); • It is less effective for 'differentiation', especially intra-household equity/gender issues than other methods; • A skilled facilitator is desirable; • It is difficult compare projects; • Different terminologies are used in different causal model approaches which can be confusing.

Figure T10: PIPA Impact Logic Model for the Strategic Innovation in Dryland Farming Project, Ghana



Source: Reproduced with permission from Douthwaite, B., Alvarez, S., Thiele, G., Mackay, R., Cordoba, D. & Tehelen, K. 2008. Participatory Impact Pathways Analysis: a practical method for project planning and evaluation. Paper prepared for: 'Rethinking Impact: Understanding the Complexity of Poverty and Change' Workshop. www.prgaaprogram.org/riw/files/papers/PIPA-Impact-WS.doc

T3 Sustainability Framework Approaches

T3.1 Introduction

Sustainability framework approaches, especially those based on the Sustainable Livelihoods Framework (SLF), are widely used as a basis for the social assessment of rural development projects, including for identifying monitoring indicators as discussed in SIA Stage 5 of the Manual. We present here a modified version of the SLF which could be used by land-based carbon projects; the Social Carbon Methodology (SCM) which is already widely used in Brazil for multiple-benefit carbon projects; and the Landscape Outcomes Assessment Methodology (LOAM) which is a practical and participatory approach to indicator selection.

T3.2 Modified SLF Developed by the SAPA Initiative

The Social Analysis of Protected Areas (SAPA) Initiative (Schreckenberg et al., 2010) has modified the original SLF (see Figure 3 in ***SIA Stage 5***) in a way that may also be appropriate for land-based carbon projects. The 'SAPA Initiative modified SLF' draws on other sustainability based approaches, notably the World Bank 'Opportunities Framework' for assessing poverty reduction and the Millennium Ecosystem Assessment (MEA).

In its 2000 World Development Report, the World Bank (2001) proposed a variant of the SLF using elements of rights-based approaches. Their 'Opportunities Framework' focuses on the needs of the poor in three areas:

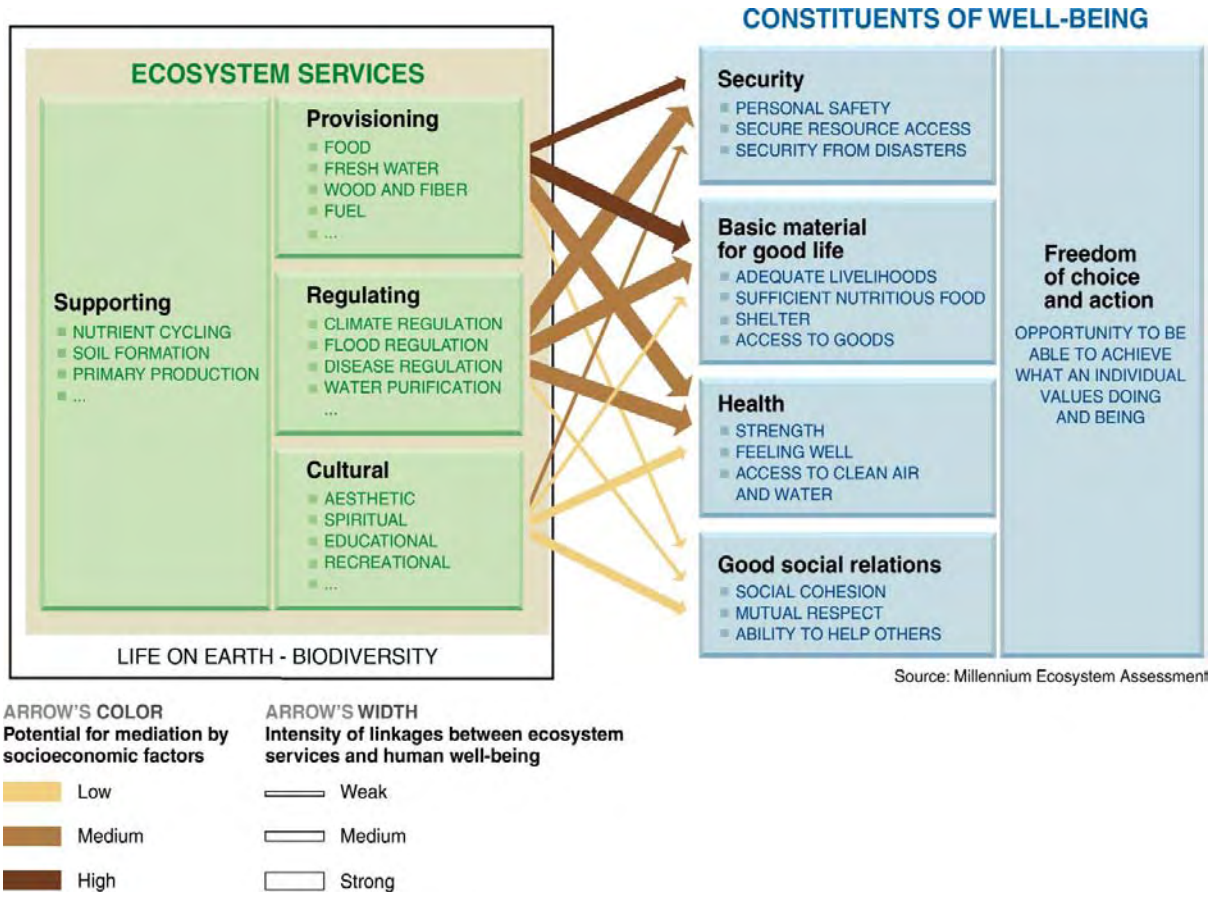
- *'Opportunity':* Expanding the economic opportunities for poor people by stimulating economic growth, making markets work better for the poor, and working for their inclusion, particularly by building up their capital assets, such as land and education.

- *'Empowerment':* Strengthening the ability of poor people to shape decisions that affect their lives, and removing discrimination based on gender, race, ethnicity, and social status.

- *'Security':* Reducing poor people's vulnerability to sickness, economic shocks, crop failure, unemployment, natural disasters, and violence, and helping them cope when such misfortunes occur.

As shown in Figure T11, the MEA framework divides ecosystem services into supporting, provisioning, regulating and cultural services, and indicates how these attributes relate to different aspects of human well-being. Well-being (the opposite of poverty) is defined as having "multiple constituents, including basic material for a good life, freedom of choice and action, health, good social relations, and security" (MEA, 2005).

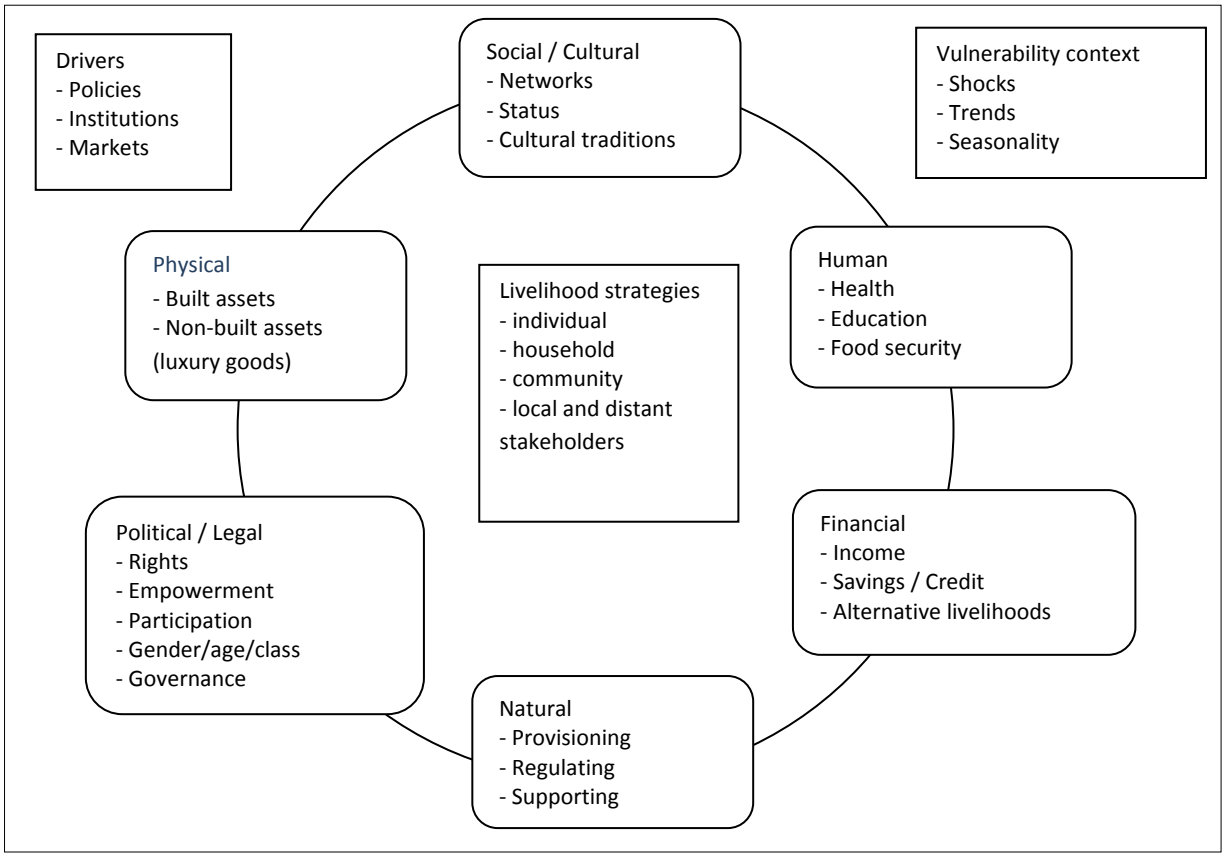
Figure T11: The Millennium Ecosystem Assessment Framework



Source: http://www.millenniumassessment.org/en/Framework.aspx

The 'SAPA Initiative SLF' (Figure T12) employs the usual five SLF assets, but 'natural' assets are broken down into provisioning, regulating, and supporting services as in the MEA framework. Cultural services – also included in the MEA framework – are included under 'social' assets. Physical assets are broken down into built assets (e.g. housing) and non-built assets (or luxury goods). A sixth capital, 'political/legal' assets, is derived from the World Bank Opportunities Framework. Indicators can be derived from the various asset categories, although these would need to be prioritized in view of cost considerations.

Figure T12: SAPA Initiative Modified Sustainable Livelihoods Framework



Source: Reproduced with permission from Schreckenberg, K., Camargo, I., Withnall, K., Corrigan, C., Franks, P., Roe, D. and Scherl, L.M. 2010. Social Assessment of Protected Areas: a review of rapid methodologies. A report for the Social Assessment of Protected Areas (SAPA) Initiative. International Institute for Environment and Development. London, UK

T3.3 The Social Carbon Methodology (SCM)

As explained in ***SIA Stage 5***, the Social Carbon Methodology (SCM) is linked to the Social Carbon Standard, which is being increasingly used in Brazil in particular, and is based on six capital assets or 'resources' – natural, financial, human, social, carbon and biodiversity. The SCM involves the following stages (Social Carbon, 2009):

- Diagnosis or 'zero point assessment' involving questionnaires, semi-structured interviews of key informants, focus groups and other meetings. This should result in a description of all the possible positive or negative social, economic and environmental impacts;
- Selection of indicators from a list of approved indicators for each resource type;
- Monitoring of indicators using the 'zero point assessment' as the baseline, resulting in annual or periodic monitoring reports;

- Use of spider diagrams for stakeholder to assess project performance over time;
- Periodic verification by an accredited Certifying Entity – annual verification is recommended, but other periods may be acceptable. Verification is based not on the absolute performance of the indicators, but on their continuous improvement over time – the main thing is to avoid a decline in the performance of the same 'resource' in successive assessments.

Toolbox Section T10.1 lists the approved social indicators organized under financial, human and social resources. In addition to this list, project developers are advised that livelihood and equity analysis should focus on the resource base, income, well-being, vulnerability and food security. Projects should also look at:

- community aspirations;
- the survival strategies adopted;
- vulnerabilities and opportunities to which local people are exposed (shocks, trends, seasonality, stresses);
- gender impacts;
- discrimination against the less educated, women and other groups; and,
- the influences of other projects, national policies and institutions, with the aim of highlighting political and social influences that may be strengthened or weakened through partnerships.

While the quite broad list of approved indicators allows a project to select a set of relevant indicators, an approval process is required for indicators that are not in the core list: the Social Carbon Guidelines (2009: 15) state that "in case your project activity presents specific characteristics which are not contemplated by the approved indicators, new indicators may be elaborated by 'Accredited Organizations'[1], and must be submitted for approval by the Social Carbon Team." For new indicators, projects are advised to consult 'Social Carbon Methodology: The Multiplier's Manual. Ecological Institute, 2007' (Portuguese only).
www.socialcarbon.org/Guidelines/Files/socialcarbon_guidelines_en.pdf

T3.4 The Landscape Outcomes Assessment Methodology (LOAM)

The Landscape Outcomes Assessment Methodology (LOAM) was developed by WWF as a project design and monitoring framework for landscape oriented sustainable livelihood and biodiversity conservation projects. It provides a good example of how the SLF approach can be used in a participatory way to identify appropriate indicators, although the authors of LOAM (Aldrich & Sayer, 2007) do not consider it is a suitable method for impact assessment (the reasons for this are unclear). LOAM involves the following steps (assuming that the basic project design parameters have been defined):

[1] Social Carbon 'Accredited Organizations' are qualified to (a) elaborate new indicators which must be approved by the Ecological Institute or Social Carbon Company, and (b) to elaborate Social Carbon Reports in their own projects or projects by third parties (Social Carbon Guidelines, p.11).

1. Identify a small group of key informants (e.g., 20) covering all parties or stakeholders with an interest in the landscape and project.

2. Undertake a participatory learning assessment (PLA) exercise with the multiple stakeholder group. In the LOAM examples, specific methods have included scenario analysis (exploring the worst and best case scenarios), participatory mapping, historical time-line analysis, etc. PLA methods get people to discuss their core problems, and the possible project strategies for confronting them.

3. Discuss the possible landscape-level outcomes and "what constitutes success" in terms of the five normal SLF asset types, as well as for a sixth asset type called "global conservation assets" covering ecosystem services. From these discussions, progress indicators are defined for each asset type. The indicators are grouped for each asset type on an Excel sheet.

4. Select about five indicators for each asset type, as shown in Table T6, which presents an example of LOAM indicators and scoring for the livelihood and social variables identified for a Joint Forest Management project in Tanzania.

5. For each indicator, a 1-5 scoring system is worked out with the stakeholders, e.g., for the management of village finances, the agreed scoring was:

1 = very poor management;

2 = some management capacity;

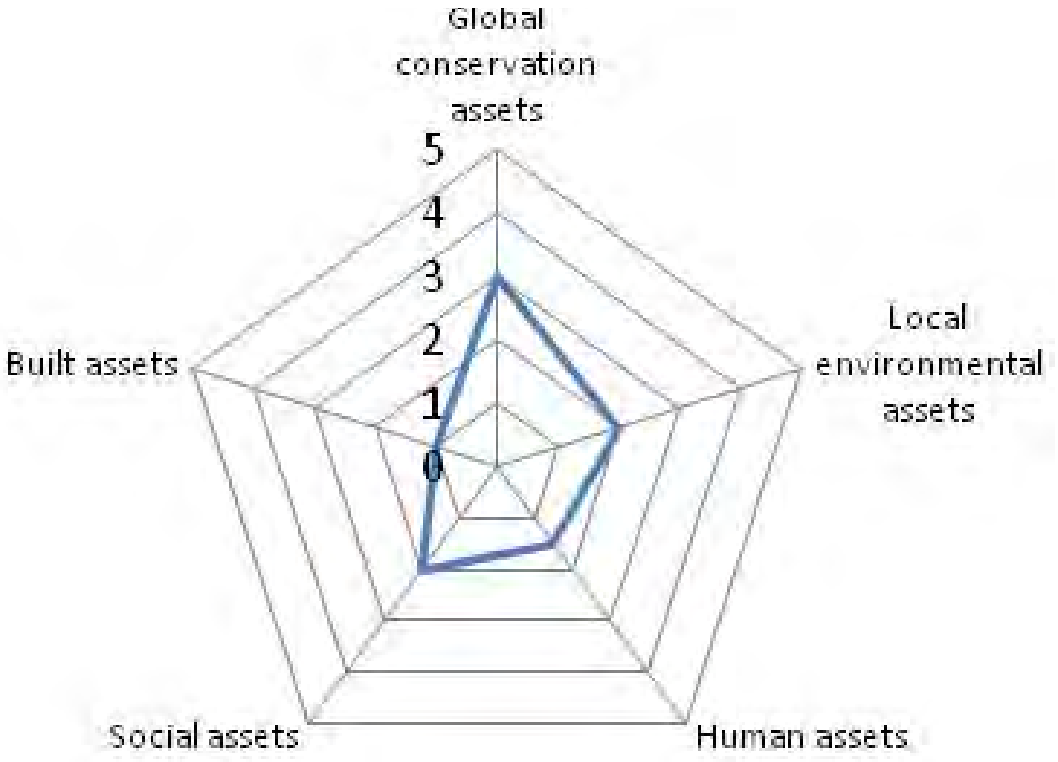
3 = intermediate level of management;

4 = good management;

5 = excellent transparent process.

6. Undertake a baseline assessment with a wider group of stakeholders, score the indicators (1-5), and construct a spider diagram (Figure T13). A spread out spider diagram indicates a healthier situation than a constricted or tight diagram. Overlaying spider diagrams conducted at different points of time are a good visual way of revealing overall progress.

Figure T13: Radar or Spider Diagram Based on LOAM Analysis



Source: Reproduced with permission from Aldrich, M. and Sayer, J. 2007. In Practice – Landscape Outcomes Assessment Methodology "LOAM". WWF Forests for Life Programme
http://assets.panda.org/downloads/loaminpracticemay07.pdf

Table T6: Example of LOAM Livelihood Indicators and Scoring Approach – East Usambara Mountains, Tanzania

Scoring	1	2	3	4	5
NATURAL CAPITAL					
Village forest reserves	No progress	Discussion initiated village level	Approved by village	Approved by district council	Management plan implemented
Riparian strips protected	No protection	Awareness of need	Some protection	Widespread protection	All riverbanks restored
Presence of trees in gaps (corridors)	No trees	Discussion about planting	Nurseries established	Some tree planting	Lots of tree planting
Native species planted in corridors	No native species	Discussion about planting	Nurseries established	Some tree planting	Lots of tree planting
Enhancing/encouraging nat. regeneration in corridors	No enhancement	Some enhancement	Enhancement	Significant enhancement	Abundant natural regeneration
SOCIAL CAPITAL					
Village NR committees	Not established	Discussion of establish.	Committee established	Committee active	Committee effective
Village participation in landscape level	No networks	Establishment of networks	Local networks effective	Establishment of landscape level networks	Landscape level networks effective
Joint Forest Management	No JFM	Initiation of discussions	JFM established	JFM agreement signed	Fully operational JFM
Awareness of zones/boundaries	No awareness	Some uncertainty	Some progress in recognition	Boundaries mostly recognized	Boundaries clearly recognized
Management of village finances	Very poor management	Some management capacity	Intermediate management	Good management	Excellent, transparent process
HUMAN CAPITAL					
Education (primary school distance)	No access to school	School more than 1 hours walk	School outside village, but < 1 hour walk	School in village, but facilities poor	Good quality school accessible
Health (e.g. no. clinics)	No access to health service	Health service > 1 hours walk	Health service < 1 hour walk (but not in village)	Health service in village, but facilities poor	Good quality health service
Skill levels and opportunities	No access to skill opportunities	Limited access to skill opportunities	Average access to skill opportunities	Above average skills/access to skill opportunities	Good level of skills and skill opportunities
Health status of village	Sig. below average	Below average	Average	Above average health	Good health
Involved in innovative projects	No involvement	Some involvement	Average involvement	Much involvement	A lot of involvement

Source: Reproduced with permission from Aldrich, M. and Sayer, J. 2007. In Practice – Landscape Outcomes Assessment Methodology "LOAM". WWF Forests for Life Programme. http://assets.panda.org/downloads/loaminpracticemay07.pdf

Advantages and Disadvantages of the SLF Approach

Main Advantages or Benefits	Main Disadvantages or Limitations
• Recognizes the complex reality and dynamics of rural livelihoods; • Widely used and understood; • Facilitates the participatory identification of indicators; • Can pick up on negative or unexpected effects; • Good for qualitative or process type indicators; • Can be adapted or modified to the project context, and be taken to an appropriate level of complexity; • Good for differentiation (intra-household or gender, inter-annual variation, etc.); • Indicators based on sustainability criteria support carbon permanence.	• Does not tackle attribution; • Focus is more on sustainability and welfare impacts rather the impact of a specific project strategy or intervention; • The time and cost of collecting data on each asset type, especially if using a complex or comprehensive SLF approach; • The main focus of SLF is on the 'stock' of assets, but the return on assets (or 'flow') may be more important for SIA; • Complex dynamics between asset types can make it difficult to observe overall trends[4]; • There is no agreed mechanism for integrating data across the asset classes (a problem of 'peaches and apples'), making it difficult to compare projects; • Social capital can be difficult to measure.

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[4] For example, forest peoples may reduce their natural capital in exchange for financial, physical and social capital, e.g., felling trees and selling timber to finance improved storage facilities (physical capital). This means that it is essential to assess all the capital assets and the dynamics between them.

T4 Matching Methods

T4.1 Introduction

Using the experimental or quasi-experimental approach is the classical or traditional way of tackling the 'attribution' challenge of impact assessment. The essence of this approach is making comparisons, statistical if possible, between 'control' and 'treatment' (or project) groups - hence the term 'matching methods'. Control groups or individuals are non-participants (in the project) with similar observable characteristics (age, income, education, gender, etc.) to the project participants.

While we have classified the quasi-experimental approach as an impact assessment framework, it should be noted that it does not *per se* provide a basis for selecting indicators unlike the previously described approaches. It is rather a framework for data collection and analysis that tackles the attribution problem.

T4.2 Description of Methods

Experimental methods (or 'randomized experiments')

The difference between experimental and quasi-experimental methods is in the way that the control and treatment communities (or other stratifying units) and households are selected. In an experimental approach, control and treatment (participants) respondents are selected using statistical sampling methods. This allows econometric and other statistical analysis using the 'difference of differences' method – subject to bias tests, any differences in the outcomes or results between control and treatment groups are attributed to the project. This is a cross-sectional comparison – therefore no baseline or starting conditions study is necessary, although one is always desirable since it provides a second basis for comparison. Other advantages of matching method approaches is that they can pick up negative or unexpected impacts, and show whether they are due to the project or not, which can prevent a project being falsely blamed for them.

But the experimental methods approach suffers from various problems (Richards, 2008 based on various sources):

- The high cost associated with the sample size and expertise needed;
- While the 'observable characteristics' may be similar, it is difficult to know how similar are the 'unobservable characteristics' (attitudes to risk, personal goals, entrepreneurship skills, etc.) without further research – differences in either type of characteristic increase bias, and reduce the reliability of the 'estimators';
- Where controls are close to the project area, 'spillover effects' can blur the distinction with participants, e.g., the controls might modify their behavior or activities based on observing participants or obtaining project information;
- Where the controls are further away, this increases the costs and the likelihood that they will have different characteristics even though selected randomly (e.g., due to differences in market access, influence of other projects, etc.)

- People in control groups are known to change their behavior when studied (known as the 'Hawthorne effect');
- The ethical problem of denying people in control groups the future right to participate in an expanding project;
- Measuring impacts at one point of time is considered less reliable for establishing causality than a comparison at two points of time;
- There is low motivation for control groups to cooperate.

In sum, the experimental approach is expensive and does not ensure attribution, due to possible differences in unobservable characteristics or other causes of bias (Tanburn, 2008).

Quasi-experimental methods

The above problems usually mean that a pure statistical approach is not practical or viable for impact assessment. Therefore a 'quasi-experimental' approach involving 'constructed controls' is often used. This means trying to find people or groups who are as similar as possible to the project participants in terms of their observable characteristics, possibly living in the same or in nearby communities. But the problems of selecting controls are more or less the same, and it has a lower level of certainty as regards attribution compared to the experimental method.

The quasi-experimental approach can theoretically be used with or without a starting conditions or 'baseline' study, but it is more reliable with a baseline – sometimes called the before-and-after-control-impact (BACI) design. Assuming a baseline is used, it is necessary to 'over-sample' by 50% according to some sources – and possibly a higher percentage among the controls if there are few incentives for them to remain in their communities. This allows for the natural decline or 'attrition' (e.g. outmigration, death, etc.) of respondents.

A cheaper but less reliable alternative to the above approaches is a 'before and after' comparison by project participants, known as 'reflexive comparison'. In this case the 'control' element is provided by the original conditions or before project situation. Again it is more effective and reliable with a baseline. If used without a baseline, it depends entirely on memory recall, and is therefore more subjective and open to bias. It is again important to 'over-sample' if a baseline is undertaken.

Data collection methods

As well as appropriate indicator selection, 'matching methods' need to be accompanied by carefully chosen and designed data collection methods which are described in the subsequent sections of the Toolbox. Thus, for example, the Basic Necessities Survey (BNS) is a cost-effective approach to measuring changes in poverty in control and project communities (***Section T6.1***), while several of the Participatory Impact Assessment (PIA) methods are relevant for matching methods (***Section T6.2***).

Advantages and Disadvantages of 'Matching Methods'

Main Advantages or Benefits	Main Disadvantages or Limitations
• A quasi-experimental approach combined with appropriate indicators has a high level of credibility as regards attribution; • Can pick up negative or unplanned effects and ascribe them to the project or not; • 'Reflective comparison' based on a starting conditions study and using participatory impact assessment methods is a useful and cost-effective SIA approach, but may not be sufficient on its own.	• Difficulties of selecting control groups, including the ethical problem; • High-cost approach; • Does not provide a basis for selecting indicators; • 'Reflexive comparison' without a starting conditions study depends on memory recall and is highly subjective.

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TOOLBOX AREA 2: DATA COLLECTION AND ANALYSIS METHODS

T5 General Data Collection Methods

T5.1 Introduction

The HOW to measure methods can be subdivided into general and more specific data collection methods. General data collection methods refer to standard tools like household surveys, case studies, key informant or focus group discussions, community mapping, and a range of other PRA or RRA type methods. More specific methods are those designed for impact assessment or M&E - all of them are participatory to some extent. Since the general data collection methods are well-known and covered in various manuals (see ***Section T5.4***), it is unnecessary to explain them in detail here, although a brief overview and some observations on their use in the context of SIA are provided below.

T5.2 Overview of General Data Collection Methods

The first thing to note is that data collection methods should not be seen as mutually exclusive. It is not a case of using PRA or household surveys or key informant interviews, but is rather one of an appropriate combination of methods, and in the right sequence, in order to obtain reliable estimates. A mix of qualitative and quantitative analysis is necessary for SIA. For example, some methods are more suitable for analyzing process-based or qualitative indicators, while others are more suited to quantitative indicators (see Box T1). In general, qualitative and participatory research methods have become more popular than sample surveys and quantitative analysis in SIA, e.g., in the micro-finance sector. This is because they are better for identifying intangible, negative or unforeseen outcomes; assessing social and institutional change (e.g., Box T2 suggests a simple approach for social capital); capturing local stakeholder perceptions; exploring social and livelihood complexities, including causative links; and capturing equity, gender and temporal issues. But there are some caveats to participatory data collection methods:

- participatory research methods are subject to bias and subjectivity[5], and may be less effective for measuring indicators based on SMART objectives;
- qualitative participatory research can be expensive for local people (in terms of their opportunity costs) and research teams, e.g., the 'Participatory Assessment of Livelihood Impacts' study based on the SLF and PRA methods, required "highly analytical and skilled study teams" (Ashley & Hussein, 2000);
- an authoritative source (Guijt, 1999) advises that genuinely participatory M&E is expensive and time consuming, and urges caution in using this suite of methods unless the benefits are very clear.

[5] For example, research by Richards et al (2003) found that even 'best practice' PRA based estimates of household income[5] are prone to major bias problems.

Box T1. General Data Collection and Analysis Methods for SIA

Participatory wealth or well-being ranking
This is usually carried out with key informants to gain an understanding of local perceptions of well-being, and to divide households into several (often four or more) wealth or well-being categories that can be used as a sampling frame for household surveys. For example, in the Nepal Swiss Community Forestry Project a well-being ranking exercise was carried out for each Forest User Group (FUG). Following a mapping exercise to identify all households in the FUG and consultations on poverty or well-being categories resulting in six categories (capable, improving poor, coping poor, declining poor, extreme poor and incapable poor), 'representative' key informants of each FUG sorted cards with household head names (or could be some other identifying factor) into the six agreed categories (PROFOR, 2008).

Focus group discussions
Discussions on specific topics (often using an interview checklist) are held with small (4-10) groups, sometimes selected to be representative of stakeholder sub-groups (e.g. women, elderly, poorest, landless, etc.). Focus groups are typically used early on in a study to obtain a general understanding of important issues or at a later stage to gain an in-depth understanding, e.g., of a specific issue that has arisen from a household survey.

Rapid Rural Appraisal (RRA) or Participatory Rural Appraisal (PRA) tools
RRA and PRA use the same set of visual tools but with a slightly different emphasis. RRA is typically used by researchers working in a more extractive mode, while PRA - now often called Participatory Learning and Action (PLA) – focuses on stimulating research and analysis by local people. Guides to RRA/PRA tools include Pretty et al. (1996), PROFOR (2008), Evans et al. (2006), FAO (1990) and Catley et al. (2008).

Key informant interviews
Semi-structured interviews with key actors both inside and outside the community can be used either to obtain a general understanding of issues or to cross-check findings from other sources. They can also be effective for collecting household economic data (Richards et al., 2003).

Household surveys
Questionnaires on a random or purposive sample of households are most effective when they are short and comprise mainly of closed (rather than open-ended) questions, e.g., to gather demographic, financial (but not income), education or health data. A criterion for deciding whether to use a household survey is the level of inter-household variation expected in a variable, e.g., a survey can be good for livestock ownership or agricultural production; but for the farming calendar or the time needed for laboring tasks, for example, PRA is more efficient. TRANSLINKS (2007) and Richards et al (2003) provide guidance on household surveys, including sampling approaches. The costs of implementing and supervising a well-designed and field-tested survey should not be underestimated; memory recall also has its limitations – the best recall period is the last 48 hours, and frequent small events are difficult to record accurately (David Wilkie, personal communication)

Case studies
If time and budget allow, detailed studies can be made of a specific unit (group, locality, organization, etc.) involving open-ended questions. This results in a more in-depth understanding of key issues, although generalizations can be dangerous.

Participant observation
The 'anthropological' approach involves researchers living or working with communities so that they can directly observe the impacts of a project on people's daily lives, but has obvious time and cost constraints.

Source: Schreckenberg et al. (2010) and other sources cited above.

Box T2. A Useful Method for Measuring Social Capital

A measure of household welfare that is seldom assessed is the level of security and support that household members feel they get from the community they live in – a key component of social capital. When household members don't trust their neighbors or do not expect to get help from them during a crisis, it is reasonable to assume that this has an adverse influence on household perceptions of well-being. To obtain a qualitative measure of social cohesion, questions like the following can be asked to the household heads:

If you left a machete outside your house overnight would it still be there in the morning?

When you leave the village can you leave the door of your house unlocked?

In the village is there someone you could leave your money with to look after?

If one of your children becomes sick is there someone in the village who would lend you money at a low rate of interest for their medicine?

Other questions with yes/no answers, and that are not leading questions, can be added to these. Such questions are designed to measure the level of trust, security and mutual support that exist in a community, and if scored as 1 for Yes and 0 for No, they can be used to create a composite 'social cohesion score' for each household.

Source: TRANSLINKS, 2007

Sequencing, triangulation and validation

The sequence of data collection methods is very important – experience shows that it is better to use participatory methods in the exploratory research phase, for example, Box T3 presents the methods proposed in the Social Carbon Methodology (SCM) for the 'starting conditions' description. The understanding gained from the participatory methods can inform and improve the research methods used in the more targeted or specific analysis, e.g., facilitating the design of short and focused household surveys.

It is always good practice to 'triangulate' using different data collection methods. A single data collection or research method used on its own can lead to erroneous results, e.g., due to unidentified bias in either participatory or survey methods. Two research methods can sometimes give surprisingly different results, in which case a third research method may be needed.

The feedback of research results to communities and validation is an essential part of any data collection and analysis process. This provides some degree of ownership or engagement of local or primary stakeholders, and is important for ground-truthing. Feedback should be an iterative process, with one or more feedback sessions before the research team leaves the community (e.g., to check on key assumptions or linkages) followed by further sessions when the data analysis is complete.

Box T3. Data Collection Methods Proposed in the Social Carbon 'Zero Point Assessment'

Projects applying for the Social Carbon Standard are advised to use various participatory research methods for the 'Zero Point' or starting conditions assessment including:

'Tendency analysis' in which people are asked to discuss the main changes which have occurred since they first arrived in community, and how they see those aspects developing over the next 10 years.

Individual interviews and drawings, including by children, of what the community might look like in 10 years' time.

Semi-structured interviews with key informants on the six Social Carbon resource types (see *Section T3.3)*, and which involve rating the resources from 1-6 from the lowest to the highest level of availability/access/conflicts, etc., depending on the resource issue. For example, for community conflicts (under 'Social resources'), the scoring could be:

1 = the conflicts within the community are intractable

2 = conflicts exist and could be intractable

3 = there are few intractable internal conflicts

4 = the internal conflicts are amenable to resolution

5 = there are few internal conflicts

6 = there are no internal conflicts or none which the group cannot resolve

This scoring system can be used to construct a radar or spider diagram when the remaining resources are scored.

Source: Social Carbon Methodology Guidelines:
http://www.socialcarbon.org/Guidelines/Files/socialcarbon_guidelines_en.pdf

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T6 Specific Data Collection Methods

T6.1 The Basic Necessities Survey (BNS)

The Basic Necessities Survey (BNS) method was originally developed by Action Aid[6], and more recently adapted by the Wildlife Conservation Society (WCS) for social impact monitoring of protected areas. The BNS method measures poverty change over time according to whether community members think they are getting more or less 'basic necessities' than before the project, or since the last time the BNS was carried out.

The BNS is a quick and relatively inexpensive way (about US$3-4/household) of measuring and tracking changes in poverty level. It can also be used to look at other aspects of poverty such as household access to basic needs, the extent of disparity in this access, and how perceptions of what is a 'basic necessity' change over time (TRANSLINKS, 2007).

The BNS should be implemented in control and treatment (project) communities in order to allow for attribution, and is therefore a very useful method when used in conjunction with the quasi-experimental approach *assuming that the project expects to have an impact on the general poverty level of project communities*.

Description of Method[7]

If poverty can be defined broadly as 'the lack of basic necessities', a valid approach to poverty assessment is to check whether a project has resulted in a change in the extent to which people's 'basic necessities' are being met. Unlike income approaches to poverty assessment (i.e., number of people living on less than US$2/day), there is no a priori definition of 'basic necessities', partly since what can be considered as a basic necessity is likely to vary both by location and over time (within the same location).

The survey is completed in three steps:

- Identification of possible basic necessities via focus groups;
- Application of the survey; and
- Analysis of the data collected.

[6] Especially by Rick Davies (http://www.mande.co.uk), an independent monitoring and evaluation expert working for ActionAid (TRANSLINKS, 2007).

[7] Acknowledgement: this BNS methods description is adapted from a version licensed under the Creative Commons Attribution-Noncommercial-Share Alike 3.0 License. To view a copy of this license, visit: http://creativecommons.org/licenses/by-nc-sa/3.0/

a) Identification of possible basic necessities via focus groups

A mixed age and gender focus group is used to generate an initial list of goods (e.g., TV, bicycle, radio, wheelbarrow, machete) and services (e.g., all school age children attending school, walking distance to a health clinic) that the participants may or may not think are basic necessities. It is important that the list includes items almost everyone would agree with (e.g., enough food each day), and others where there may be disagreement (e.g., having a TV). The list should include between 20 and 25 items.

Some items should be included that only a few people in the group think are currently necessities, but many think could become necessities in the future. At this point it is a list of *possible* basic necessities, not a final list of *agreed* basic necessities. It is important to avoid items that are difficult to record with a Yes or No answer (e.g., 'a healthy family' or 'well trained teachers'), or that cannot be reliably observed by different people.

b) Application of the survey

Two basic questions are put to the male or female (picked randomly) household head:

- Which items do you consider are basic necessities that everyone should have, and no-one should have to do without?
- Which items on the list does your household possess now?

The list of items can be read out to respondents or typed on cards. The respondent then sorts the cards/items into two piles – items that s(he) thinks are basic necessities, and items possessed by the household. Table T8 presents an example of a household BNS form.

c) Analysis of the data collected

Data analysis involves the following steps (see Table T9):

- determine which items are 'basic necessities' – these are defined as items which over 50% of the households think are basic necessities;
- calculate a weighting (fraction) for each item based on the percentage of households who think it is a basic necessity;
- for each household multiply the number of items owned by the weighting fraction;
- calculating a maximum possible score for a household with all the basic necessities;
- calculate a poverty index (%) for each household by adding up the weighted scores and dividing this by the maximum score, as shown in Table T9;
- it is also possible to estimate the value of a "basket of basic necessities." As can be noted from Table T8, a 'village price' can be estimated for each item owned and each household's 'basket value' computed. If desired, this could be compared to say the often used poverty measure of $2 per person per day.

Table T8: Example of a Household BNS Form

Asset or Service	Item	Have now? Yes=1, No=0	Are Basic Necessities? Yes=1, No=0	How Many Owned?	Village Price/Item	Total Value Owned Assets
Asset	1 sμo of land per person	0	1			0
Asset	Electric light	1	1	2	10	20
Asset	Bicycle	1	0	1	500	500
Asset	Concrete rice drying yard	1	0	1	1500	1500
Asset	Wooden rice chest	1	1	1	200	200
Service	3 meals a day	1	1			0
Asset	Buffalo or cow	0	1			0
Service	All children studying to level 2	0	1			0
Asset	Well with well head	0	1			0
Asset	Stone built house	0	0			0
Asset	Thick cotton blanket	1	1			0
Service	Doctor visiting house when sick	1	1			0
Asset	Electric fan	0	0			0
Service	A new set of clothes each year	1	1			0
Service	Livestock vaccination	0	0			0
Service	Meat once a week	0	1			0
Asset	Pesticide pump	0	0			0
Asset	Watch	0	0			0
Service	Access to loans	0	1			0
Asset	Radio	0	0			0
Asset	Toilet - built of stone	0	1			0
Asset	Table made of good wood	1	1	1	800	800
Asset	2 compartment wood wardrobe	0	0			0
Asset	TV	0	0			0
Asset	Bathroom	0	0			0
Asset	Motorbike	0	0			0
					Total value	**3020**

Source: Reproduced with permission from TRANSLINKS, 2007. Livelihood Surveys. A tool for conservation design, action and monitoring. TRANSLINKS 16 Household Survey Manual. Wildlife Conservation Society and USAID http://rmportal.net/library/content/translinks/LivelihoodSurveys_Manual_WCS_2007.pdf/view

Table T9: Example of a Household BNS Poverty Score

Basic Necessities	Do you have it now? Yes=1, No=0	Weighting (Fraction)	Poverty Score
1 sµo of land per person	0	0.995	0.000
Electric light	1	0.995	0.995
Bicycle	1	0.995	0.995
Concrete rice drying yard	1	0.988	0.988
Wooden rice chest	1	0.986	0.986
3 meals a day	1	0.983	0.983
Buffalo or cow	0	0.981	0.000
All children studying up to level 2	0	0.981	0.000
Well with well head	0	0.979	0.000
Stone built house	0	0.976	0.000
Thick cotton blanket	1	0.971	0.971
Doctor visiting the house when sick	1	0.950	0.950
Electric fan	0	0.931	0.000
A new set of clothes each year	1	0.924	0.924
Livestock vaccination	0	0.919	0.000
Meat once a week	0	0.833	0.000
Pesticide pump	0	0.800	0.000
Watch	0	0.774	0.000
Access to loans	0	0.767	0.000
Radio	0	0.743	0.000
	Total	**18.471**	**7.793**
Poverty score	7.793		
Maximum possible score	18.471		
Poverty index	**43.29%**		

Source: Reproduced with permission from TRANSLINKS, 2007. Livelihood Surveys. A tool for conservation design, action and monitoring. TRANSLINKS 16 Household Survey Manual. Wildlife Conservation Society and USAID http://rmportal.net/library/content/translinks/LivelihoodSurveys_Manual_WCS_2007.pdf/view

The poverty index can range from 0%, when the family possesses none of the basic necessities, to 100%, when it has all of them. If the poverty scores are recalculated using all of the items (even those not considered to be basic necessities), and the poverty index is recalculated using the maximum score from only the basic necessity items, then a score of ≥100% denotes households living at or above the poverty line[8] (i.e., they possess all of the basic necessities).

Perceptions of 'basic necessities' change over time. When conducting a subsequent BNS (with the same households), the focus group exercise should be repeated to see if any additional items need to be added to the list or old ones deleted (since by now all households may have an item). Scores can be calculated for each household both on the basis of a new extended list and, after excluding the new items, according to the old list.

Although not part of the standard BNS approach, in order to assist the attribution analysis, a column or two could be added to the standard BNS form asking respondents if they think that any change in ownership of a basic necessity was due to the project, and if yes, asking them why they think this. Finally it is possible to derive financial or economic measures from the BNS, as implied by the values in Table T8, as well as a price index to show the rate of inflation (see TRANSLINKS (2007) for further guidance).

Advantages and Disadvantages of the BNS

Main Advantages or Benefits	Main Disadvantages or Limitations
• Cost-effective way of measuring change in poverty • A quantifiable indicator (index over time) that is easy to communicate • Good for differentiation, e.g., separating stakeholders by female-headed households; ethnic group; age of household head, etc. • It is relatively simple to understand and analyze – local people can be trained as facilitators • Reported cost of US$3-4 per household • 'Attribution column' could be added to BNS form	• It does not tackle attribution *per se*, so needs to be used with a quasi-experimental approach, and therefore faces the challenge of control selection • The difficulty of comparing communities since each community has its own definition of basic necessities

[8] This assumes that all the goods and services that are not basic necessities are superior goods (in economic terms) whose consumption rises with income, rather than inferior goods whose consumption drops with rising income.

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T6.2 'Participatory Impact Assessment' (PIA)

Participatory Impact Assessment (PIA) is an extension of PRA methods and includes the adaptation of some well-known participatory tools, especially ranking and scoring methods, to issues of impact assessment, including attribution. It was created by the Feinstein International Center (Catley et al., 2008), and was designed mainly to evaluate humanitarian emergency and livelihood projects. The approach is based on the recognition that "local people are capable of identifying and measuring their own indicators of change" (Catley et al., 2008:9)

While PIA also contains some guidance for the *'WHAT to measure?'* question - participatory approaches to identify community selected indicators - it is most interesting for the participatory ranking and scoring methods associated with the *'HOW to measure?'* question. Here we first present a brief overview of the PIA approach, and then describe the specific data collection methods which could be used for measuring indicators.

Description of Method

Overview of the PIA approach

PIA aims to answer three key questions:

- What changes have there been in the community since the start of the project?
- Which of these changes are attributable to the project?
- What difference have these changes made to people's lives?

The PIA guide proposes the following eight steps:

1. Define the questions to be answered

Identification of the key issues and research questions should be based on a clear understanding of the project logic and objectives (as in SIA Stage 3).

2. Define the geographical and time limits of the project

Participatory mapping and historical timelines are recommended for this step.

3. Identify and prioritize locally defined impact indicators

PIA proposes the use of impact indicators identified by the community participants. Communities have their own priorities for improving their lives, and their own ways of measuring change. Their priorities and indicators are often different to those identified by external actors. PIA suggests that participatory indicators can be obtained via a simple questioning process with project participants, e.g., what changes do you expect in your lives due to the project? What changes in your lives have already occurred due to the project? etc. Appropriate follow-up questions can then probe for more specific evidence of change.

4. Decide which methods to use and test them out

This refers to the data collection methods used to measure the selected indicators. It is noted that each method (presented below) has its strengths and weaknesses, and some are more appropriate in certain cultures. It is noted that the numbers produced from scoring exercises can be meaningless without the reasoning to explain them. They must therefore be conducted as part of a semi-structured interview process, and not in isolation. The importance of testing the methods is also stressed; it is best to do this in non-project communities.

5. Decide which sampling method and sample size to use

The sampling method is likely to be purposive (e.g., selection of 'typical villages') or random sampling. There is no simple answer to the question of what sample size to use: this depends on the type and number of questions and methods used. In most situations, the important thing is to capture the overall trend, and this can usually be done with a reasonably small sample size as long as the methods are applied consistently.

A principle of the PIA approach is that statistical analysis is possible if the same tool is applied consistently using the same indicators, the same number of counters, the same visual aids, the same questions, etc. Even though the data may be subjective, and qualitative indicators are used, if the exercises are repeated identically and systematically, data from 10-15 repetitions can be enough to be regarded as "scientifically rigorous" according to Catley et al (2008: 47).

6. Assess project attribution

The use of specific participatory methods to assess attribution is discussed below, but in general the preferred approach is to separate the project and non-project causative factors, and to find the relative importance of these factors in the explanation of an identified positive or negative outcome or impact. PIA methods can also be used to assess attribution when using 'matching methods'.

7. Triangulate

Triangulation is essential for all data collection methods, including participatory methods. Sometimes secondary data can be used to check if estimates are in the right 'ball park'; a short household survey could be implemented to check participatory methods; or different participatory methods can be used for triangulation purposes.

8. Feedback and verity the results with the community

It is essential to feed the analysis back and to discuss the results with the communities and other stakeholders. This is the last opportunity to 'ground truth' the results, and the discussions usually reveal further insights into project outcome and impact processes. Focus groups, e.g., by gender, are advisable for getting the best feedback quality.

<u>Description of PIA data collection methods (and examples)</u>

Simple ranking and scoring methods

A simple initial approach is to rank and/or score the importance of different possible contributory factors for a given impact or outcome by placing counters (e.g., seeds or stones) on each potential contributory factor - these should be represented as far as possible by a picture card or other visual aid, ideally using local materials.

The 'proportional piling' technique involves distributing 20, 50 or 100 stones or seeds among a number of variables (e.g., contributory factors, potential impacts or indicators). It should be noted that the greater is the number of counters, the longer the exercise takes – fewer counters can be used if there are less variables or indicators. The results of proportional piling can be conveniently presented in a pie chart, as shown in Figure T14.

Ranking can also be undertaken through a voting process using a secret ballot to reduce the bias caused by peer pressures, strong personalities, etc. Ranking and scoring should be undertaken by different focus groups, e.g., women and men, and then aggregated.

'Before and after' scoring including the use of 'nominal baselines'

'Before and after' scoring involves undertaking proportional piling for the 'before project' situation for a particular variable or indicator (e.g., the pre-project annual cash value of forest products), and asking the informants or focus group to increase or remove counters according to whether they think the annual cash value has increased or fallen since the project started compared to the present

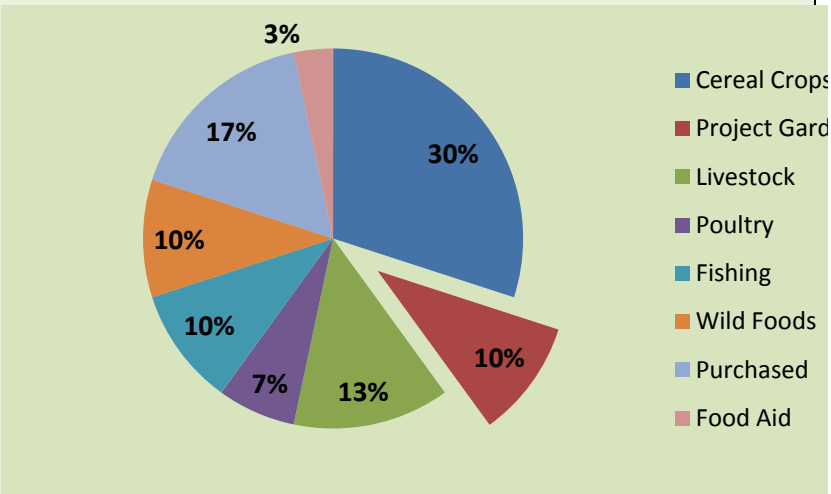
day. The 'before project' score provides the baseline or starting index. Before and after scoring can also be useful if a community outcome or impact is in terms of the time saved on key household activities, e.g., collection of water, fodder or firewood.

In many cases, people are unwilling to reveal certain types of information, especially financial information such as income levels, and even discussing production levels can be sensitive. Income data based on surveys and conventional participatory methods should be treated with extreme caution since they are likely to suffer from major bias problems[9]. Figure T15 presents an example of 'before and after' scoring for a hypothetical community vegetable garden project. It is essential that the reasons for any differences in the before and after scores are thoroughly discussed and recorded.

[9] In general it is more reliable to measure wealth as a proxy for income (TRANSLINKS, 2007).

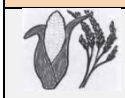
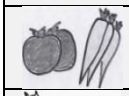
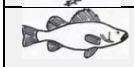
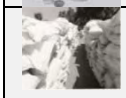
Figure T14: Example of Proportional Piling Scoring of Food Sources

	Cereal Crops	••••••• ••••••• ••••••• ••••••• ••
	Project Garden	••••••• •••
	Livestock	••••••• ••••••
	Poultry	•••••••
	Fishing	••••••• •••
	Wild Foods	••••••• •••
	Purchased food	••••••• ••••••• •••
	Food Aid	•••



Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford

Figure T15: "Before and After" Project Scoring of Food Sources

Food Source (Indicator)		Counters (Score)	
	Rain-fed Production	BEFORE	••••••••••••••••••••••••••••••••••••
		AFTER	••••••••••••••••••••••••••••••••
	Project Garden	BEFORE	
		AFTER	••••••••••
	Livestock Production	BEFORE	••••••••••••
		AFTER	••••••••••••••
	Poultry	BEFORE	••
		AFTER	•••••••
	Fishing	BEFORE	••••••••••
		AFTER	••••••••••
	Wild Food Collection	BEFORE	••••••••••••••
		AFTER	••••••••••
	Purchases	**BEFORE**	••••••••••••••••••••
		AFTER	••••••••••••••••••
	**Food Aid**	**BEFORE**	•••••••
		AFTER	•••

Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford

A good way of capturing relative change, and which does not involve asking sensitive questions about income or harvest levels, herd size, milk production, etc., is by using a nominal baseline to represent a quantity of a given indicator or variable at a certain point in time. The example presented in Box T4 shows how this method can be used to assess changes in income for a project designed to achieve household income benefits. Scoring against a nominal baseline is particularly useful for estimating changes in quantitative indicators like income, livestock numbers, and crop yields. The Quantitative Participatory Assessment (QPA) method, presented in **Section T6.3,** uses a similar approach.

Box T4. Measuring Impacts Against a Nominal Baseline

Stakeholder or focus group project participants were asked if they have experienced any increase or decrease in income since the project started. This was done by firstly giving the focus group 10 counters in a basket representing their income before the project. They were then given another 10 counters and asked to show any relative changes in their household income by either adding counters to the original basket of counters or by removing them (e.g., if four counters were added to the original basket this would denote a 40% increase in income). The participants are then asked to discuss how and why they decided on this (e.g.) 40% increase. This can be done separately for all income sources if it is felt to be necessary and useful. If it is repeated with sufficient groups, arithmetic means and standard deviations can be estimated.

Source: Catley et al., 2008.

Another approach is to use the same number of counters (say 100) for both the 'before project' and 'current' scoring, and asking participants to distribute the 100 counters between all the possible explanatory factors or variables. This will show the relative importance of these factors at the two time points in time, but not their absolute importance. This method could be used, for example, to assess the distribution of household income from different sources.

The most important parts of these exercises are the discussions of what has caused any change in the scores, and what consequences they think the identified change will have on their lives. It is possible to repeat these exercises in subsequent years, although the comparison would only be valid if it is done with the same people.

Matrix scoring and pairwise ranking

Matrix scoring can be used to identify and prioritize impact indicators or as a means of attributing impacts to a project or project activity. In an example involving the selection of indicators for a livelihoods and food security project in Niger, there were five main stages:

a) Identification by focus groups of five current food sources: (own farm) millet production; (own farm) vegetable production; cereal bank (millet) purchases; other purchased food; and (own farm) livestock production (milk and meat);
b) a pair-wise ranking of these food sources to identify the preferred food sources: these turned out to be millet and vegetable production (Table T10);
c) a discussion of the reasons for preferring these food sources – the main reasons were the volume and availability of the food produced, and the ease of selling them (millet and vegetables are easier to sell than milk);
d) discussion and selection of possible food preference indicators, resulting in four main indicators being selected: availability (quantity/volume); accessibility (easy to obtain/cheap); income earning or saving potential; and nutritional or health value;
e) scoring of the food sources against the selected food preference indicators: this was done for each indicator, with the participants scoring 50 counters between the five food sources (see Table T11).

Table T10: Pair-Wise Ranking Showing Food-Source Preferences in Niger

Food Source	Millett Production	Vegetable Production	Purchased Food	Cereal Bank	Livestock Production
Millet Production		Millet production	Millet production	Millet production	Millet production
Vegetable Production			Vegetable production	Vegetable production	Vegetable production
Purchased Food				Cereal Bank	Purchased food
Cereal Bank					Cereal Bank
Livestock Production					

Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford

Table T11: Matrix Scoring of Food Sources against Indicators of Preference

Indicators	Millett Production	Vegetable Production	Purchased Food	Cereal Bank	Livestock Production	Total
Availability	15	12	5	13	5	50
Accessibility	22	8	3	13	4	50
Income/savings potential	12	13	0	8	17	50
Nutritional value	6	17	6	6	15	50
Total	55	50	14	40	41	200

Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford

It is interesting to note that while livestock production ranked lowest in the pairwise ranking exercise, it was the third most important food source when scored against the preference indicators. This shows that matrix scoring can be a valuable tool for measuring different indicators, and captures information which might otherwise be overlooked. Figure T16 also shows how matrix scoring was used to score different indicators in a comparison of livestock and other interventions during a drought in Southern Ethiopia.

Figure T16: Matrix Scoring Comparison of Drought Interventions against Indicators

Indicators	Mean Scores (95% CI) for Interventions							
	De-Stocking	Veterinary Support	Animal Feed	Food Aid	Water Supply	Labor (Safety Net)	Credit	Others
"Helps us to cope with the effect of drought"	9.1 (8.5, 9.7)	3.5 (3.2, 3.9)	5.7 (5.1, 6.2)	6.9 (6.5, 7.4)	3.0 (2.4, 3.6)	0.8 (0.5, 1.1)	0.5 (0.2, 0.8)	0.4 (0.2, 0.7)
"Helps fast recovery and rebuilding herd"	11.1 (10.5,11.7)	4.4 (3.9, 4.9)	5.7 (5.0, 6.3)	4.9 (4.4, 5.6)	1.9 (1.5, 2.4)	0.9 (0.5, 1.4)	0.6 (0.1, 1.1)	0.4 (0.1, 0.7)
"Helps the livestock to survive"	10.3 (9.5, 11.2)	4.9 (4.4, 5.4)	8.9 (8.1, 9.7)	2.3 (1.8, 2.8)	2.8 (2.2, 3.5)	0.2 (0.1, 0.4)	0.3 (0.1, 0.6)	0.2 (0.0, 0.4)
"Saves human life better"	9.8 (8.9, 10.6)	2.4 (1.9, 2.8)	3.7 (3.1, 4.3)	8.8 (8.1, 9.6)	3.6 (2.9, 4.3)	0.9 (0.5, 1.3)	0.5 (0.2, 0.9)	0.3 (0.1, 0.5)
"Benefits the poor most"	7.6 (6.7, 8.6)	1.9 (1.6, 2.3)	3.2 (2.5, 3.8)	11.0 (10.1,11.9)	3.7 (2.8, 4.3)	1.6 (0.9, 2.2)	0.7 (0.3, 1.1)	0.5 (0.1, 0.8)
"Socially and culturally accepted"	11.5 (10.6,12.4)	5.1 (4.7, 5.6)	5.8 (5.1, 6.4)	3.4 (2.8, 3.9)	2.6 (2.1, 3.2)	0.9 (0.5, 1.4)	0.3 (0.1, 0.5)	0.3 (0.1, 0.5)
"Timely and available"	8.4 (7.8, 9.0)	3.3 (2.9, 3.7)	4.3 (3.9, 4.6)	8.5 (7.9, 9.1)	3.5 (2.8, 4.1)	1.2 (0.7, 1.7)	0.5 (0.2, 0.8)	0.3 (0.1, 0.5)
Overall Preference	10.6 (9.9, 11.2)	4.2 (3.8, 4.6)	6.2 (5.5, 6.9)	4.7 (4.1, 5.2)	2.6 (2.1, 3.2)	1.0 (0.5, 1.5)	0.4 (0.1, 0.6)	0.3 (0.1, 0.6)

Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford

Impact calendars

Impact calendars can be useful for measuring impacts against 'dimensional' indicators such as time and distance. Catley et al (2008) describe how an impact calendar was used to analyze the number of months of household food security 'before' and 'after' a project. Project participants were given 25 counters representing a household's post-harvest food balance. Using 12 cards, one for each month of the year, participants were asked to distribute the counters along a 12 month calendar to show the monthly household utilization of the harvested maize, as shown in Table T12.

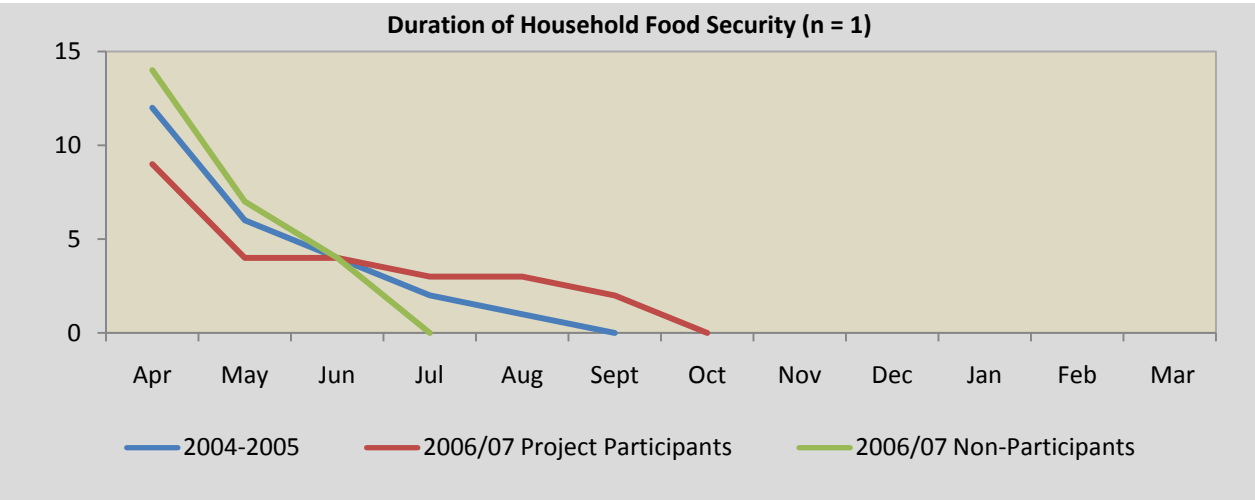
Table T12: Food Security Impact Calendar Using 25 Counters

	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
2004-2005	•••••• ••••••	••••• •	••••	••	•							
2006-2007 actual	•••••• •••	••••	••••	•••	•••	••						
2006-2007 (Control)	•••••• •••••• ••	••••• ••	••••									

Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford

This exercise was done three times: firstly with the project participants for the agricultural year before the project started; secondly with the same people for the agricultural year after the project had started; and thirdly with a control group - community members who had not participated in the project – for the year after the project started. The three sets of time series data were then graphed as shown in Figure T17.

FigureT17: Changes in Number of Months of Food Security



Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford.

Scoring and 'tally' methods to show attribution

The main approach to attribution in PIA is to separate out the project and non-project factors as determinants of outcomes, rather than to use the matching methods (using controls) approach. This involves firstly developing a 'causal diagram' showing all the potential project and non-project factors contributing to a given impact. These are then ranked or scored. If all the factors are scored using proportional piling (100 counters is best for calculating percentages), the project (or non-project) factors can be aggregated into a statement such as:

"*the project-related factors contributed X% to a project outcome/impact*"

For example, Table T13 shows the scoring for six project and non-project factors contributing to a positive change in food security status following an agricultural recovery project in a post-conflict setting. It was concluded that the project-related factors made a 29% relative contribution to improved food security.

Table T13: Attribution by Ranking and Scoring for a Food Security Project

Factor	Project or Non-Project Factor	Rank	Score
Improved rainfall	Non-project	1	33
Improved security	Non-project	2	26
Improved seeds	Project	3	19
Government extension service	Non-project	4	12
Provision of fertilizers	Project	5	8
Provision of tools	Project	6	2

Source: Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford.

Another approach is to ask individuals to list all the factors they think have contributed to a particular outcome or impact. When everyone has been asked, the number of times each potential cause was mentioned is added up. This is known as the 'tally method'. Table T14 presents an example of the tally method based on the responses (74) to an open-ended question: what has contributed to improved food security following the drought in Niger? (this followed a 'before and after project' scoring exercise on food sources).

Table T14: Reasons for Improved Household Food Security in Niger

Factors	Project or non-project factor	No. of responses (n = 74)
Cereal Banks	Project	68
Better farm inputs	Project	59
More income to buy food	Project	50
Livestock restocking	Project	46
Vegetable production	Project	38
Food Aid	Non-project	10
Decrease in crop pests and diseases	Non-project	8
Improved rainfall	Non-project	5

Source: Reproduced with permission from Catley, A., Burns, J., Abebe, D. and Suji, O. (2008). Participatory Impact Assessment: A guide for practitioners. Feinstein International Center, Medford

A large sample is needed to be confident of the tally method. An advantage of the tally methods is that by not listing or pre-defining the potential factors, there is little risk of influencing people's responses; there may however be a bias towards them mentioning project-related factors, especially if they know the study is being carried out to analyze project impacts, and important non-project factors could be omitted. As with all participatory methods, great care is needed to avoid bias. Given the danger that respondents are more likely to cite project-related factors if someone from the project undertakes the survey, it would be better to get an independent group to do it, e.g., a local NGO unconnected to the project.

Advantages and Disadvantages of Participatory Impact Assessment

Main Advantages or Benefits	Main Disadvantages or Limitations
• PIA methods can be designed with an explicit attribution focus • With 10-15 repetitions with different focus groups and systematic use of the methods, basic statistical analysis is possible • Any level of 'differentiation' is possible, e.g., analysis of wealth, gender and ethnic factors • Participatory and low cost approach using locally defined indicators • Flexible and adaptable – can be combined with other methods	• Methodology needs to be adapted to each locality and may require a relatively long planning process • Possible vulnerability to bias (e.g., strategic responses; project factors more likely to be mentioned in 'tally tables') • Quite demanding of community time • Variable levels of rigor and reliability • Some methods are time consuming, e.g., pair-wise or matrix ranking

Main Source and Further Guidance

Catley, A., Burns, J., Abebe, D. and Suji, O. 2008. Participatory Impact Assessment. A Guide for Practitioners. Feinstein International Center, Tufts University. Available at: http://wikis.uit.tufts.edu/confluence/display/FIC/Participatory+Impact+Assessment (also available in Spanish and French).

T6.3 Quantitative Participatory Assessment (QPA)

Quantitative Participatory Assessment (QPA) is a participatory scoring system originally developed in India to monitor the environmental benefits of watershed protection projects. It is very similar to the methods described in ***Section T6.2,*** and could be classified as another PIA method. QPA aims to capture people's perceptions of changes in qualitative indicators in a quantitative form via community or focus group based assessments. It was first developed in the context of analyzing the environmental and other non-market benefits of watershed protection projects in India, benefits which would be difficult or costly to value using conventional economic valuation methods (James et al., 2002).

Description of Method and Examples

Relative scoring using the QPA

Description of Method

For developing an index of change, each qualitative indicator (e.g., water quality or community cohesion) is given a pre-project (baseline) nominal value of 100. Then the focus groups need to be carefully chosen, e.g., by gender, wealth grouping, age, livelihood interests, etc. Each focus then engages in a semi-structured discussion so that they obtain a good understanding of the benefits under consideration, and of the key issues in determining whether they have got better or worse.

The focus group is then asked whether the benefits it currently receives have risen or fallen since the project began (or since the previous year, compared to five years ago, etc.), and then asked to add stones or counters to a pile of 100 (representing the baseline score) or to take them away if they think there has been a deterioration. For example, a score of 150 would indicate that the perceived value has increased by a half, and a score of 50 that its value has halved.

This perceived value could involve a combination of qualitative and quantitative information (e.g., clean water could include the amount of water), or the component parts could be scored separately. Each focus group is encouraged to reach a consensus score, and asked to explain why it chose this score. Over the years this can become an index of change, although it would really be valid if the focus groups were composed of the same people.

Example: Change in income from crop production

Table T15 shows the scores from focus group discussions of the change in agricultural incomes in a project area in India after assigning 100 as the baseline score. These findings from a rapid QPA in 16 villages were later corroborated by a full-scale impact evaluation study of social equity and household livelihoods, which found an increase of about 50% in crop incomes in the sampled villages (James et al., 2004).

Table T15: Scoring of Changes in Agricultural Income, Doon Valley Project, India

Village	Division	Scores for Change in Agricultural Incomes		
		Before	After	% change
Tachchila	Dehradun	100	150	50
Majhara	Dehradun	100	183	83
Rainiwala	Dehradun	100	200	100
Hasanpur	Dehradun	100	125	25
Bhopalpani	Song	100	150	50
Bharwakatal	Song	100	150	50
Kalimati	Song	100	130	30
Marora	Song	100	150	50
Dudhai	Kalsi	100	150	50
Nahad	Kalsi	100	125	25
Singli	Kalsi	100	110	10
Sorna	Kalsi	100	125	25
Bawani	Rishikesh	100	150	50
Dagar	Rishikesh	100	125	25
Dour	Rishikesh	100	130	30
Koti May Chak	Rishikesh	100	125	25
Average % change				**42**

Source: Reproduced with permission from James, A. 2003. Quantified Participatory Assessment: Capturing Qualitative Information in Large-Scale Development Projects. http://www.solutionexchange-un.net.in/decn/cr/res03060802.pdf

Absolute scoring using the QPA

Description of method

For absolute scoring, which is normally preferable, respondents are asked to rate a variable or indicator on a scale from 1 to 100 at any point in time. Again it is essential to note the reasons for deciding on a particular score. The scores should also be validated in community meetings and in a meeting with peer group assessment teams (if these exist).

Example: Scoring of effectiveness of soil erosion measures

This example shows the use of QPA to derive scores measuring the effectiveness of a project's soil erosion control measures. Villagers were asked to mark the areas of soil erosion on a village resource map before the project, and to identify areas where the project worked to reduce erosion. They were then asked to score the erosion control sites (up to five in each village) on a scale from 0 (equals 'erosion continued unabated') to 100 ('erosion stopped completely'). The results are shown in Table T16.

Table T16: Scoring of Soil Erosion Control in the Doon Valley Project, India

Village	Division	Scores on Erosion Control					
		Site 1	Site 2	Site 3	Site 4	Site 5	Average
Tachchila	Dehradun	50	75	100	40		66
Majhara	Dehradun	100	100	100	100		100
Rainiwala	Dehradun	100					100
Hasanpur	Dehradun	25	100	100	100		81
Bhopalpani	Song	0	0	0	0		0
Bharwakatal	Song	50	25	75			50
Kalimati	Song	75					75
Marora	Song	50	75	50	100		69
Dudhai	Kalsi	75	100	50			75
Nahad	Kalsi	50	25	75			50
Singli	Kalsi	80	100	100	40		80
Sorna	Kalsi	100	100				100
Bawani	Rishikesh	0	0	0	0		0
Dagar	Rishikesh	0	0	0	0		0
Dour	Rishikesh	0	0	0	0		0
Koti May Chak	Rishikesh	75	100	75	50	100	80

Source: Reproduced with permission from James, A. 2003. Quantified Participatory Assessment: Capturing Qualitative Information in Large-Scale Development Projects. Available at: http://www.solutionexchange-un.net.in/decn/cr/res03060802.pdf

Example: Scoring of social equity of NTFP enterprises in India

This example comes from a broader analysis of the social, environmental and economic benefits of conservation oriented enterprises in five States of North and South India (James et al., 2005). Table T17 shows the scores out of a hundred for carefully selected 'social equity' indicators of some NTFP enterprises. While these scores were self-assessment scores, and are therefore prone to subjectivity and bias, it can be observed how this approach could be adapted to a multiple stakeholder assessment system.

Table T17: QPA Scoring of Social Equity Indicators for NTFP Enterprises in India

Name of NTFP enterprise	Price benefits	Profit shared	Other benefits	Members Contribute	Members participate in DM	Few members decide?	Conflicts among members?	Conflicts with villagers	Ave.	Observations
Lakshmi Seva Sangham	75	75	25	25	25	0	50	50	42	Revenue surplus put back into enterprise; little decision sharing
Sahyadri Ayurvedic Pharmaceuticals	50	10	25	25	25	0	50	50	29	Ownership with management; Community not included
Samridhi Mahila Cooperative Society	100	50	50	75	80	60	60	75	67	Profits put back/given as insurance; strong group participation; conflicts resolved
Biligiri Soligara Kiru Aranya Samskaran Sanga	25	75	60	60	65	50	75	75	59	Bonus to collectors, who decide & resolve issues (including conflicts)
Sahara	75	50	75	25	50	75	75	25	56	Young enterprise; no revenue surplus; NGO-led participation
Kuringi Foundation	65	10	50	75	75	50	75	50	56	Cohesive federation of tribal collector groups; revenue surplus not yet distributed

Source: Reproduced with permission from James, A.J., Mathew, T. & Rai, N. 2005. Report of a Ford Foundation supported Action Research Study on Conservation, Enterprise and Livelihoods. Pragmatix Research & Advisory Services Pvt. Ltd., New Delhi.

Advantages and Disadvantages of Quantitative Participatory Assessment

Main Advantages or Benefits	Main Disadvantages or Limitations
• It does not require a starting conditions (baseline) study • Represents an easy way of quantifying qualitative issues • It is easily understood – most people are comfortable with 0-100 scale and it can be implemented by local assessment teams or junior staff following training • It is easy to graph and communicate results • It is reasonably quick – 1 village assessment per day was normal in India	• It does not assess attribution although questions could be phrased to include attribution • Bias and uncertainty in the scoring, e.g., it may suffer from strategic responses, depends on memory recall for starting conditions, and limited understanding of complex social or physical relationships • Repetitions or developing an index would need the same people in the focus groups year after year but this is unlikely

Main Sources and Further Guidance

James, A. 2003. Quantified Participatory Assessment: Capturing Qualitative Information in Large-Scale Development Projects. Available at: http://www.solutionexchange-un.net.in/decn/cr/res03060802.pdf

James A., Pangtey V., Singh P. & Virgo K. 2002. Participatory assessment. Bringing people's perceptions to project management desktops: a quantified participatory assessment of the Doon Valley Watershed Project in North India. *Impact Assessment and Project Appraisal* 20 (3): 201-214

James, A.J., Mathew, T. & Rai, N. 2005. Report of a Ford Foundation supported Action Research Study on Conservation, Enterprise and Livelihoods. Pragmatix Research & Advisory Services Pvt. Ltd., New Delhi

T6.4 Participatory Economic Valuation (PEV)

Participatory Economic Valuation (PEV) is a technique that allows communities or other stakeholders to estimate the value of a range of benefits based on their equivalent value to a commonly traded item, known as the 'numeraire'. PEV was first known as contingent ranking, since it is a variant of 'contingent valuation' which involves people expressing their willingness to pay (WTP) for a good or service.

Following some early examples in Africa in the 1990s (Campbell et al., 1991, Emerton, 1996), PEV has been recently adopted by CARE International and partners (Franks, undated). It is a useful way of ranking a range of benefits, but is not recommended for the estimation of absolute economic values (e.g., by adding together values derived from PEV) due to various theoretical and methodological limitations (IIED, 1994; Richards et al., 2003).

Description of Method

Assuming that the various benefits and costs (positive and negative impacts) have been defined in the earlier SIA stages, the following steps are required:

- Identification of an anchor or 'numeraire' value. Participants need to decide on an item with a well-known value, e.g., a goat, a measure of firewood, etc.
- Participants are then asked to rank all the benefits (and the anchor value) from the least significant/valuable to the most significant or valuable.
- Participants then perform a proportional piling exercise, allocating a number of counters to each benefit (it is important that someone records the discussion of how or why a particular score is decided)
- In order to assess attribution, the respondents can also be asked to divide the counters into two piles: one pile for the benefits which they think are due to the project, and a second pile which they think is due to other factors. It is important to capture the reasons behind this division.
- The benefits can then be transformed into a cash amount, based on their scoring relative to the numeraire or anchor value. The numeraire is thus used to estimate the willingness to pay (WTP) value of the other goods or services.
- The exercise can be repeated for the costs or negative impacts of the project.
- The exercise should be discussed, including whether people felt it gave a fair reflection of the benefits and costs.

Example

The first documented application of the PEV or contingent valuation method involved a group of small farmers in Zimbabwe estimating a range of environmental and subsistence benefits from an agroforestry project (Campbell et al., 1991). The farmers were asked to rank and score 10 benefits from multi-purpose agroforestry trees against the value of a hand-pump borehole (the numeraire).

As part of a household survey, 10 cards were laid out before each respondent, each card representing an agroforestry benefit. Also, two cards representing 'anchor values' were handed out: a hand borehole and a 'Blair' latrine. Each respondent was then asked to place 50 matches on the 12 cards (using the proportional piling technique). They were then asked what they would be prepared to pay to have the (hypothetical) opportunity of joining four other households in sinking a borehole and installing a hand pump, with success guaranteed and an interest-free loan to be paid back over 5 years. This represented their WTP for their share of the borehole. They were also asked for their choice between a share of the borehole and five specified commodities ranging in value from Zim $90 to Zim $ 35,000.

The number of matches scored by each category of benefit was then standardised against the number of matches allocated to the borehole. Thus each benefit was expressed in terms of its borehole equivalent, and multiplied by the WTP borehole value. This resulted in the values shown in Table T18. The discounted annual benefit was estimated in the range of Zim $84-336 per household.

Table T18: Estimated Value of Agroforestry Benefits in Zimbabwe

Benefit (Good or Service)	Mean WTP value - Zim $	Median WTP value - Zim $
Fuel	373	500
Farm/house materials	290	400
Crop production	222	333
Animal feed	181	144
Nutrient recycling	175	257
Food	136	200
Shade	102	150
Cash income	82	125
Health	71	100
Social benefits	46	47

Note: At the time of the study, there were Zim $3.13 per US dollar.

Source: Campbell et al., 1991.

Advantages and Disadvantages of Participatory Economic Valuation

Main Advantages or Benefits	Main Disadvantages or Limitations
• Attribution can be factored in • It is very useful for ranking a range of benefits • Monetization makes comparisons easy to understand • Order of magnitude numbers can be derived relatively quickly • It uses local data and knowledge • It can be done individually or with focus groups	• As regards the generation of absolute numbers, this method has been critiqued by economists due to various theoretical and methodological problems: the mixing of stock and flow values; non-independent and inconsistent values (e.g., in terms of unit area); WTP values depend on whether people own the 'numeraire' item; seasonality issues; bias caused by group dynamics; and other issues • It is less effective for costs or negative impacts • It is inappropriate in situations where people are unused to monetary valuation • It should be combined with other methods

Main Sources and Further Guidance

Campbell B., Vermeulen S. & Lynam T. 1991. Value of Trees in the Small-Scale Farming Sector of Zimbabwe. IDRC-MR302e. International Development Research Centre. Ottawa, Canada.

Franks, P. (Undated) Promoting Equity in the Management of Protected Areas: New evidence of the need for action. CARE International. http://www.povertyandconservation. info/docs/20080524-Phil_Franks_CARE_International2.pdf

Emerton, L. 1996. Valuing the subsistence use of forest products in Oldonyo Orok Forest, Kenya. Rural Development Forestry Network Paper 16e, ODI, London.

IIED. 1994. Economic Evaluation of Tropical Land Use Options: A Review of Methodology and Applications. Environmental Economics Programme, International Institute for Environment and Development, London.

Richards, M., Davies, J. & Yaron, G. 2003. Stakeholder Incentives in Participatory Forest Management. A Manual for Economic Analysis. London: ITDG Publishing.

Schreckenberg, K., Camargo, I., Withnall, K., Corrigan, C., Franks, P., Roe, D. and Scherl, L.M. 2010. Social Assessment of Protected Areas: a review of rapid methodologies. A report for the Social Assessment of Protected Areas (SAPA) Initiative. International Institute for Environment and Development. London, UK.

T6.5 The Most Significant Change (MSC) Method

The most significant change (MSC) method is a form of participatory M&E. It is participatory because many project stakeholders are involved both in deciding the sorts of change to be recorded and in analyzing the data. It is a form of monitoring because it occurs throughout the project or program cycle, and provides information to help people manage the project. It contributes to evaluation because it provides data on impacts and outcomes. It is particularly useful for capturing unexpected or negative impacts. A key advantage is that it can help identify attribution: it can provide evidence of cause and effect in the form of stories of who did what, when and why.

Description of Method

MSC involves the collection of significant change stories from the field level, and the systematic selection of the most important of these by panels of designated stakeholders or staff. The designated staff and stakeholders are initially involved by 'searching' for project impact. Once changes have been captured, various people sit down together, read the stories aloud and have regular and often in-depth discussions about the value of the reported changes.

Most versions of the MSC involve 10 steps:

1. Raising interest at the start
2. Defining the domains of change
3. Defining the reporting period
4. Collecting SC stories
5. Selecting the most significant of the stories
6. Feeding back the results of the selection process
7. Verifying the stories
8. Quantification
9. Secondary analysis and meta-monitoring
10. Revising the system

The first step in MSC generally involves introducing a range of stakeholders to MSC, and fostering interest and commitment to participate. The next step is to identify the domains of change to be monitored. This involves selected stakeholders identifying broad domains - for example, 'changes in people's lives' - that are not precisely defined like performance indicators, but are deliberately left loose, to be defined by the actual users. The third step is to decide how frequently to monitor changes taking place in these domains.

The stories are collected from those most directly involved, such as participants and field staff. The stories are collected by asking a simple question such as: 'During the last month, in your opinion, what was the most significant change that took place for participants in the program?' It is initially up to respondents to allocate their stories to a domain category. In addition to this, respondents are encouraged to report why they consider a particular change to be the most significant one. The stories are then analysed and filtered up through the levels of authority typically found within an organisation or programme. Each level of the hierarchy reviews a series of stories sent to them by the level below and selects the single most significant account of change within each of the domains. Each group then sends the selected stories up to the next level of the programme hierarchy, and the number of stories is whittled down through a systematic and transparent process. Every time stories are selected, the criteria used to select them are recorded and fed back to all interested stakeholders, so that each subsequent round of story collection and selection is informed by feedback from previous rounds.

After this process has been used for some time, such as a year, a document is produced with all stories selected at the uppermost organisational level over that period in each domain of change. The stories are accompanied by the reasons the stories were selected. The program funders are asked to assess the stories in this document and select those that best represent the sort of outcomes they wish to fund. They are also asked to document the reasons for their choice. This information is fed back to project managers.

The selected stories can then be verified by visiting the sites where the described events took place. The purpose of this is two-fold: to check that stories have been reported accurately and honestly, and to provide an opportunity to gather more detailed information about events seen as especially significant. If conducted some time after the event, a visit also offers a chance to see what has happened since the event was first documented.

The next step is quantification, which can take place at two stages. When an account of change is first described, it is possible to include quantitative information as well as qualitative information. It is also possible to quantify the extent to which the most significant changes identified in one location have taken place in other locations within a specific period. The next step after quantification is monitoring the monitoring system itself, which can include looking at who participated and how they affected the contents, and analysing how often different types of changes are reported. The final step is to revise the design of the MSC process to take into account what has been learned as a direct result of using it and from analysing its use.

In sum, the kernel of the MSC process is a question along the lines of: 'Looking back over the last month, what do you think was the most significant change in [particular domain of change]?' A similar question is posed when the answers to the first question are examined by another group of participants: 'From among all these significant changes, what do you think was the most significant change of all?'

Advice to facilitators of the MSC method includes:

- Make sure everyone understand the approach.
- Make sure everyone understands and 'buys-in' to why this approach is being used and what purpose it will serve. If people are going to put time, energy and knowledge into it they should know why, what it contributes to, and what will be done with their stories.
- Try to make it a team/group effort - something which 'we' will do together - rather than a top-down effort in which people have to comply and produce something
- Be very clear about the domain of change and how it is defined. The question you ask is really important for the stories you will get. Make sure the question is clear and to the point of what you want to find out. It may be good to test it out on someone to make sure what you are asking is what you want and that it is understood by others the same way.
- It is sometimes good to have an example to share with others to give them a kick-start; but beware - you may also get replicas of your example with certain details changed. It is up to you to decide what will work with the group you are working with.
- You need to handle the selection of 'best stories' process carefully. Everyone who has written and shared an MSC story will feel attached to their story, and their effort and story should always be respected. It is necessary to understand your group and find a way to instill a team feeling about choosing the change stories which are 'best' for the project.
- Stories can still go through a process of discussion, revision and refinement before being finalized - both before submission and even after selection. The process can help to make an even better story around a key change identified. After all we aren't all good at storytelling and writing, and there may be differences in capacity, literacy and language which must be taken into account.
- While MSC is associated with and used for monitoring, review and evaluation processes, you can get a lot more out of it if you link MSC and the stories produced to other parts of the project. MSC and the stories produced can be linked to communication, dissemination, media, and future planning activities to name a few.

The above description is based on: http://www.mande.co.uk/docs/MSCGuide.pdf, and http://www.odi.org.uk/rapid/tools/Toolkits/Communication/MSC.html

Main Sources and Further Guidance

Davies, R. & Dart, J. 2005. The 'Most Significant Change' (MSC) Technique: A Guide to Its Use http://www.mande.co.uk/docs/MSCGuide.htm

Mason Westphal, S. con aportes de Gladys Velásquez y Karsten Kirkegaard. 2005. Hacia más cambios significativos con el método de CMS - Desarrollo e implementación del método del Cambio Más Significativo en los Programas Temáticos de Ibis en Guatemala: experiencias de la fase inicial y guía de implementación. http://www.ibis.dk/ca/biblioteca.php?mode=read&id=44&menuId=25&upId=6

T7 Supporting Participatory Research Tools

Here we consider some other participatory tools or methods which are not data collection methods *per se*, but which are very useful for conducting SIA, especially during SIA Stages 1-3. These methods are:

- Stakeholder analysis
- Problem trees
- Scenario analysis

T7.1 Stakeholder Analysis

Introduction

Stakeholder analysis is very important for the starting conditions study. Identification of the different stakeholder groups and sub-groups, their interests and inter-actions with other stakeholder groups, and their likely reaction to project interventions or external pressures, are critical elements of SIA. Appropriate identification and analysis of stakeholders helps frame the SIA, and is important for indicator selection.

Description of Method

The following steps in stakeholder analysis are suggested by CARE (2002):

(a) Brainstorm with key informants or focus groups to list all the people, groups and organizations that might have an influence on the project or be affected by it, including: local leaders; key people in implementing NGOs and community-based organizations; central, district and local government staff; people benefiting from a pre-project open access situation; and other groups who could be negatively affected such as illegal loggers, charcoal producers, bushmeat hunters, etc. It is also useful to divide the stakeholders into project 'insiders' and 'outsiders'. The list needs to be revised from time to time to ensure since new stakeholders can emerge.

(b) Analyze each stakeholder group in terms of their interests, their possible impact on the project, their motivation to participate, and their relationships with other stakeholders. This information can be summarized in Table T19. Venn diagrams are also useful for analyzing relationships between stakeholders (see Box T5).

Table T19: Stakeholder Analysis Profile Matrix

Stakeholder or Stakeholder Sub-group	Interests in the Project	Effect of Project on Their Interest(s)	Capacity and Motivation to Participate	Relationship with Other Stakeholders (Partnership/Conflict)?

Source: CARE, 2002.

(c) Analyze the level of influence and importance of each potential stakeholder group. *Influence* refers to the degree to which a stakeholder has power over the project, and can therefore facilitate or hinder project interventions. *Importance* refers to the degree to which achievement of project goals depends upon the involvement of a given stakeholder. Table T20 is useful for assessing the relative influence and importance of stakeholder groups.

Table T20: Relative Influence and Importance of Key Stakeholders

Influence of Stakeholder	Importance of Stakeholder to Project Achievement				
	Unknown	Low	Moderate	Significant	Critical
Low					
Moderate					
Significant					
Highly influential					

Source: CARE, 2002.

Another approach is to use a Venn diagram as explained in Box T5 and illustrated in Figure T18, which presents a hypothetical example of an indigenous community with a forest management plan, and which wants to ensure the long-term viability of legal commercial forest management in the region.

Box T5: Use of Venn Diagrams for Stakeholder Analysis

Participants should firstly cut three sizes of circles – at least two sets of circles using different colored cards. One color is for 'insider stakeholders' and another is for 'outsider stakeholders.' For each 'outsider stakeholder', the participants need to decide how important the involvement of each stakeholder or stakeholder group is, or should be, in the project, and select the corresponding size of circle:

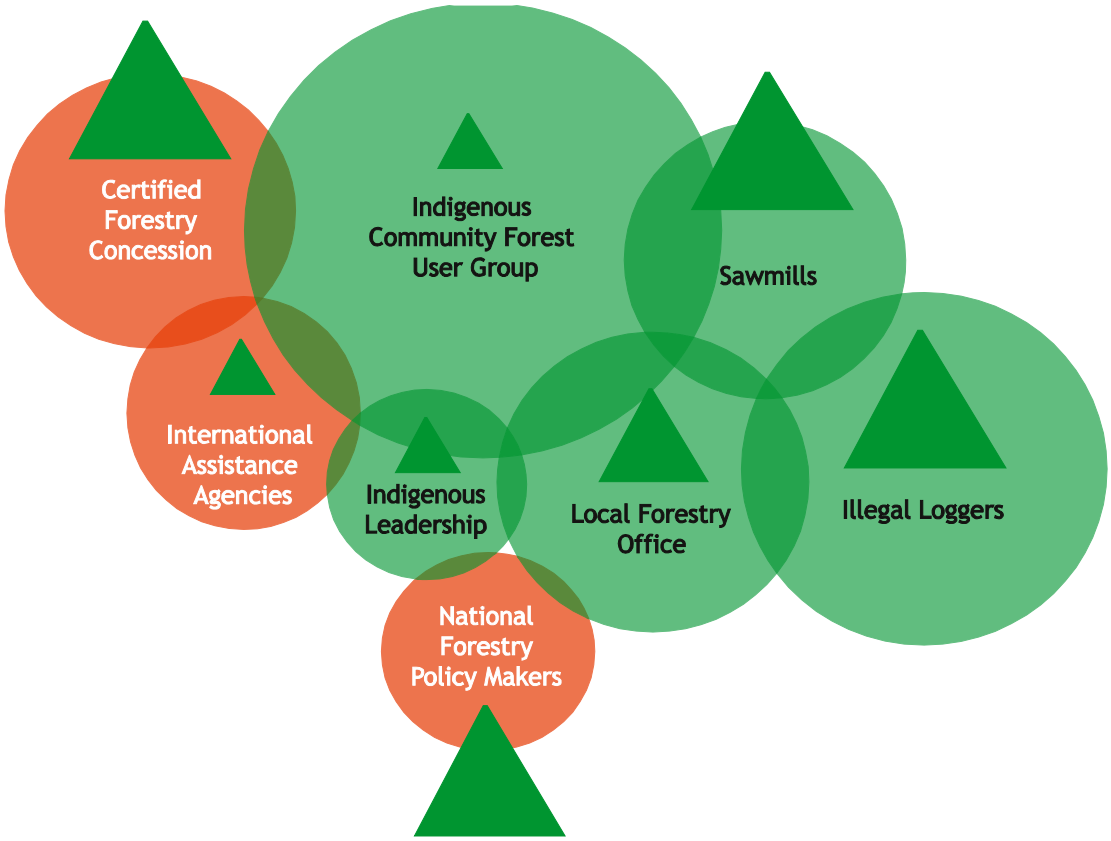
- Little importance = smallest circle
- Some or significant importance = middle sized circle
- Very important = largest circle

The name of the 'insider' stakeholder or stakeholder groups can then be written on the appropriate sized circles/cards. This should be repeated for all the 'insider' stakeholders using the other colored card. When all the stakeholders have been represented, the circles should be organized and stuck to a flipchart, grouping and placing the circles according to the relationships between the stakeholders: the closer is the relationship between two stakeholders, the closer should be the circles on the flipchart.

The next stage is to cut three sizes of triangles from different colored cards. For each stakeholder (group), a small, medium or large triangle should be chosen to represent the degree of influence that the stakeholder has on the project. The triangle should then be stuck on the edge of the stakeholder circle. A stakeholder with a small 'importance circle' could have a large 'influence triangle' and *vice versa*. The overlap of the circles represents the extent of the relationship between stakeholders (see Figure 18). Once the diagram is complete, it should be reviewed by the wider group, which should continue to discuss the relative importance and influence of each stakeholder or stakeholder group until a consensus is reached. *(See also Figure 18).*

Source: Evans, Velarde et al., 2006.

Figure T18. Venn Diagram with Stakeholder Analysis



Source: Reproduced with permission from Evans, K., Velarde, S.J., Prieto, R., Rao, S.N., Sertzen, S., Dávila, K., Cronkleton P. and de Jong, W. 2006. Field guide to the Future: Four Ways for Communities to Think Ahead. Bennett E. and Zurek M. (eds.). Nairobi: Center for International Forestry Research (CIFOR), ASB, World Agroforestry Centre. p.87. URL: http://www.asb.cgiar.org/ma/scenarios

(d) On the basis of stages (b) and (c) it should be possible to decide which stakeholder groups should be the focus of the SIA. A challenge is to decide an appropriate level of disaggregation: the greater the number of stakeholder groups or sub-groups, e.g., according to poverty grouping, gender, ethnic classification, etc., the greater is the complexity and cost of data collection and analysis.

(e) Decide how best to involve people or stakeholder groups. It is advisable to draw up a stakeholder analysis participation matrix such as in Table T21. This indicates their likely level of involvement, and the project cycle stages they should be involved in. Key stakeholders with high levels of influence and importance for project success are potential project partners. Stakeholders with considerable influence, but a limited role in project achievement, may be involved through periodic consultations.

(f) The stakeholder analysis should be repeated as the project evolves – it is not a one-off exercise, since stakeholder roles change and new information becomes available.

Table T21: Stakeholder Analysis Participation Matrix

Stage in Project Planning	Type of Participation		
	Inform (One-way flow)	Consult (Two-way flow)	Partner (Joint Implementation)
Diagnostic Assessment			
Project Design			
Implementation			
Monitoring			
Evaluation			

Source: CARE, 2002.

Main Sources and Further Guidance

CARE. 2002. Household Livelihood Security Assessments. A Toolkit for Practitioners, Prepared for the PHLS Unit by: TANGO International Inc., Tucson, Arizona 2002, US www.proventionconsortium.org/themes/default/pdfs/CRA/HLSA2002_meth.pdf

Evans, K., Velarde, S.J., Prieto, R., Rao, S.N., Sertzen, S., Dávila, K., Cronkleton P. and de Jong, W. 2006. Field guide to the Future: Four Ways for Communities to Think Ahead. Bennett E. and Zurek M. (eds.). Nairobi: Center for International Forestry Research (CIFOR), ASB, World Agroforestry Centre. p.87. URL: http://www.asb.cgiar.org/ma/scenarios

T7.2 Problem Trees

Assuming it is possible to decide what the main problem(s) of a project are, a problem tree describes the problem, the factors causing it, and in turn the causes of these factors until the underlying causes are reached. A problem tree is a good way of explaining the project rationale, because it links the project goals and activities to a central challenge or problem. Problem trees are also good for establishing causality - identifying what the project needs to do to achieve favorable outcomes and impacts. They can also be useful for understanding the different points of view of various stakeholder groups if each group constructs its own problem tree. They are most useful for SIA Stage 3 – developing the theory of change or causal model.

Description of Method

Project stakeholders or participants should be asked to develop a problem tree that links the problems that the project is directly addressing with the social, environmental and/or economic conditions it wishes to improve. The tree is constructed using cards which are stuck on a large chart or piece of paper on a table or wall.

The exercise begins with the participants forming a problem statement related to the project's main goal. Only one main problem can be assessed at a time, and in order to be manageable, no more than four or five contributory factors (or secondary problems) causing the problem should be identified – this requires that the group prioritize or rank the contributory factors. The branch of a problem tree ends when it has identified an underlying problem that the project can directly address – called a 'determinant problem'. Once identified, these 'determinant' problems help define the outputs and activities required by the project. Figure T19 presents an example of a problem tree.

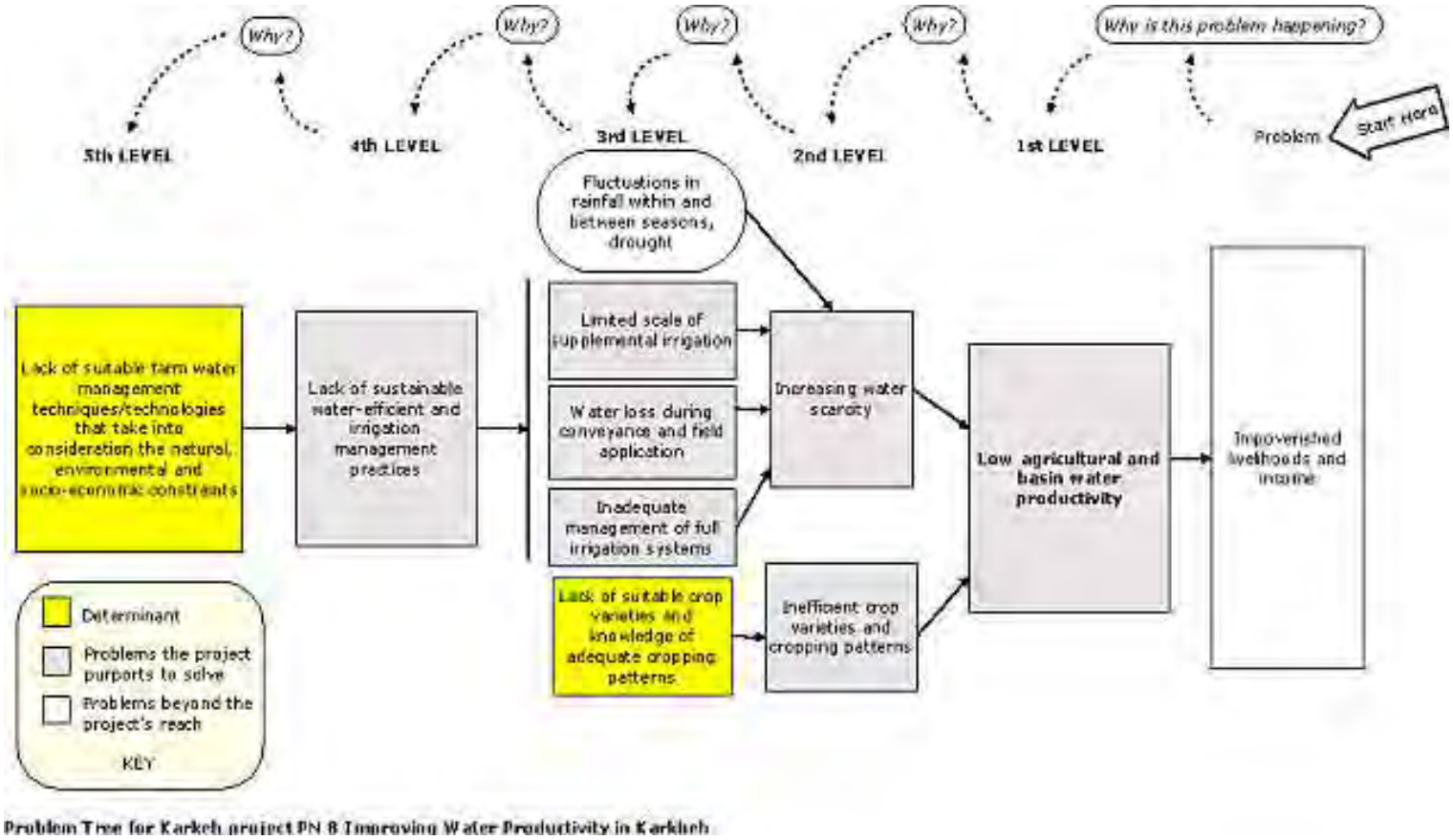
Problem trees focus on problems rather than opportunities, and can appear to be rather negative. Therefore in some situations, 'problem trees' can be turned into 'objective trees', which are better for motivating people since it shifts the focus to positive things that need to be done to solve the problem. This can be done by reframing the problem into the 'desired state' once the problem has been 'solved'. However, objective trees are not as effective as problem trees for explaining the project logic or rationale.

Main Sources and Further Guidance

http://boru.pbworks.com/Draw-a-problem-tree

MDF. Problem Tree Analysis http://www.toolkitsportdevelopment.org/html/resources/91/910EE48E-350A-47FB-953B-374221B375CE/03%20Problem%20tree%20analysis.pdf

Figure T19: Example of a Problem Tree for a Water Improvement Project



Problem Tree for Karkeh project PN 8 Improving Water Productivity in Karkheh

Source: Reproduced with permission from http://boru.pbworks.com/Draw-a-problem-tree

T7.3 Scenario Analysis

Scenarios are stories about the future. They are creative answers to the question: "What if…?" Scenarios encourage stakeholders to consider the range of changes that could occur in the future, and to think about their likely outcomes and impacts. It is mainly useful for SIA Stages 4 and 5, i.e., to help build the 'without project' scenario and the project theory of change. It can be helpful to explain scenario building by comparing a scenario to a film or movie (Box T6).

Box T6. What Makes a Successful Scenario?

A film has actors, action, scenes, conflict, comedy, drama, and happy or sad endings. A scenario should have the same elements as a good film. The participants should be encouraged to stretch their imaginations to think about what might happen in the community, for example, considering storylines that are unlikely but plausible. If the stories are dull and predictable, the participants are probably not thinking outside their traditional boundaries. The most successful scenarios are ones in which there are interesting comparisons between two or more of the storylines, and where the storylines stretch beyond what most people are already thinking about.

Source: Evans, Velarde et al., 2006.

Description of Method

Evans, Velarde et al (2006) propose six main steps, although the order of these is flexible.

Step 1: Identify historical eras of change and renewal

This activity encourages participants to think about change, even when a situation might appear to be quite stable. A long timeframe such as 100, 1000, or 10,000 years can be selected - the longest timeframe understandable to the group – which may require connecting several sheets of flipchart paper together. The participants are then asked to write or draw important local events on the timeline, and to identify different historical 'eras' and trends. The changes and factors causing the changes are then discussed and identified. It is often helpful to invite a community elder to lead this discussion.

In some communities, participants may not be used to thinking in terms of historical eras, or historical information on the area may not be readily available, which may mean that outside resources (e.g., regional historians) need to be brought in if this is acceptable.

Step 2: Identify the 'focal questions'

The focal questions are the main concerns or topics of the exercise. The scenarios should ultimately answer these questions. The group should be asked:

- What are your main concerns for the future without the project?
- What are your main concerns or issues with the project?

The participants can brainstorm as a group or individually by writing issues or concerns down on cards. This step can also be done firstly in breakout groups and the results compared in a plenary session. When the groups have narrowed the issues down to a few key or focal questions, these should be written on flipchart paper and stuck to the wall. The focal questions should be referred to frequently to ensure the exercise is 'on track'.

Step 3: Identify the 'driving forces'

Driving forces are factors that might influence the future of the community. It is best to split into breakout groups to brainstorm driving forces. The following questions can help kick-start these brainstorm sessions:

- Given the historical eras that we identified, what do you see as the key drivers of these eras? Do you think these drivers will continue to be important in the future?
- What are the most important changes happening in your community? What is causing these changes?
- What things have stayed the same in the community, and what is keeping them stable?
- What environmental changes (especially re forests, streams, rivers, animals, etc.) have happened, and what is causing these changes?
- How are natural resources currently being used in your community?
- Do you expect this to change? Why?
- How is farming undertaken in this area? Has it been changing?
- How has the government impacted on the village?
- How does the village interact with the government?
- How do most people here make a living? Do you expect this to change? How?
- How do you think your children will be different from you? Why?

It is also possible for a facilitator to introduce a driving force which the participants do not seem to be aware of, although s(he) should be careful not to direct the process too heavily.

The driving forces should be classified into 'certain' and 'uncertain' driving forces. Certain driving forces have a fairly obvious direction or result, while uncertain driving forces are those with an unclear direction and where the impacts are not obvious. For example, the government might be discussing building a new road through the region, but whether it will go ahead is uncertain, and if it does go ahead, the effects on the community are also uncertain. It is also useful to discuss which driving forces are 'opportunities' and which ones are 'threats'. An example of driving forces is presented in Box T7.

Box T7. Driving Forces in a Community in the Bolivian Amazon

For most families in the northern part of the Bolivian Amazon, Brazil nut collection provides the only significant source of cash income. However, many aspects of Brazil nut production and marketing are beyond the control of local people. For instance, the price of the nut is set by international markets and varies widely from year to year. Transportation in the region is poor and unreliable, particularly in the rainy season when the nuts are collected. In Scenario exercises, the communities identified that the two most important driving forces were the price of Brazil nut and the quality of transportation to their village. The price of Brazil nuts was an uncertain driving force, while transportation quality was somewhat more certain.

Source: Evans, Velarde et al., 2006.

Step 4: Defining the scenario starting points

This step creates the opening sentences of the scenarios. Each scenario has a different starting point. There are five main options for creating the scenario starting points:

Option 1. The group selects several uncertain driving forces. For each uncertain driving force, the group imagines several possible futures. The scenarios unfold from differences in the trajectories of these driving forces. Participants can then insert other more certain driving forces, such as population growth, into the scenario to see what happens.

Option 2. Select two driving forces to create a simple 2x2 matrix. By arranging two driving forces into a matrix, we can define the starting points for four possible scenarios (e.g., Table T22). In Scenario A, the starting point would be: "What happens if the price of Brazil nut drops and transport to the village gets worse?"

Table T22: Matrix for Defining Starting Points in Scenario Analysis

	Lower price of Brazil nuts	Higher price of Brazil nuts
Worse transportation	Scenario A	Scenario B
Better transportation	Scenario C	Scenario D

Source: Evans, Velarde et al., 2006.

Option 3. If there are more than two driving forces, various possible combinations of them can be used to create several scenario starting points.

Option 4. A visioning exercise can be used to define the ideal future for the community, and the group asked what needs to happen for this ideal future to be realized. They can also be asked what could go wrong in achieving this ideal and/or for stories of the future that diverge from it in plausible ways.

Option 5. The answers to the focal questions (Step 2) can be used.

Step 5: Creating the narratives

In the next stage, the participants use the starting points (Step 4) to create coherent and plausible narratives or stories. Participants can be divided into several groups of 4-6 people with a facilitator for each group. Each group receives a different set of starting points. Various questions can be asked to get the group started:

- What happens if … insert scenario starting point (e.g., the price of Brazil nuts falls and transport to the community gets worse)? Then what?
- What happens next?
- What will be the consequence of that?
- How will people react if that happens?
- What will they do next?
- Who will push for what kind of change?

These questions can be continued to deepen the story. It can be useful to use time lines to help build the scenarios – people can be asked to think about what happens at each point in time. This can help them write a story. Each group should develop at least two scenarios - this will stimulate their thinking about different outcomes or impacts.

The facilitator should also point out any inconsistencies and ask the participants to reconcile them. It is important that the story includes the entire cast of characters as well as other identified driving forces. If the group loses focus, the facilitator needs to bring the discussion back on track. A good way of breaking a roadblock is to get the breakout groups to come up with outlines for a set of three to four stories in 45 minutes or less. This process can be repeated a few times, with full group discussions in between, to deepen the stories.

Once the group has reached the logical end of a story, someone from the group should read it to the rest of the group which should review and correct it. Finally it is essential to have a note taker (not the facilitator) recording the discussions as the scenarios are developed.

Main Sources and Further Guidance

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TOOLBOX AREA 3: SUPPORT MATERIALS

T8 Review and Typology of Social Outcomes, Impacts, and Change Processes

Introduction

To date there have been a limited number of case studies on the social outcomes and impacts of land-based carbon projects. A major shortcoming of these studies is that they rely on anecdotal evidence, and most empirical evidence is limited (Jindal 2010). Nonetheless, limited research results show that where REDD+ projects have made concerted efforts to target poor and marginalized groups, they have provided positive, albeit marginal livelihood benefits for local people. While little evidence has been presented to date on the adverse effects of REDD+, there are potential risks, opportunity costs, and negative outcomes.

The considerable literature on PES projects sheds some light on how carbon projects can affect the social welfare of local participants and non-participants (Peskett et al. 2008).[10] The PES literature generally considers a narrow range of social impact criteria, focusing primarily on the degree to which poor people participate as buyers and sellers of environmental services, and whether as sellers the poor become better off financially.[11] The empirical evidence on the social welfare impacts of PES (including carbon projects) in developing countries remains limited both because these schemes are relatively recent, and little systematic data about social conditions 'with and without PES' have been produced (Wunder 2008). While direct evidence of the effect of PES projects on livelihoods is limited, studies nonetheless indicate that they commonly produce small and modest positive benefits for communities, principally through increased cash income (Bond et al. 2009; Tacconi et al. 2009; Grieg-Gran et al. 2005). At the same time, there is little evidence from PES experiences to support concerns that they will exacerbate poverty (Bond et al. 2009).

Benefits of PES schemes and carbon projects can be divided into **monetary and non-monetary benefits**. While income from cash payments and/or employment is perhaps the livelihood benefit that is most commonly quantified and cited in case studies, the non-monetary benefits that participants receive can be equally important (Wunder 2008). For example, non-income benefits were seen as an important factor in securing the participation of local people in carbon forestry PES schemes in Mexico and Uganda that offered relatively small monetary payments (Martin 2010).

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[10] This literature is relevant because carbon projects are among the PES schemes studied, and most carbon projects have some element of a PES mechanism for providing local communities with incentives and compensation (Grieg-Gran et al. 2005; Angelsen & Wunder 2003).

[11] Most studies focus on social outcomes and impacts on-site or near projects rather than far 'downstream'. However, the greatest welfare benefits of carbon projects may accrue to users at the regional, national, or global levels, and thus the primary means of providing social welfare benefits for the poor could be to ensure that projects effectively and efficiently deliver the service they offer (Wunder 2008; Angelsen & Wunder 2003).

In terms of non-monetary benefits, carbon projects may provide improvements in natural capital (e.g. improved timber stocks and cleaner/more stable water supply), physical capital (e.g., community infrastructure: schools, health clinics, and roads), social capital (e.g. improved community organization and more secure land tenure) and human capital (e.g. skills and knowledge in business administration and natural resource management through training) (Grieg-Gran *et al*. 2005; Bond *et al*. 2009; Tacconi *et al*. 2009; Wunder 2008). Carbon projects may also involve direct and indirect costs for society that can potentially outweigh their intended benefits (Peskett et al 2008).

Review of Observed or Likely Benefits and Costs According to the SLF 'Capitals'

The following sections summarize our understanding of the likely impacts of land-based carbon projects on the five main capital assets of the well-known Sustainable Livelihoods Framework (SLF).

Financial Capital

Financial benefits are commonly offered to local people in order to incentivize or compensate for the adoption or abandonment of land use practices that reduce greenhouse gas emissions and/or foster carbon sequestration functions in the landscape. These benefits may come in the form of **direct carbon payments** (to individuals or the community) or **alternative commercial or employment opportunities**. Some studies show that carbon projects (and payment schemes for other environmental services) can supplement household incomes, but to date there is little evidence of the long-term impact of monetary income on poverty (Jindal 2010, Tacconi *et al.* 2009, Corbera *et al.* 2008; Grieg-Gran *et al.* 2005; Bond *et al*. 2009)[12]

Because projects imply both benefits and costs for local people, it is understandable to find evidence of net gains as well as net losses. The Noel Kempff Mercado Climate Action Project (NK-CAP) in Bolivia is an example of a REDD initiative that has provided a modest but positive net per capita gain for local people (Wunder 2008). In that case, the project compensated for local jobs that were lost when timber concessions were retired by facilitating new opportunities in carbon monitoring, harvesting and processing NTFPs, micro-enterprise development, and park management (Smith & Scherr 2002). On the other hand, a review of four watershed services and carbon sequestration projects in Mesoamerica found cases where payments did not cover opportunity costs or what farmers perceived to be a fair price (Corbera *et al*. 2007). In other situations it is not clear if the net benefits are positive or negative. A study of the Trees for Global Benefits (TFGB) project in the Bushenyi District of Uganda found it difficult

[12] An analysis of the potential of agricultural soil-carbon projects concluded that carbon contracts that providing cash or in-kind payments can boost aggregate income in rural areas, but impacts on poverty will be relatively small (Antle and Stoorvogel 2008). Evidence does however exist for significant improvements in household income in PES programs in Costa Rica and Ecuador (Wunder 2008).

to estimate the net economic benefits for households, but surmised that the costs of "displaced production and additional expenditure on food items may outweigh carbon income" (German *et al.* 2009, 16).

How a carbon project affects employment and livelihoods tends to depend on how much it restricts or facilitates productive activities (Wunder 2008). Carbon projects commonly attempt to compensate for lost economic activity by facilitating new commercial and employment opportunities through training, technical assistance, and by subsidizing or promoting **alternative livelihood activities** such as agroforestry and microenterprise development. It is expected that through upfront investments projects can produce a net increase in local employment opportunities, even if only in the short term (Grieg-Gran *et al*. 2005; Wunder 2008).[13] But some project efforts to promote new income and livelihoods may fall short, and the net effect on employment could be negative. The rural poor, who depend on logging, charcoal production, harvesting NTFPs, or clearing and cultivating land, are commonly among those most affected by lost sources of livelihood (Bond *et al*. 2009; Grieg-Gran *et al.* 2005).

New or supplementary income from carbon projects can allow community members or community organizations to make **new purchases or investments** that generate indirect social outcomes and impacts in the areas of health, education, or economic productivity. For example, carbon payments to community organizations or community trust funds have been used for building new physical capital such as schools and health clinics (Jindal 2010). In the case of carbon income for individual farmers in projects in Mozambique and Uganda, new household income was used to pay for building materials for home improvements, food, clothing, and school fees and supplies (Jindal 2010; Carter 2009). Similarly, farmers on an agroforestry based carbon sequestration project in Chiapas (Mexico) stated that they intended to use new carbon income to pay for health care services and education, as well as purchase durable goods such as agricultural machinery and food processing equipment (DFID 2000). In one of the villages in Chiapas, new carbon income led to an indirect health benefit for farmers' families as it allowed them to purchase and install fuel efficient stoves with chimneys that removed dangerous smoke from their homes.

Under some circumstances, payments and employment from carbon projects can result in **improved income diversification and stability** (Wunder 2008, Peskett *et al*. 2008; Pagiola *et al.* 2004). For example, income from carbon projects in Costa Rica and Ecuador was cited by local people as being a significant means of income stabilization and diversification (Grieg-Gran et al. 2005). As Peskett *et al*. (2008) note, PES schemes (including carbon projects) that provide annual payments that do not vary from year to year offer participants income streams that are more stable than, for example, those based on agriculture (Peskett *et al*. 2008). The relative diversity and stability of income from carbon payments or new employment opportunities depends on many factors including the payment regime, frequency

[13] Plantations or A/R projects can provide a significant but short-lived increase in local employment, but they also have well-documented environmental and social risks (Smith & Scherr, 2002; Wunder 2008). REDD+ projects that preserve forest cover while permitting some level of forest use, such as improved forest management, generally provide more diverse livelihood benefits than A/R projects.

and duration of employment, the stability of markets for carbon and other traditional sources of income, and the management and funding of projects (Peskett *et al*. 2008). Greater income stability can allow households to better cope with short-term shocks and emergencies and ensure basic needs are met more consistently (Grieg-Gran *et al*. 2005).

On the other hand, if long-term carbon projects restrict certain productive activities, then communities may lose both income and **flexibility in their livelihood strategies** to cope and respond to shocks and emergencies. For example, A/R projects can reduce the area available for food crop production (Smith & Scherr 2002). This occurred in the TFGB project in Uganda where some households lost customary access to idle lands when neighbors established woodlots for carbon payments. There the loss of agricultural lands to carbon forestry led some families to rent land for cultivation, whereas other families that could not secure sufficient cultivable land had to buy food (Carter 2009). As explained under natural capital (below), restrictions on access to forest resources could particularly harm poor rural people for whom the forests serve as a social 'safety net'.

An influx of cash from carbon projects to households and communities may have **negative social implications**. Communities that receive a large transfer of monetary wealth in rural areas with weak governance face the risks of mismanagement, corruption, and 'elite capture' (Angelsen & Wertz-Kanounnikoff 2008; Peskett *et al*. 2008).[14] In the case of REDD+ projects, Brown *et al.* (2008, 113) caution that "large new financial flows would likely fuel conflict and create new opportunities for corruption." Also the benefits of carbon payments or employment may be limited in remote rural areas where poor people use forests for subsistence production and have limited access to local markets. Peskett *et al.* (2008) observe that where people cannot easily obtain basic goods (including subsistence products) with cash, the benefit of cash could even be negative.

Social Capital

Increased **social cohesion and trust** inside communities have been cited as positive indirect outcomes of agroforestry carbon projects involving smallholders and community organizations (Jindal 2010, Tacconi *et al*. 2009; Carter 2009). This and the **strengthening of community-based organizations** are common outcomes of carbon projects implemented with local counterparts, whether or not it is an explicit project objective. More specifically, community groups can develop social coordination capacities as well as increased visibility, representation, and negotiation abilities vis-à-vis government authorities and donors (Wunder 2008). Strategic visibility makes it easier to attract outside support for projects that create physical capital such as the construction of schools, health clinics, and roads.

Other important forms of social capital that may be directly or indirectly affected by carbon projects are **land tenure security and resource rights**. Significant international concern exists about the impact of

[14] Bond et al. (2009, 21) warn that poor local governance could lead REDD+ to "create perverse incentives to increase emissions and threaten the rights and livelihoods of forest dependent communities."

REDD projects in particular on the rights of local and indigenous communities (Peskett *et al.* 2008), although the literature on PES and carbon projects shows that in a wide variety of cases, the rights and land tenure security of smallholders were consolidated or improved (Bond *et al.* 2009).[15] However, this does not preclude the possibility of grievances or conflict over land tenure and carbon rights at different geographic and political scales (Peskett *et al*. 2008). Standards like the CCB that demand clear and uncontested carbon rights should lead to greater land tenure and carbon rights security in a way that is analogous to the effect of PES schemes on tenure security (CCBA 2008; Plan Vivo Foundation 2008; Brown *et al*. 2008).

It has also been noted that if REDD+ mechanisms confer greater economic value to forests, there are heightened incentives for interest groups (including governments) to deny or overlook the local tenure and forest use rights (Brown *et al*. 2008). Likewise, new carbon benefits may provoke increased land speculation or in-migration, thus creating loss of assets and **conditions for increased competition and social conflict** "within and between communities" (Peskett *et al*. 2008, 43). As Jindal (2010) notes, forest use is dynamic and frequently fraught with competing claims, and the needs of new migrants can place new pressure on forests and community resources which cannot be solved with carbon payments alone. Whereas REDD projects with strict restrictions may exacerbate contests over access to and control of natural resources, carbon projects that include alternative livelihood activities or multiple-use forest management are more likely to ensure or increase community access to forests and help resolve outstanding problems with undefined land tenure or tenure conflicts (Smith & Scherr 2002).

Human Capital

Carbon projects typically contribute to the development of knowledge, skills, and capacity of individuals through training and on-the-job learning in forest management, agroforestry, sustainable agriculture, business administration, negotiations, and project management (Grieg-Gran *et al*. 2005). While **skill and capacity building** is commonly cited as a benefit, there is little evidence of the long-term impact of capacity building activities, for instance whether new knowledge and skills are gainfully applied in practice (Tacconi *et al*. 2009). As in the case of social capital, improved human skills and capacities can facilitate longer-term secondary outcomes and impacts in terms of economic productivity and sustainable resource use.

[15] Some projects have facilitated formal recognition of land tenure (e.g. titling). Smallholders in Costa Rica saw their land tenure security improve as neighbors and potential squatters perceived that the land enrolled in PES schemes was being utilized. Thus, PES schemes allowed land to be kept as forest without being considered "idle" (Pagiola *et al.* 2004).

Physical Capital

Positive changes in community infrastructure and other forms of physical capital could result directly from project spending (particularly in the project startup phase) or, as noted above, come later as the secondary outcome of the investment of carbon income received by the community. Where carbon or other PES income has been channeled to community institutions, there is evidence of investment in community infrastructure, such as improvements in water supply, roads, clinics and schools (Jindal 2010; Tacconi *et al*. 2009). These indirect outcomes could improve health and education if they are matched with increases in human capacity in these areas. On the other hand, carbon projects could pose risks for local physical capital, including the deterioration of local infrastructure where activities promoted by the project lead to heavy use of roads and bridges (e.g. from logging operations in plantations), or even to the complete loss of infrastructure where roads or structures (e.g. dams) are dismantled to protect carbon stocks (Grieg-Gran et al. 2005).

Natural Capital

Natural capital outcomes vary significantly between carbon project types, perhaps more than any other livelihood capital category. Potential positive outcomes and impacts of carbon projects for natural capital include increased community timber stocks, improved soil fertility and productivity, reduced erosion, recovery of valuable wildlife populations and biodiversity, better pollination, and more stable water quality and flows (see Table T23) (Grieg-Gran et al. 2005). Agroforestry or plantations commonly establish or restore important stocks of natural capital on degraded lands. However, in comparison with such approaches, REDD activities, particularly those with stricter restrictions on natural resource use, can be most important for existing natural capital. The natural forest ecosystems favored by REDD generally offer greater biodiversity values[16] in contrast to A/R projects based on monocultures of exotic species (Brown et al. 2008).

[16] While most observers assume important biodiversity benefits of REDD, there could be trade-offs where important geographic areas for biodiversity and carbon do not coincide (Angelsen & Wertz-Kanounnikoff 2008, 21).

Table T23: Potential Positive (+) and Negative (-) Outcomes and Impacts for Natural Capital by Project Type

Carbon Project Type	Short-term Outcome	Medium- to Long-term Outcome/Impact
REDD achieved by conservation with strict restrictions on resource use	• Loss of access to timber, NTFPs, and fuel wood (+) • Increased stocks of timber, NTFPs, and fuel wood (+) • Maintenance of ecosystem services (pollination, hydrological functions, etc.) (+) • Reduced food security (lower availability of NTFPs, hunting and grazing opportunities) (-)	
	• Decreased availability of farm land (-) • Increase in food prices (-)	
REDD with forest management or alternative livelihoods	• Intensified agricultural production (+) • Decline in food prices (+)	• Availability of timber and fuel wood (+) • Additional food security (+) • More sustainable natural resource use (+)
Agroforestry (small farmers/community level projects)	• Improved soil productivity (+) • Improved livestock productivity (+) • Increased production of subsistence and/or cash crops (+)	• Greater food security and flexibility (+) • Availability of timber and firewood (+) • Limited recovery of wildlife populations and biodiversity (+)
A/R plantations (small or large)	• Compromised hydrological functions (water flows & quality), soil conservation (-) • Loss of access to lands for agricultural, grazing, and other uses (-) • Decreased agricultural or livestock production (-)	
		• Increased availability of timber and building materials (+) • Limited recovery of wildlife and rehabilitation of ecosystem services (including hydrological services) where A/R is practiced on degraded lands) (+)
Soil carbon/ agriculture[17]	• Increased soil productivity (+)	• Increase crop yields (+) • Increased sustainability of agriculture (+)

If natural capital accumulates or is maintained as a result of project restrictions on resource use or access, it may occur at the expense of local people who must reduce or forgo their use. Restricting access to large areas of forest may disproportionately affect those who do not own land or lack formal access rights, and thus have few options for obtaining timber, NTFPs, wild game, grazing or agricultural lands, or firewood (Jindal 2010; Wunder 2008). Given that forests serve as a social 'safety net' that allows millions of rural people to cope in times of scarcity, strict restrictions on resource use can put

[17] Antle and Stoorvogel (2008) explore the potential of agricultural soil carbon sequestration, noting that the decline of the carbon content of soil is widely regarded as a significant factor in the persistence of poverty and food insecurity.

these strategic resource off-limits, increasing the risk of deeper poverty (Angelsen & Wunder 2003, 21). Reduced access to food and other essentials provided by the forest could also result in negative impacts on local nutrition and health.

The market for land and other forms of natural capital (price and availability) may also be affected if restrictions are applied over large areas (Peskett et al. 2008). Increased competition for land and natural resources could cause land prices to rise and put land ownership beyond the reach of the poor, or under the worst circumstances, lead to the displacement of landless people (Grieg-Gran et al. 2005). Although the CCB standards require projects to demonstrate that they do not require involuntary relocation of people or key livelihoods, some of the indirect market effects are difficult to foresee or measure (CCBA 2008). Projects that overlook or fail to account for informal or customary rights could feed social grievances and conflict that affect the local population and the viability of the conservation initiative itself (Corbera 2007).

Likewise, to the extent that REDD+ projects take agricultural land out of production and/or limit the expansion of agriculture, they could affect local commodity markets and food prices (Peskett *et al.* 2008). It is theorized that higher local food prices could positively affect net commodity/food producers, but would negatively affect net commodity/food consumers (Peskett et al. 2009). REDD+ mechanisms may also affect local commodity/food prices by reducing the availability of NTFPs or restricting hunting in protected forests. Increases in food prices could lead to reductions in food consumption, substitution of higher quality foods with basic staples, and reduced spending on competing priorities such as schooling, clothing, health, and housing (Peskett et al. 2008). In contrast, if REDD mechanisms are combined with or include agricultural intensification or alternative livelihood activities that increase agricultural production, then forest conservation and local food production could both increase (Peskett et al. 2008).

Gender and Equity Impacts

Whereas the literature on carbon projects and PES schemes often considers outcomes and impacts for financial or natural livelihood capitals, little attention has been given to the gender dimensions of these mechanisms. Few studies consider how projects affect the distribution of benefits, division of labor, and participation in decision-making in households and communities.[18] An analysis of the gender impacts of the Noel Kempff Mercado Climate Action Project in Bolivia, found that while the project focused on women's practical needs, (e.g. health, education, income-generation, and food production), other "strategic gender needs" were not addressed that could "empower women, challenge the existing gender division of labor, and bring about greater gender equality" (Boyd 2002, 75). Projects therefore

[18] Exceptions include the analysis by Jindal (2010) of the Nhambita Community Carbon Project in Mozambique, which briefly addresses how carbon projects have affected women's workload, and Boyd (2002).

face a choice and dilemma in terms of working with (and potentially reinforcing) existing social structures and traditional norms, or pushing for more transformational social change.

Costs and benefits of carbon projects may affect households and segments of rural society differently. As noted above, in the case of expanded woodlots in Uganda the costs of restricted access or production may fall more heavily on poor households that rely on customary use of land or forests. The distribution of project benefits depends in large part on who participates. Eligibility requirements for participation, such as minimum landholding size, credit, or formal property rights, may exclude the poorest rural people—including smallholders and landless—from taking part in carbon projects and their benefits (Tacconi *et al.* 2009; Grieg-Gran *et al.* 2005).[19]

For example, the PROFAFOR carbon sequestration project in Ecuador set the minimum plot size at 50 hectares, thus excluding some poor smallholders from participating (Wunder 2008). In the TFGB project in Uganda, "the availability of land and capital" of local farmers was seen as a determining factor for participation, and smallholders without idle land faced the difficult decision of planting trees for carbon forestry or cultivating food crops (German *et al.* 2009). Likewise, evidence from some PES schemes shows that requirements for participation led to benefits being channeled largely to the already relatively well-off.[20] Selective enrollment or the concentration of carbon benefits may lead to jealousies and grievances among non-participants, and negatively affect intra-community relations and the local standing of the project (Wunder 2008).

Project Design and the 'Rules of the Game'

The social outcomes and impacts generated vary according to the design and context of each project as well as the differences between and within communities. Specifically, each project's policies and governance (its 'rules of the game') are key determining factors.[21] They include types of compensation, how local stakeholders participate in project governance, modes and rates of payment, risk arrangements, and eligibility requirements for participation. Benefit sharing systems can strengthen or

[19] The willingness, ability, or eligibility people to participate in carbon projects may be affected by a variety of legal, economic, socio-cultural, and ecological factors (Jindal 2010; Pagiola *et al*. 2004; and Grieg-Gran *et al*. 2005).A review of eight case studies of PES schemes in Africa, Asia, and Latin America concluded that poorer households were allowed access to the schemes, but land tenure was often a constraint to participation (Tacconi *et al.* 2009). On the other hand, Bond *et al.* (2009) found that small-scale farmers with informal land tenure have been able to participate in some PES schemes.

[20] A case study of the Costa Rican national PES system found that in one watershed a large number of participants were relatively well-off, and derived more than half their total income from outside the farm (Grieg-Gran *et al*. 2005). The initial failure of Costa Rica's PES scheme to involve poorer farmers and land users (who held no formal land titles) led the country to develop specific measures to lower or remove barriers to participation (Bond *et al*. 2009).

[21] National policies and governance as well as the international climate regime are also determining factors of these 'rules'.

reinforce existing institutions or norms or lead to changes in decision-making arrangements, gender relations, and social and organizational dynamics. How these issues are preset by project developers and/or negotiated among the stakeholders will influence social outcomes and impacts throughout the life of the project (Wunder 2008). Among the key exogenous factors that influence social dimensions of carbon projects are the policies that local and national governments implement in conjunction with or parallel to the initiative. The risks and benefits of policies vary according to the political, cultural, and social context (Peskett et al. 2008).[22]

[22] In the case of REDD+, examples of these measures include, but are not limited to: removal subsidies for deforestation and forest degradation, taxation of land clearing/conversion, strategic road planning improved forest law enforcement, improved land tenure security, forest certification, fire prevention programs, improved national forest governance, alternative livelihood programs, and agricultural intensification (Peskett *et al*. 2008).

Table T24: Summary of Direct and Indirect Social Outcomes (Observed or Expected) by Project

PROJECT: Trees for Global Benefit	TYPE: A/R including Agroforestry	COUNTRY: Uganda

Observed direct outcomes:

- Carbon payments to households
- Complimentary income generating activities
- Strengthened social and human capacity
- Improved farm management capacity
- Improved timber stocks

Observed indirect outcomes:

- Increased access to credit (loans)
- Increased ability for households to make investments
- Increased household spending (purchasing power) on basic needs
- Improved household food security and diet
- Improved fuel security (firewood)
- Improved social cohesion
- Decreased flexibility in land-use options (loss of alternative economic activities)
- Decreased customary access to previously idle land (loss of customary 'safety net')
- Increased reliance on purchased food
- Renting land necessary for farming due to loss of access to land
- New disputes and conflict between households regarding land use and natural capital in new woodlots

Sources: Carter 2009; German et al. 2009.

PROJECT: Scolel Té Project, Chiapas	TYPE: Agroforestry	COUNTRY: Mexico

Observed direct outcomes:

- New incomes from carbon payments to farmers
- New skills developed in agroforestry

Observed indirect outcomes:

- Increased spending on food, medicines, and home improvements
- Investment of carbon income in fuel-efficient stoves for homes
- Improved indoor air quality in homes due to new stoves

Sources: Smith & Scherr 2002; DFID 2000.

PROJECT: PROFAFOR	TYPE: Plantations	COUNTRY: Ecuador

Observed direct outcomes:

- New employment
- Forestry added as a livelihood activity
- Timber stocks increased
- Improved land tenure security
- Community credit system established with assistance of the project
- Reduced land-use flexibility

Observed indirect outcomes:

- Water quality reduced in one of five communities
- Surplus funds used for food, credit schemes and livestock

Sources: Grieg-Gran et al. 2005; Smith & Scherr 2002.

PROJECT: Noel Kempff Mercado Climate Action Project	TYPE: REDD with Strict Restrictions on Resource Use	COUNTRY: Bolivia

Observed direct outcomes:

- New employment in monitoring, micro-enterprises, and work as park guards
- New alternative sources of income
- Legal land rights secured for local communities
- Employment lost in the forest sector

Source: Smith & Scherr 2002.

PROJECT: Makira Protected Area	TYPE: REDD with Zones of Strict Use Restrictions and Multiple-Use	COUNTRY: Madagascar

Expected direct outcomes:

- Improved natural resource management capacity
- New income sources from alternative livelihood activities
- Improved health services through health and family planning interventions

Source: Holmes et al. 2008

PROJECT: Nhambita Community Carbon Project	TYPE: REDD and Agroforestry	COUNTRY: Mozambique

Observed direct outcomes:

- Household incomes supplemented with annual cash payments
- New income through monthly wages for people employed in micro enterprises
- Community trust fund endowed with annual payments
- Improved educational infrastructure (new school and health center built)
- Local institutions strengthened and expanded
- Human capital strengthened through training
- Increase in timber stocks and availability of building supplies, and firewood
- Increased workload for women

Observed indirect outcomes:

- Carbon income used to pay for home improvement, food, clothing, books, school supplies, agricultural investments, and durable goods
- Reduced demand for seasonal wage labor due to a reduction in the area dedicated to agricultural crops

Source: Jindal 2010.

Towards a Typology of Social Change Processes, Outcomes, and Impacts

Social (or livelihood) outcomes and impacts—both positive and negative—are the result of dynamic processes involving multiple variables, factors, and circumstances. Some outcomes are the direct (or primary) results of project interventions, whereas others are the indirect result from other outcomes. The Sustainable Livelihood Framework (SLF) demonstrates that social outcomes can be understood as a principal input or building block of longer-term livelihood *impacts.* Outcomes beget other changes and alter dynamic processes that in turn affect other outcomes and impacts.

While the complexity of these relationships is fully acknowledged, we attempt here to demonstrate some of these relationships through simplified diagrams. This section depicts the possible relationships between social outcomes, impacts, with emphasis on the influencing factor of social change processes. Accordingly, the social outcomes of land-based carbon projects presented in the following tables are categorized by the livelihood capital type that they represent or affect. In the case of the social impacts (Table T25), the livelihood capital type is not specified given that impacts represent or affect several different capital types and this combination of capitals varies depending on local circumstances.

In the checklists, each type of land-based carbon project (e.g. *REDD by means of strict protection*) has many potential outcomes. However it is not considered probable that all of the "potential" outcomes listed here will occur simultaneously in the same project. Moreover, outcomes vary depending upon when they take place (short to mid-term) as do impacts (mid-term to longer term). The outcomes and impacts listed below should be understood as *possible* results for the corresponding project type, as

their occurrence will depend in large part on specific project design, local context, and other governance and policy factors. This explains why there are sometimes contradictory or contrary 'potential' outcomes listed for the same type of project.

For example, it is possible that given the common social demands expressed by poor local communities, a project will directly finance or provide the community with funds necessary for the construction, expansion, or improvement of a community health clinic, thus leading to a positive impact. However, it is possible that the project or community may not prioritize or finance this kind of social investment.

The possible social outcomes and impacts by land-based carbon project type are presented in Tables T25 and T26. These checklists are meant to offer examples of possible social outcomes and impacts, and thus they are not definitive or exhaustive compilations of what may occur as the result of carbon projects. In each case, the tables indicate whether the social outcome/impact is positive or negative and whether it is a direct or indirect result of the project. The kinds of dynamic interaction that can occur between project outcomes and impacts, and the role of social change processes, are illustrated in Figures T20 to T23.

Table T25: Observed or Potential Short- to Mid-Term Social Outcomes of Land-Based Carbon Projects

REDD *(w/ strict restrictions)*	***REDD*** *(w/ sustainable*	***Improved forest management***	***Plantations*** *(large or small)*	***Agroforestry*** *(communities/small*	***Soil carbon/agriculture***	***OUTCOMES*** *(short to mid-term)*	***Positive outcome*** *(+)* ***,or Negative outcome*** *(-)*	***Primary/direct outcome*** *(1), or* ***Secondary/indirect*** *(2)*
						FINANCIAL CAPITAL		
	☐	☐	☐	☐	☐	Increase in **employment** / increase in **demand for labor** (in tree planting, thinning, harvesting, or monitoring, etc.) (albeit short-term)	+	1
☐	☐		☐			Loss of **employment and incomes** (from agriculture, charcoal production, NTFP harvesting, logging, and other restricted or substituted economic activities)	-	1
		☐	☐	☐	☐	Increase in **cash income from employment** for individuals	+	1
☐	☐	☐	☐	☐	☐	Increase in **cash income from carbon payments** to individuals	+	1
☐	☐	☐	☐	☐	☐	Increase in **income diversification** (supplemental income)	+	1
	☐			☐	☐	Increase in **income from the sale of fruit and/or NTFPs**	+	1
☐						Increase in income or new **income from ecotourism**	+	1
		☐	☐	☐		Increase in income or new **income from the sale of timber**	+	1
☐	☐	☐	☐	☐	☐	Increase in **stability of income flow**	+	1
			☐	☐	☐	**Subsidies to households** for tree planting	+	1
☐	☐	☐	☐	☐	☐	**Debt cancellation** (due to lump sum carbon payments to households)	+	2
☐	☐	☐	☐	☐	☐	Increased **availability of micro-credit** (e.g. project fund, or community trust fund or rotating fund)	+	1
☐	☐	☐	☐	☐	☐	Increase in **income for community organizations**/committees from carbon payments	+	1

						HUMAN CAPITAL		
☐	☐	☐	☐	☐	☐	Increase in **perception/recognition of the value of forest resources**	+	1
☐	☐	☐	☐	☐	☐	Improvement in **skills and/or knowledge** of **business administration**	+	1
☐	☐	☐	☐	☐	☐	Improvement in **skills and knowledge in forest management, agro-forestry, sustainable agriculture, or wildlife management** (from training or practice)	+	1
						NATURAL CAPITAL		
	☐			☐	☐	Increase in **in-kind income/benefits**	+	1
	☐			☐	☐	Increase in **land prices** due to migration to project area	-	2
☐	☐	☐	☐	☐		Loss or decline of **area available for agriculture or grazing**	-	1
☐			☐	☐		Increase in **wildlife populations** due to increased forest cover or protection	+	2
☐	☐					Decrease in **subsistence agricultural production**	+/-	1
			☐	☐		**Damage to crops** due to increase in wildlife inhabiting new nearby forest cover	-	2
☐	☐		☐	☐		Decrease in **availability of food** due to lack of market substitutes for farm production	-	2
☐						Decrease in **availability of edible NTFPs for subsistence**	-	2
☐			☐	☐		Increase in **cost of food** (due to decreased local agricultural production)	-	2
☐	☐			☐	☐	Increase in **soil conservation** and soil fertility/productivity	+	1
☐	☐	☐	☐	☐	☐	Increase in **livestock ownership** or number (from investment of new cash income)	+	2
				☐	☐	Increase in **production of subsistence or cash crops**	+	1
	☐			☐	☐	Increase in **diversity of locally produced food**	+	1
					☐	Increase in **productivity of livestock systems**	+	1
				☐	☐	Increase in **supply of nutrition** due to cultivation of fruit trees	+	1
	☐			☐	☐	Increase in **availability of botanical/natural medicines**	+	1
☐						Decrease in availability of botanical/natural medicines	-	1
☐	☐	☐			☐	Increase or **stabilization of water flows and/or quality** for local people.	+	1
		☐	☐	☐		Decline in water quality or stability of water flows for local people	-	1
☐	☐	☐			☐	Increase or stabilization of water flows/quality for urban users (off-site, downstream)	+	1
		☐	☐	☐		Decline in water quality or stability of water flows for urban users (off-site, downstream)	-	1

		☐	☐			Increase in **erosion and siltation** due to logging and/or road building	-	1
		☐	☐	☐		Increase in **community stocks of timber**	+	1
		☐	☐	☐		Increase in the availability of timber (for household and community use)	+	1
☐	☐					Decrease in the availability of timber (for household and community use)	+	1
			☐	☐	☐	Increase in **availability of fuel-wood** (for household and community use)	+	1
☐	☐					Decrease in availability of fuel-wood (for household and community use)	+	1
						PHYSICAL CAPITAL		
☐	☐	☐	☐			Deterioration or reduction in **transportation infrastructure**	-	2
☐	☐	☐	☐	☐	☐	New or improved transportation infrastructure	+	1
☐	☐	☐	☐	☐	☐	Improved **access to markets** (due to new or improved roads/infrastructure)	+	2
☐	☐					**Ecotourism facilities** developed or improved	+	1
☐	☐	☐	☐	☐	☐	**Health clinic** established or improved (directly by the project)	+	2
						SOCIAL CAPITAL		
☐	☐	☐	☐	☐	☐	**Community organization** established or strengthened	+	1
☐	☐	☐	☐	☐	☐	Community and/or household **negotiation skills** improved	+	1
☐	☐	☐	☐	☐	☐	Community gain **voice and participation in local and/or national planning**	+	2
☐	☐	☐	☐	☐	☐	**Mistrust towards authorities & project managers** due to complexity/lack of understanding of project's payment/compensation regime/contracts & assoc. factors incl. carbon pricing, etc.	-	1
☐	☐	☐	☐	☐	☐	Legal recognition of **land tenure rights** (private or communal titles) of local inhabitants	+	1
☐	☐	☐	☐	☐	☐	Increase in **land tenure security** (due to change in perception as result of inclusion of land in carbon scheme)	+	2
☐	☐	☐	☐	☐	☐	Decrease or loss of **informal/customary rights** over forest resources and land	-	1
☐	☐	☐	☐			Decrease in **availability of land** for poor landless, due to access restrictions	-	1
☐						Decrease or loss of **access to forest resources** for extraction/harvest (timber, NTFPs, wild game etc.)	-	1
☐	☐	☐	☐	☐	☐	Recognition of **carbon rights** for local communities or individuals	+	1
☐	☐	☐	☐	☐	☐	New **micro-enterprises** developed	+	1
		☐	☐			Logging companies cause **social disruption** and tensions	-	1

Table T26: Potential Mid- to Long-Term Social Impacts of Land-Based Carbon Projects

REDD *(w/ strict restrictions)*	***REDD*** *(w/ sustainable use)*	***Improved forest Management***	***Plantations*** *(large or small)*	***Agroforestry***	***Soil carbon/agriculture***	***IMPACTS*** *(Mid to long-term)*	***Impact: Positive*** *(+), or* ***Negative*** *(-)*	***Impact: Primary/direct*** *(1) or* ***Secondary/indirect*** *(2)*
✓	✓	✓	✓	✓	✓	More **sustainable natural resource** use	+	1
✓	✓	✓	✓	✓	✓	Decline in general rate of **poverty** in community	+	2
	✓			✓	✓	Increased **food security**	+	1
✓			✓			Decrease in food security	-	2
✓			✓			Decrease **food consumption** due to higher food prices and/or the reduced availability of subsistence forest resources	-	2
✓	✓		✓	✓	✓	Increase in spending on food (due to restricted access to land and subsistence farming)	-	2
	✓			✓	✓	Improvement in **household or community nutrition**	+	2
✓			✓			Decline in household or community nutrition	-	2
	✓			✓		Increase in use of **botanical/natural medicines**	+	2
✓						Decrease in use of botanical/natural medicines	-	2
✓	✓	✓	✓	✓	✓	Improvement in household or **community health** (due to food security, health services, nutritional outcomes, and/or reduced air pollution)	+	2
✓			✓			Decline in community health	-	2
✓	✓	✓	✓	✓	✓	Increased **life expectancy**	+	2
	✓	✓	✓	✓	✓	Households have **livelihood activities/strategies** that better allow them to resist and cope with economic shocks and emergencies (due to production of and/or access to alternative food sources, medicines, cash crops/products, etc.)	+	2

✓			✓			Fewer households are able to resist and cope with economic shocks and emergencies	-	2
✓	✓	✓	✓	✓	✓	Increase in **development aid/investment in the community** from new government, donors, investors (additional to carbon project-related investment)	+	2
✓	✓	✓	✓	✓	✓	**Rural population** maintained (due to in-migration and/or slowed rate of out-migration to urban areas resulting from increased incomes and/or employment opportunities)	+	2
✓	✓	✓	✓	✓	✓	Increased in community **spending on education** (as a result of carbon payments, cash crops, and/or employment)	+	2
✓	✓	✓	✓	✓	✓	School or other **educational infrastructure** established or improved (due to carbon payments in cash or kind)	+	2
✓	✓	✓	✓	✓	✓	Improved **levels of literacy or education**	+	2
✓	✓	✓	✓	✓	✓	Improvement in **quality of housing** (from investment of cash income)	+	2
✓	✓	✓	✓	✓	✓	Improvement in **communications services/infrastructure** (from household and/or community investment, and/or improved infrastructure)	+	2
✓	✓	✓	✓	✓	✓	**Electrical grid/generation** and/or distribution established or improved (from community investment)	+	2
✓	✓	✓	✓	✓	✓	Wells and/or **water supply infrastructure** established or improved (from household or community investment)	+	2
✓	✓	✓	✓	✓	✓	Increase in **gender equality** in social organizations and productive enterprises	+	2
✓	✓	✓	✓	✓	✓	Change in gender equality (benefits capture, workload, decision making, spending, etc.)	+/-	2
✓						Increase in **social tensions** due to disproportionate distribution of opportunity costs	-	2
			✓	✓	✓	Increase in **social conflict** due to land speculation and/or in-migration in project area	-	2
				✓	✓	Decrease in social conflict	+	2
✓	✓	✓	✓	✓	✓	Improved recognition and respect for **human rights**	+	2

Figure T20: Example of Relationship between Possible Outcomes, Social Change Processes and Impact in Land-Based Carbon Projects

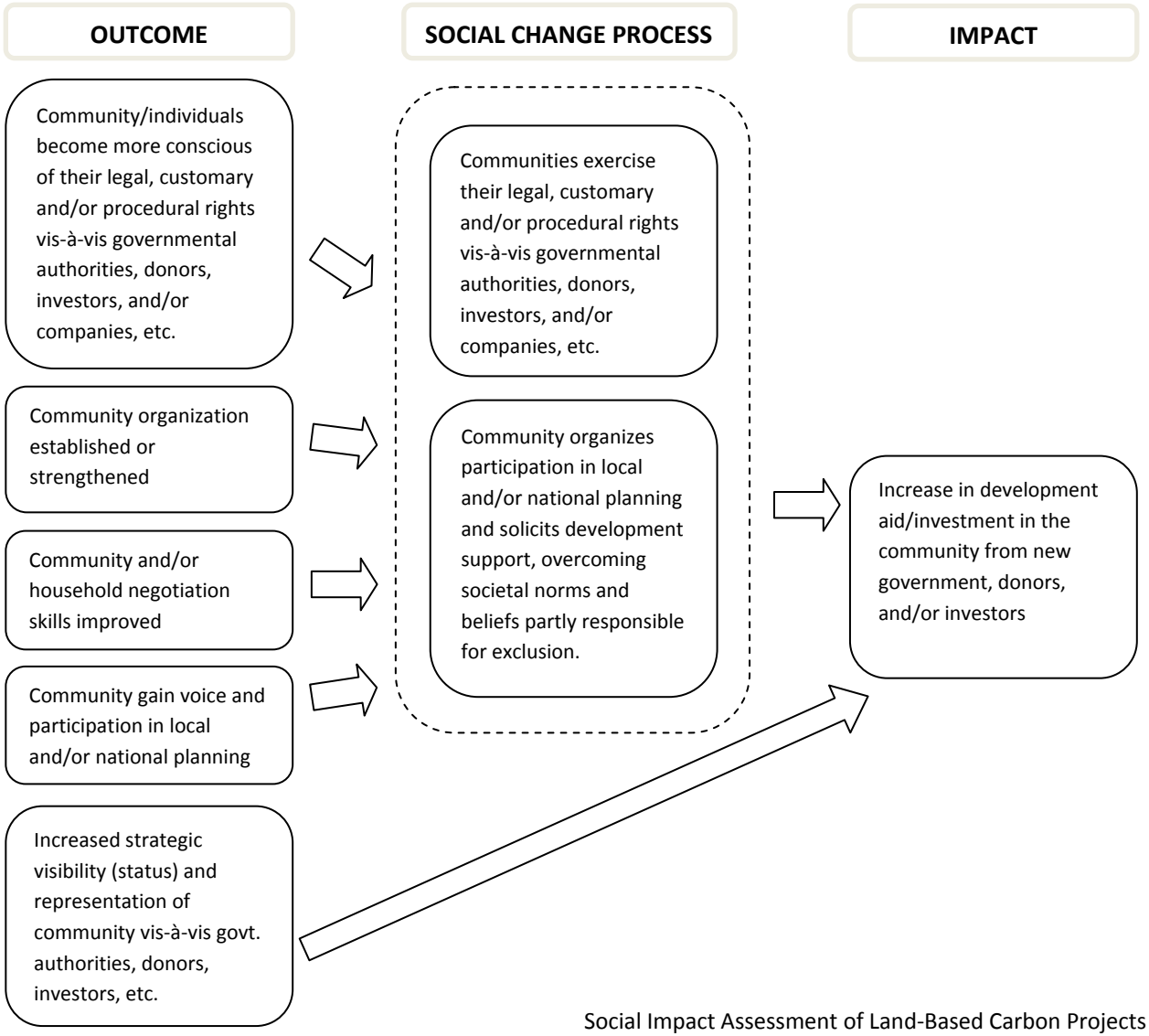


Figure T21: Possible Social Change Processes and Negative Social Outcomes and Impacts of REDD (with Strict Protection)

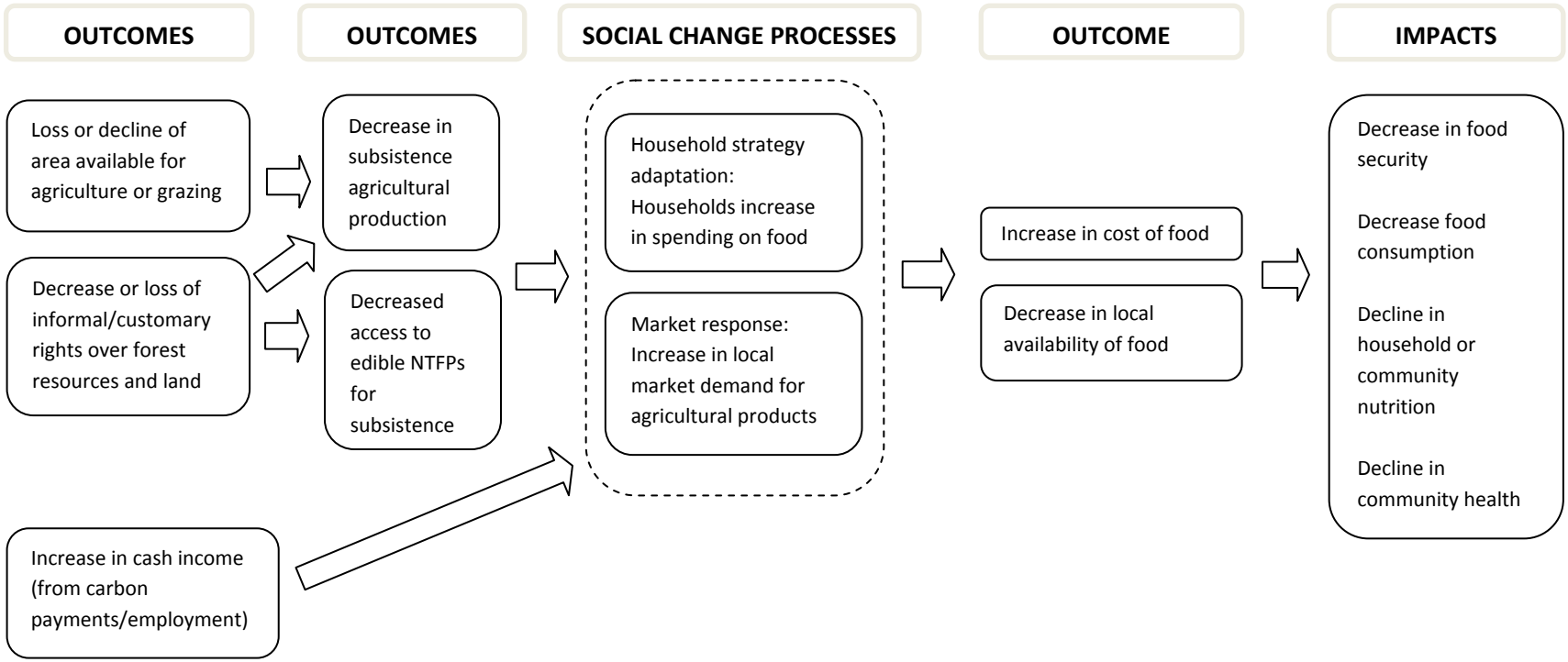


Figure T22: Additional Potential Social Change Processes and Negative Outcomes and Impacts of REDD (with Strict Protection)

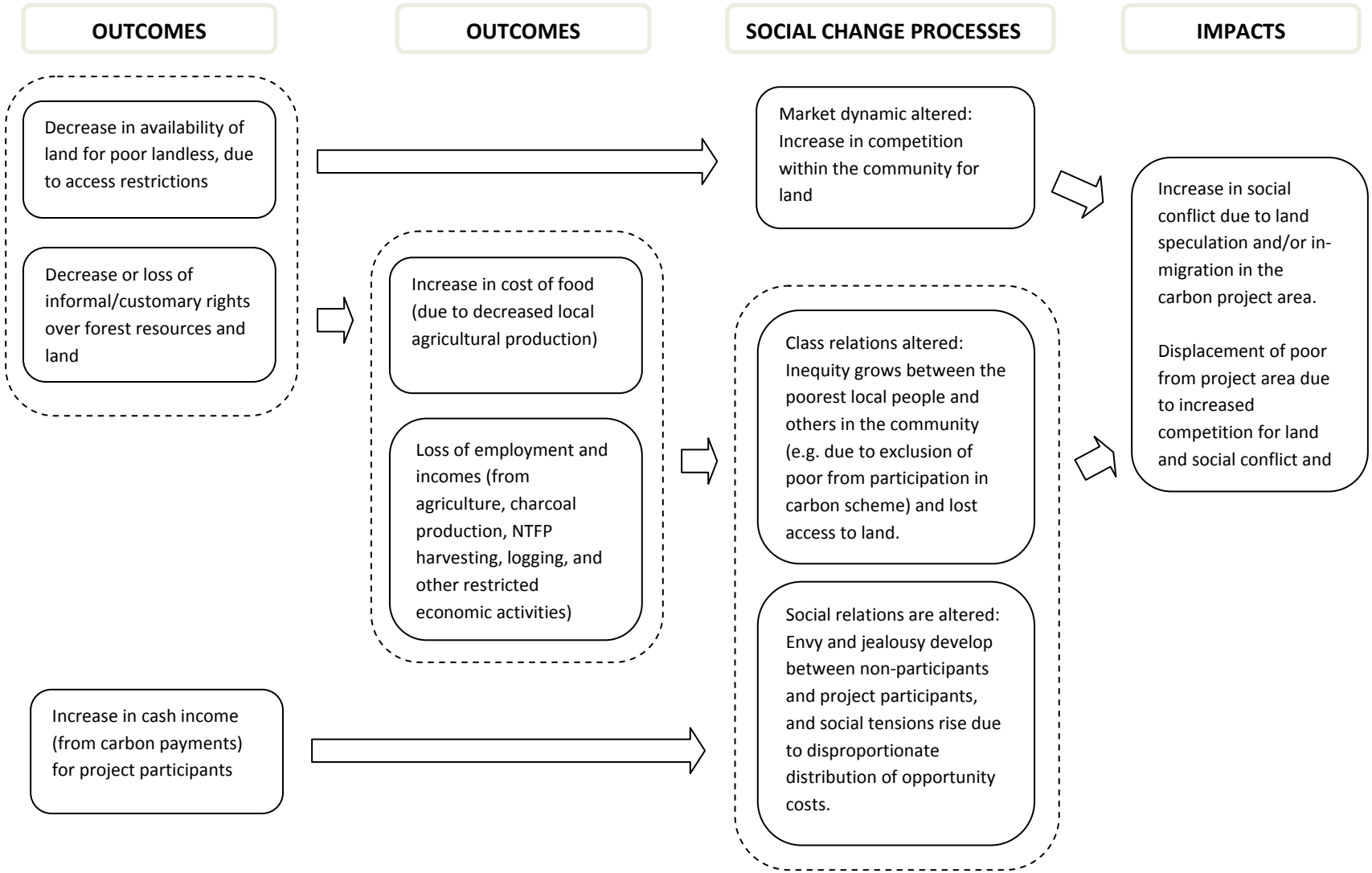
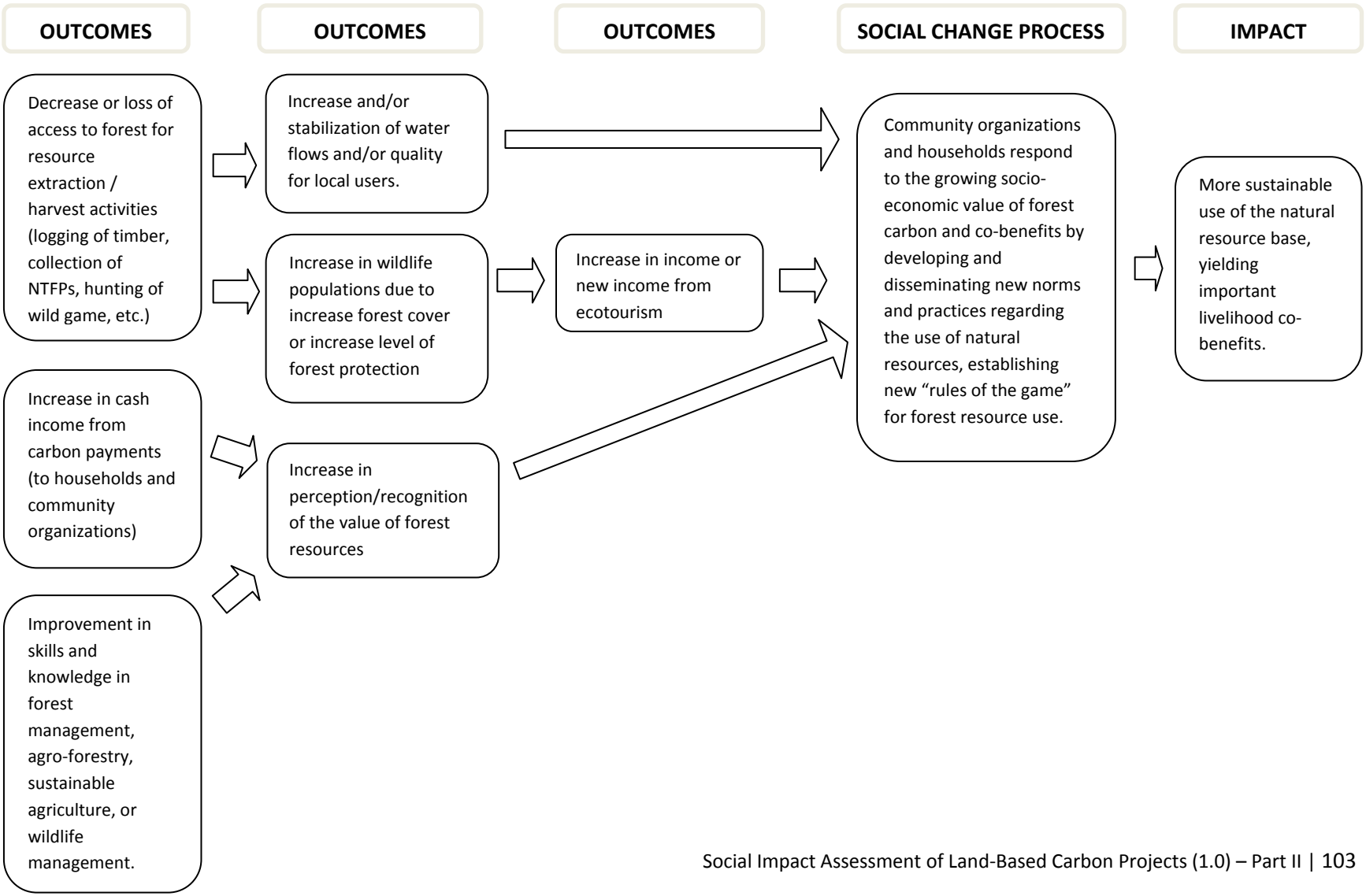


Figure T23: Possible Social Outcomes, Impacts and Change Processes in REDD (with Strict Protection)



T9 Further Guidance on Indicator Selection

T9.1 Introduction

Indicators are important and can be used throughout the full spectrum of project management for planning, implementation, monitoring, reporting and managing. Most importantly, indicators are tools for measuring a project's progress and achievements in realizing project outputs, outcomes and impacts. Indicators provide a simple and reliable means to measure progress and achievements, thus ensuring legitimacy and accountability to all stakeholders. But remember, indicators only indicate; they do not explain.

What type of indicator is best? The choice makes a difference. Validity, accuracy, sensitivity, transparency/plausibility and cost-effectiveness are all important considerations when defining or selecting indicators. Some general guidelines on indicator selection include:

Avoid reinventing the wheel. Considerable efforts to formulate indicators have been undertaken in a number of relevant contexts, such as the UN Millennium Development Goals, Performance Indicators of the Global Environment Facility (GEF, 2000), work in poverty alleviation, economic development, governance, forest management and other sectors that address social well-being, such as poverty reduction, health and education. Some indicator lists have been included in **Section T10 Social Indicator Checklists**.

Keep it simple. Each indicator should convey a single meaningful message or information. The indicator should be easy to detect, record and interpret; in other words, indicators should be unambiguous. Indicators that are easy to detect, record and interpret contribute significantly toward the goal of cost-effectiveness. The process of defining indicators itself can help project proponents and stakeholders in clarifying the outcomes being sought. If it proves difficult to identify an outcome indicator, it usually reflects a lack of clarity in conceiving the outcome, or the excessively broad or ambitious nature of the outcome sought.

More is not better. The key to good indicators is credibility. A larger number of indicators tends to make things more confusing, generate a lot of not-so-necessary data, and increases the cost of monitoring change. Indicators should be used to provide approximate answers to a few important questions rather than seek to provide exact answers to many less important questions. Given that resources for monitoring are limited, choosing the right set of indicators is very important. One or two clearly articulated indicators that measure the link between the activity and the output or the output and outcome are sufficient. As one moves upward (toward the overall social objective or impact) in the conceptual model, the number of indicators linked to each element tends to diminish.

Check for objectivity. The validity of an indicator is related to its reliability in measuring what it is designed to measure in a replicable way. In other words, when reapplying the same assessment procedure to the same conditions, the same answer should result (CIFOR 2001). The literature often refers to the need for 'objectively verifiable indicators' (OVI).

T9.2 Definitions

Performance indicators are measures, qualitative and quantitative, used to reflect progress toward achievement of objectives. The indicators can measure 'ends' (achievement of objectives or impacts) or 'means' (ways of achieving objectives – outputs and outcomes) or a combination of the two. Box T8 lists some features of good indicators.

Box T8. Features of Good Indicators

A good indicator:

- Is a direct and unambiguous measure of progress
- Is relevant, i.e., it measures factors that reflect goals/objectives of the program/project
- Varies across areas, groups, over time, and is sensitive to changes in policies, programs and institutions
- Is transparent and cannot be manipulated to show achievement where none exists
- Is practical/cost-effective to track

Source: G. Prennushi, G. Rubio, and K. Subbanno 2001.

Before a monitoring system can be set up to assess whether project activities are having a positive (or negative) social impact, it is necessary to decide which goals the project wants to achieve, and select key indicators in order to measure progress towards those goals. By verifying change, indicators help in demonstrating progress when things go right and provide early warning signals when things go wrong.

Each output/outcome/impact has many possible indicators, some of which will be more appropriate than others. Indicators will vary from one project to another, according to the project's objectives and its context. The choice of indicators is also dependent on the data available, as well as on what can be feasibly monitored given resource and capacity constraints. The challenge is to meaningfully capture key changes over time by combining what is relevant with what is practically feasible to monitor. At the end of the day, the key to good indicators is not volume of data or precision in measurement. Large volumes of data can confuse rather than bring focus. It is better to have indicators that provide approximate answers to some important questions than to have exact answers to many unimportant questions. Box T9 provides an overview of some key indicator definitions and distinctions.

When it is not possible or practical to select an indicator that allows direct measurement of an outcome or impact then a proxy indicator may be necessary. Cost-effectiveness may be a reason to choose proxy or indirect indicators; the proxy indicator seeks a balance between the level of reliability of information and the efforts needed to obtain the data. The inability to measure the subject of interest directly may be another reason to formulate a proxy indicator. This is often the case for more qualitative subjects like behavioural change and good governance. For example "distance traveled" or "time spent" can be proxies for effort expended on obtaining livelihood resources or income and are particularly important for understanding resource degradation or access impacts on women and children.

Box T9. Goals and Indicators Definitions and Distinctions

Impact Goals: what is to be assessed
Impact Indicators: how it is to be assessed

Quantitative and Qualitative Indicators

Quantitative indicators are expressed in numerical form (number, percentage, ratio), however they vary in precision. They can record precise amounts, (e.g. wages actually paid) or estimate rough quantities (e.g. unrecorded income from informal sector activities).

Qualitative indicators are expressed in verbal form. They may assess observable characteristics (e.g. villagers' perceptions of whether they are poor or not), as well as ideas or attitudes. Data from assessments linked to qualitative indicators can also be categorized and ranked like quantitative indicators to varying degrees of precision.

Direct and Proxy Indicators

Direct indicators are those which are a direct result of an intervention (e.g. numbers of community members employed in a reforestation initiative).

Proxy indicators are those which are used when data for direct indicators is not available or feasible to collect, e.g. levels of women's savings as a proxy indicator of economic empowerment.

Source: Mayoux, 2001.

T9.3 Types of Indicators

There are generally considered to be four types of indicators: input, output, outcome and impact indicators. Inputs and outputs are intermediate steps to determine if the desired outcomes/impacts are achieved.

Activity or Input Indicators are measures of the project's inputs and the direct activities involved in its implementation; e.g., the amount of the project's implementation budget spent on training forest guards. Activity indicators are the most straightforward indicators to use.

Output Indicators measure the immediate results of the project's activities; they refer to goods and services that result from the project; e.g., number of forest guards trained. They are intervention indicators.

Outcome Indicators seek to measure the extent to which the project's objectives or purposes have been attained; they measure the results from the goods and services produced by the project activity. For example, the number of trained men employed as forest guards.

Impact Indicators measure the highest objectives or the project's contribution to attainment of a broader/larger strategic or overall goal over the longer-term, such as improved well-being or a reduction in poverty levels. A project typically only contributes to these longer term goals or impacts.

Input and output indicators (also known as process indicators) are usually quantitative because they measure the implementation of project activities. Outcome or impact indicators can be quantitative

and qualitative, and measure changes that occur as the result of project activities. Analysis of the relationship between the two indicator types is essential for understanding the chain of cause and effect or attribution.

Projects with clear goals will be more likely to develop a hierarchy of indicators that link process to impact and thereby allow evaluators to form judgments at all levels (activity-output-outcome-impact), to assess cause-effect linkages, and to form a view about overall project coherence and effectiveness.

The choice between qualitative versus quantitative indicators has been the subject of frequent discussion and debate over the years. The tendency has been a shift away from indicators that require quantitative data (e.g., number or percentage of dollar value, tonnage, number of participants) toward descriptive, qualitative indicators. While the numerical precision of qualitative indicators tends to lead to more agreement on the interpretation of results, qualitative indicators provide texture or richness of information. Even when a result is qualitative, it is still possible to develop an indicator that offers some measure of the magnitude of change. For example, if the proportion of people who perceived the local natural resource management committee as "very participatory" increases from 35 per cent to 60 per cent over a certain period of time, this increase provides some measure of the degree of qualitative change. In all likelihood, most projects will have a mixture of quantitative and qualitative indicators, selecting each indicator that is most appropriate for the output/outcome/impact being measured.

T9.4 Approaches for Selecting Indicators

Once a set of impact goals has been agreed upon, the next step is to identify indicators. The choice of indicators makes a difference. If the wrong thing is measured, or if it is measured in the wrong way, the data may be misleading and the impact of a project may not be properly ascertained.

In general, good indicators share a number of features. As already discussed, they must be relevant, a direct and clear measure of progress, and can be tracked in a cost effective manner at a desired frequency. However, there is unlikely to be any "correct" set of indicators for assessing the outcomes and impact of a particular intervention or activity. Instead, there are a range of possible signs which can be used to help measure these, with varying degrees of certainty. A key task therefore is to make the selection of indicators and their analysis more useful, less arbitrary and more accountable (Mayoux, 2001).

Employing a Logical Framework when developing indicators can assist the project proponent in visualizing the logical relationship or the 'causal chains' as a hierarchy between different levels (impact/objective, outcomes, outputs, activities or inputs), the indicators, and the assumptions or risks. This will help ensure that each indicator is directly and logically related to an output, outcome, impact or objective. Different indicators are needed to monitor different aspects of a project. While impact indicators may best for assessing changes in overall well-being, the intermediate output indicators can be cost-effective proxies and provide useful information throughout project implementation.

When selecting indicators, it is best to start by developing a list of potential indicators and then narrow down the list to a final set based on a set of criteria. **Toolbox Section T10** provides project developers with a jump start on this task, but there are plenty of other resources available for identifying potential indicators. The project proponent's own portfolio of activities may provide insights into appropriate indicators; the internet, other organizations, external sector/regional experts, and internal brainstorming are all ways to tap information to help identify potential indicators. The key to creating a useful list of potential indicators is to view the desired result in all it aspects and from all its perspectives (USAID, 2003). Another best practice is to use a participatory approach in selecting indicators (see below). It makes good sense to draw on experience of others throughout the process.

The desired properties of indicators will therefore depend very much on the approach adopted and the nature of the project. Three different approaches are presented below and can be used as the basis for selecting project indicators:

SMART criteria are oriented towards enhancing the speed and ease of data collection:

- **S**pecific: the indicator should be defined and understood by all stakeholders in the same way
    - Is it clear exactly what is being measured?
    - Does the indicator capture the essence of the desired result?
    - Does it capture differences across areas and categories of people?
    - Is the indicator specific enough to measure progress toward the result?
- **M**easurable: ideally it should be possible to record quantitative as well as qualitative changes in the indicator
    - Are changes objectively verifiable?
    - Will the indicator show desirable change?
    - Is it a reliable and clear measure of results?
    - Do stakeholders agree on exactly what to measure?
- **A**chievable/Attainable: the indicator should be realistic in terms of the cost and complexity of data collection
    - What changes are anticipated as a result of the activity?
    - Are the result(s) realistic? For this, a credible link between inputs, outputs and outcomes is indispensible.
- **R**eliable and Relevant: the indicator should give consistent answers or numbers
    - Is the indicator straightforward and clear to understand and measure?
    - Does the indicator capture the essence of the desired result?
    - Is it relevant to the intended outputs and outcome?
- **T**ime-bound and 'Trackable': the indicator should have a time limit attached
    - Are the data actually available at reasonable cost and effort?
    - Are the data sources known?
    - Can the data be collected for the timeframe required by the project?

SPICED criteria give particular emphasis to participatory approaches:

- **S**ubjective in that stakeholders are uniquely placed to offer insights based on their experience
- **P**articipatory, involving the project or affected stakeholders
- **I**nterpreted or explained to provide an understanding of the local context in which they occur
- **C**ross-checked against other indicators, stakeholders and methods
- **E**mpowering to affected groups
- **D**iverse in nature and measured from a variety of stakeholder groups

CREAM criteria focus on managing for development results:

- **C**lear: Precise and unambiguous
- **R**elevant: appropriate to the subject at hand
- **E**conomic: available at a reasonable cost
- **A**dequate: provide a sufficient basis to assess performance
- **M**onitorable: amenable to independent validation

The project proponent should be sensible and practical in applying these criteria. No one indicator will satisfy all criteria equally well. In practice there can also be tension between the participatory, subjective character of the SPICED indicator approach and the emphasis on objective measuring in the SMART approach, requiring some reconciliation between the approaches.

Ultimately, the choice of indicator is determined through an assessment of validity and practicality. The selection of indicators is an iterative process, building on consultations between project developers, stakeholders and partners (UNDP, 2002). The process of selecting an indicator takes several steps including brainstorming ideas, assessing each one, and narrowing the list down to produce an indicator monitoring plan. Table T27 summarizes a number of key criteria for evaluating each of the indicators selected.

Table T27: Indicator Quality Assessment

Name of Indicator: _____

Name of Relevant Output/Outcome/Impact: _____

Criteria	Comments
Is the indicator **DIRECT**? • Does it measure the result it is intended to measure? • Is it grounded in theory and practice? • Does it represent an acceptable measure to both proponents and sceptics? • If it is a proxy, is it as directly related to the result as possible?	
Is the indicator **OBJECTIVE**? • Is it unambiguous about what is being measured? • Is there general agreement over the interpretation of the results? • Is it uni-dimensional (i.e., does it measure only one phenomenon at a time?) • Is it operationally precise (i.e., is there no ambiguity over what kind of data should be collected)?	
Is the indicator **USEFUL** for management? • Useful at what level? • How will it be used?	
Is the indicator **PRACTICAL**? • Are timely data available? • Can the data be collected frequently enough to inform management decisions? • Are data valid and reliable? • Are the costs of data collection reasonable?	
Is the indicator **ATTRIBUTABLE** to proposed positive social impact? • Are the links between the project's activities and the result being measured clear and significant? • Can the result be attributed in part to the project's efforts?	
Is the indicator **TIMELY**? • Are data available when needed for decision making or verification purposes? • Are data available frequently enough to inform adaptive management decisions?	
Is the indicator **ADEQUATE**? • Does it merely indicate progress rather than attempt to fully describe everything an activity accomplishes? • Taken as a group, are the indicator and its companion indicators the minimum necessary to ensure that progress toward the given result is sufficiently captured?	
Should the indicator be **DISAGGREGATED**? • Is disaggregation necessary and appropriate?	

Source: Worksheet 5: Performance Indicator Quality Assessment in USAID. 2003. The Performance Management Toolkit. Policy and Program Coordination Bureau. Contract Number: AEP-C-00-99-00034-00. http://pdf.usaid.gov/pdf_docs/PNACT871.pdf

Attempts to formulate a complete indicator straight away seldom results in a good quality indicator. Therefore, based on the characteristics of SMART indicators (see above), taking a stepwise approach is best. Working through this process step by step, and worrying about the precise formulation of the indicator later, will result in higher quality indicators that more clearly serve the project developer's purposes.

1. *What?* Brainstorm the variables, which may provide the means to measure change in the outcomes, impacts, or objectives. During the brainstorming, the minimum or standard quality of the phenomenon is taken into account (what and how good?).
2. *How much?* Define the magnitude of the change the project aims to achieve (performance targets).
3. *Who?* Clarify who belongs to the target group for a specific outcome or impact.
4. *Where?* This includes specific information on the particular intervention.
5. *When?* This step defines the timeframe for measuring change.

The necessary timeliness of the data depends on the nature of the decision to be made – for example, adaptive management decisions during project implementation versus CCB Verification. For addressing routine management issues, frequently available data are required. Data collected infrequently (every 2-5 years) or with a substantial time lag (> 1 year), are useful for tracking long-term trends towards achievement of project outcomes and impacts, and can be useful for confirming the accuracy of lower-level data.

How many indicators are needed? The answer is only as many as are necessary and cost-effective for management and reporting/verification purposes. The challenge is to strike a balance between having too many indicators, which tends to increase costs (in time and money) and too few indicators, which could be insufficient to assess progress and make appropriate adaptive management decisions. The general rule of thumb is two to three indicators per activity/output/outcome and impact (USAID, 2003).

Several methods are available to develop indicators that quantify complex results, for example, in the area of governance. These methods include rating scales, milestone scales, indexes, and scorecards. These tools introduce a level of objectivity to subjective measures, although validity and reliability of the measures can be an issue with these methods. Although designed primarily for national level indicators, the Governance of Forests Initiative (GFI) Framework may help identify governance indicators (Box T10). The Centre for Democracy and Governance (1998) is another useful source for governance indicators.

How to measure the indicator (*sources of verification*) can be just as important as selecting the indicator. Clarifying this at the same time as the indicators are being formulated is important since discussions on how to collect or measure the indicator often lead to reformulation of the indicator. The aim should be to select indicators for which data can be obtained at a reasonable cost and in a timely fashion. A rule of thumb is that costs of monitoring and evaluation should range from three to ten percent of the total budget.

Box T10. Indicators Derived from the Governance of Forests Initiative (GFI)

The purpose of the GFI Framework is to provide a framework for understanding forest governance across a variety of developing country contexts, and based on widely agreed principles of good governance. The Framework consists of key ***principles*** and ***components*** used to define good governance. The resulting matrix provides 94 governance ***indicators*** or diagnostic questions to assess the quality and adequacy of governance aspects relating to four key ***issues***:

- **Forest tenure**: the spectrum of ownership, use, access and management rights to forests, which shape relationships between people and forests by defining who can use what resources, for how long and under what conditions;
- **Land use planning:** the iterative and multi-stakeholder process to determine optimal land uses that maximize benefits for current and future generations;
- **Forest management**: management and control of forest use, including conservation, community, and extractive uses, and conversion for agriculture, infrastructure or other activities.
- **Forest revenues and incentives:** collection and management of revenues from productive forest uses, and the design and implementation of economic incentives affecting forests.

The indicators (too numerous to list here) are organized according to three major ***components*** of forest governance: the ***actors***, the ***rules*** and the ***practice***, and assess the extent to which a particular aspect of forest governance reflects one or more of five ***principles*** of good governance: ***transparency, participation, accountability, coordination*** *and* ***capacity*** (these are carefully defined in the GFI).

The GFI indicators aim to provide an objective but qualitative assessment of processes and arrangements that determine how forest management decisions are made. The focus of these indicators is on *how* decisions are made, rather than *what* decisions are made. For example, indicators addressing the management of resource funds consider the *transparency* of processes for prioritizing spending, rather than the particular programs funded. Each indicator is framed as a diagnostic question, which is broken down into several ***elements of quality*** that describe the various attributes that must be met to demonstrate good governance.

For each diagnostic question, an indicator value of (i) Low, (ii) Low-Medium, (iii) Medium, (iv) Medium-High, or (v) High is possible based on documented explanation of the extent to which the *elements of quality* are met. Each indicator includes an analytical explanation for the value assigned. The indicators can be applied at the national or project level, but cross-national comparisons are discouraged. The table below presents an example of a GFI indicator – community forest tenure – which could be adapted to a forest carbon project situation.

Source: ICV/IMAZON/WRI. 2009. The Governance Of Forests Toolkit (Version 1): A draft framework of indicators for assessing governance of the forest sector.
http://www.wri.org/project/governance-of-forests-initiative

Example of a GFI Indicator

Indicator: Community Forest Tenure	Elements of Quality	Governance Principles
Recognition and resolution of community forest tenure claims: Communities living in and around public forests often have existing claims to land and resources that have not been formally acknowledged by the government. These communities typically practice customary or informal tenure systems. At some point, the government may decide to formalize existing or establish new property rights in these areas. This may include selling the land, awarding a contract for resource utilization or forest management to a company or particular community, or establishing a protected area. In order to avoid conflicts over land and resource use, pre-existing claims should be recognized and resolved prior to establishing new or formalizing existing tenure rights. This indicator should be applied as a case study of a recent instance where forest tenure rights were formalized in an area where forest-dependent communities were present.	*Diagnostic question:* To what extent are the land claims and resource use rights of local communities and indigenous peoples recognized and resolved as a part of any process to regularize existing or establish new property rights in public forests? *Elements of quality*: • All pre-existing land claims and resource use rights of local communities are identified in the area under question before initiating any action • Local communities are consulted as a part of the decision-making process • Local communities have access to all relevant information necessary to understand the situation and participate effectively • Local communities have the internal capacity and/or external support to effectively engage and negotiate with external parties • Local communities have access to adequate mechanisms of redress if they feel that their existing land claims and resource use rights were not adequately addressed	Participation Accountability Transparency
Participatory mapping of community forest tenure: Participatory mapping is a way for communities to raise their awareness about the status and value of their resources and to make this information known to outsiders. It can also build community consensus on organizing to defend their tenure claims. Community maps may strengthen community negotiations regarding tenure rights deals with government agencies and private firms. This indicator should be applied as a case study to a recent community mapping project.	*Diagnostic question:* To what extent is there meaningful community participation in mapping of community-owned lands? *Elements of quality*: • Communities have access to external support to assist the community mapping process • Map is generated through a broadly participatory process • Map is perceived to be legitimate by the community • Map is perceived to be legitimate by the government • Evidence that community maps have been utilized by the government for local land use planning decisions	Participation

T9.5 Disaggregating Indicators

Multi-dimensional indicators often need to be disaggregated, or broken down, in order to reveal differences between their various components. The decision on the level of disaggregation of indicators is as important as the choice of the indicator itself. Indicators can be disaggregated along various dimensions, including location, gender, income level, and social group (based on ethnicity, religion, tribe, caste). Aggregate, country-level indicators are useful, as they give an overall picture of where a country stands in comparison with others. However, these can mask significant differences across areas, gender, or social groups which will affect how well an impact can be monitored and assessed (Prennushi et al., 2002). At the project level, disaggregation is often necessary.

Although smaller projects may find it harder to disaggregate by geographical areas, other possible examples include disaggregating by gender, income, consumption, asset ownership and ethnicity. It is also important to recognize that disaggregating indicators by areas, groups, etc., can have political consequences, and must be done carefully.

Gender considerations are perhaps the most frequent reason for disaggregating data. It is well established that men and women use land-based resources differently, have different access to programs, and are affected differently by activities/programs/projects. Project proponents must understand these differences in order to improve the efficiency and effectiveness of the project, and to ensure that women and men have equitable access to the project's benefits, and that neither is negatively affected by the project. Table T28 demonstrates how indicator data can be disaggregated.

Table T28: Data Disaggregation and Analysis, by Indicator

Indicator	Analyze by:				Additional Analysis by:
	Aggregate	Activity	Gender	Youth/Adult	
Increase in income for community from carbon payments					
Value of carbon payments to community	✓	✓			Cash, Material, Labour, Source
Number of community development projects completed	✓	✓			Project type
Number of direct beneficiaries under Indicator	✓	✓	✓	✓	Intervention type

T9.6 Stakeholder Participation in Indicator Selection

Until recently, the most common approach for the selection of indicators was *a priori* external selection where indicators were selected at the beginning of an assessment by external assessors or by the project development staff. This resulted in subjective biases as the monitoring process was

narrowly defined by outsiders' concepts of impacts. The chosen indicators might not be the most important ones for other stakeholders, and so the results of the impact assessment may not be accepted.

The sharing of indicators can thus be a valuable exercise in partnership and consensus building. A commonly agreed upon set of indicators reflects a shared understanding of problems, goals and strategies. Sharing ensures greater agreement and "buy in" among all partners and stakeholders involved in the project (UNDP, 2002).

The process of stakeholder participation will require careful planning, and wherever possible, the indicator selection process needs to be explicit, for example, using a predetermined checklist from which participants select the indicators, or carrying out a participatory brainstorming session to then progressively narrow down and prioritise a set of indicators (Mayoux, 2001). During this process it is also important to acknowledge and address power relations between stakeholders.

T9.7 Practical Considerations

The use of indicators is integral to good social impact assessment frameworks. However, even with this guidance in mind, it is important to remember that indicators are only indicators, and are never an end in themselves, nor are they necessarily the final proof. But indicators that are carefully considered and shared among partners and stakeholders are far better than guesswork or individual opinion. The important thing, in the end, is how indicators are used as part of the project implementation process and how they can help make better decisions.

In summary, in the selection of indicators it is important to bear in mind that:

- Both quantitative and qualitative aspects should be measured, e.g. it is not enough to know how many people have been trained, we also need to know what they have learned, and whether they are successfully applying their new knowledge
- No one type of indicator or observation is inherently better than another; its suitability depends on how it relates to the result it intends to describe
- More information is not necessarily better, and collecting too much information can waste scarce resources
- Indicators are partial and selective. Underlying values inevitably influence the selection of any particular set of indicators

Main Sources and Further Guidance

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T10 Social Indicator Checklists

T10.1 Indicators Derived from 'Sustainability Framework' Approaches

Social Carbon Methodology (SCM)

The list of approved indicators for the SCM 'Financial', 'Human', 'Social' and 'Natural Resources' are as follows:

Financial Resources:

- ability or capacity to access to credit
- participation in goods and services markets
- level of household income and savings
- 'economic and social returns' incl. relative income distribution & distribution of financial assets

Human Resources:

- state of family health
- adult literacy level
- professional skills in the household (especially agriculture, livestock, extractivism)
- formal education levels
- disease incidence
- work attitudes
- leisure options
- 'technical competence'
- access to technical extension services

Social Resources:

- level of participation in civil organizations
- number of people taking collective decisions
- adherence to and actions by institutions representing community
- level of dependency on government interventions
- degree of community organization - formal associations or community groups
- presence of support agencies (especially religious)
- family networks
- internal conflicts and their causes (external or internal)

Natural resources:

- rate of deforestation
- level of fish & wild game stocks
- quality of soil & water
- degree of fragmentation of local ecosystems
- level of protection
- management regimes

Source: Social Carbon. 2009. Social Carbon Guidelines.
http://www.socialcarbon.org/Guidelines/Files/socialcarbon_guidelines_en.pdf

Landscape Outcomes Assessment Methodology (LOAM)

Some commonly identified indicators from LOAM case studies are:

Human capital assets:

- Child and adult mortality, especially to major diseases
- Availability and quality of health care
- Availability of education – distance to schools
- Skills and education levels (e.g., number of qualified people)
- Capacity-building of women
- Traditional knowledge

Social capital assets:

- Levels of corruption/effectiveness of administration
- Equity in application of laws
- Existence of community based resource management groups
- Respect for traditional resource management rules
- Social organizations
- Local networks

Physical capital assets:

- Road access
- Plantations as providers of employment
- Quality of housing – number of tin roofs
- Local processing industries – sawmills etc.
- Village water supply
- Mechanization, e.g., number of tractors
- Electricity/energy sources

Financial/economic assets:

- Income from timber or NTFPs
- Employment from tourism, local estates
- Total household income
- Access to and cost of formal credit/microfinance
- Access to and cost of informal credit

Natural capital assets:

- Quality of water
- Accessibility of drinking water
- Availability of non-timber forest products
- Erosion
- Access/distance to forest reserves
- Fire incidence

Source: Aldrich, M. and Sayer, J. 2007. In Practice – Landscape Outcomes Assessment Methodology "LOAM". WWF Forests for Life Programme. http://assets.panda.org/downloads/loaminpracticemay07.pdf

Millennium Ecosystem Assessment (MEA)

The MEA lists the following indicators of 'human well-being' linked to ecosystem services:

Components of Human Well-Being	Indicators
Security	a safe environment; resilience to ecological shocks or stresses such as droughts, floods, and pests • secure rights and access to ecosystem services
Basic Materials for a 'Good Life'	• access to resources for a viable livelihood (including food and building materials) or the income to purchase them
Health	• adequate food and nutrition • avoidance of disease • clean and safe drinking water • clean air • energy for comfortable temperature control
Good Social Relations	• realization of aesthetic and recreational values • ability to express cultural and spiritual values • opportunity to observe and learn from nature • development of social capital • avoidance of tension and conflict over a declining resource base
Freedom and Choice	• the ability to influence decisions regarding ecosystem services and well-being

Source: McMichael, A. et al. 2003. Linking Ecosystem Services and Human Well-being. Chapter 3. Millennium Ecosystem Assesssment. http://www.millenniumassessment.org/en/Synthesis.aspx

T10.2 Indicators for Clean Development Mechanism (CDM) projects

WWF Gold Standard Social Sustainability and Development indicators

(note: the WWF Gold Standard for CDM projects currently excludes A/R carbon projects)

Employment and job quality*:* the job quality indicator depends whether the job is temporary or permanent (in comparison with the baseline) as well as any job-related Health and Safety (H&S) impacts.

Livelihoods of the poor: this indicator is composed of various sub-indicators:

- *Poverty alleviation:* the change in number of people living above income poverty line compared to a baseline.
- *Contribution to equitable distribution and additional opportunity for disadvantaged sectors:* the indicator combines quantitative - changes in estimated earned income (normalized to the project's starting year) compared with the baseline – and qualitative assessment - improved opportunities for gender and marginal or excluded social groups.

- *Access to essential services (water, health, education, access to facilities, etc.):* this indicator is measured by the number of additional people gaining access compared with the baseline (access must be directly related to the project service).
- *Access to affordable clean energy services:* security of energy supply should be taken into account when assessing this indicator.

Human Capacity: this indicator is used to assess the project's contribution to raising the capacity of local people and/or communities to participate actively in social and economic development. It comprises three indicative sub-indicators:

- *Empowerment:* used to evaluate the project's contribution to improving the access of local people to, and their participation in, community institutions and decision-making processes.
- *Education/skills:* used to assess how the project activity enhances and/or requires improved and more widespread education and skills in the community.
- *Gender equality:* used to assess how the project activity requires or enhances improvement of the empowerment, education/skills and livelihoods of women in the community.

Source: Gold Standard Version 2.1: http://www.cdmgoldstandard.org/Current-GS-Rules.102.0.html

EnCoFor Social and Institutional Impact Assessment Indicators

The EnCoFor Manual (Robledo, 2007), which was designed to assess the social and institutional impacts of CDM Projects, does not use a conventional system of indicators, but some indicators can be identified from the discussion of 'Social and Institutional Principles and Criteria':

- monitoring of alliances and conflicts between social groups;
- immigration rate/level;
- changes in food sources;
- access to timber and NTFPs (for different social groups);
- improved access to capacity-building;
- access to technology;
- changes in land tenure or use rights;
- ownership of carbon pools and Certified Emission Reduction units (CERs);
- access to cultural or religious sites;
- access to information:
- participation and decision-making mechanisms;
- monitoring of inequalities;
- effects on social groups' internal organizations.

The Social and Institutional Principles are presented below. The approach is primarily one of identifying risks of negative impact and minimizing or mitigating them.

Social Principles	Social Criteria
SP1. Social groups	Social groups involved by the project shall be characterized
	Interactions among key social groups shall be identified
	Alliances and conflicts between social groups should be considered
SP2. Social Impacts	Benefits shall be maximized
	Lack of benefits should not be perceived as negative impacts
	Negative impacts shall be minimized
	Risks should be reduced
SP3. Social Processes	Social groups involved by the project should be informed in advance
	Social groups involved by the project should be able to promote their interests
	Participatory decision- making mechanisms should be in place
Institutional Principles	**Institutional Criteria**
IP1. National Level	Requirements of the national DNA shall be fulfilled
	Legal regime on land tenure and land use rights shall be respected
	Other national legislation on natural resources should be considered
IP2. Project Level	Regional and/or local legislation should be considered (at Province, Municipality and Parish level), including customary rights
	Changes in ownership of and access to land and carbon pools shall be documented
	Ownership of the CERs shall be clarified
	Contract conditions and obligations between project proponents and landowners should be socialized -also ERPA
	Association forms that facilitate project implementation shall be promoted
	Sharing mechanisms shall be institutionalized

Source: Robledo C. 2007. Manual for addressing social and institutional issues. Environment and community based framework for designing afforestation/reforestation projects in the CDM: methodology development and case studies. www.joanneum.at/encofor

T10.3 Social Indicators Derived from Poverty-Focused Programs

CARE Household Livelihood Security-Based Indicators

Livelihood Security Outcomes	Indicators
Nutrition	Nutritional status
Food	Access to food
Income	Financial status
Education	Access to education
Health	Access to health, sanitation, water, etc.; disease levels
Habitat	Housing materials, access to water
Social Network	Social Network participation
Personal Safety	Physical safety
Environment	Environmental protection
Life skills	Life skill capacities status

Source: CARE. 2002. Household Livelihood Security Assessments. A Toolkit for Practitioners, Prepared for the PHLS Unit by: TANGO International Inc., Tucson, Arizona 2002, US
www.proventionconsortium.org/themes/default/pdfs/CRA/HLSA2002_meth.pdf

It should be noted that an indicator may relate to more than one livelihood security outcome, for example, nutritional status can reflect access to food, healthcare and education. The indicators should be evaluated against baseline levels, and be complemented by community defined criteria and indicators.

World Bank Core Welfare Indicators Questionnaire (CWIQ)

The CWIQ process represents a standardized, low cost (estimated cost US $30-60 per household) and 'off the shelf' approach to basic poverty indicators. It uses a standardized data collection and analysis process which can be implemented by non-specialists with limited training. Using a standardized multiple choice questionnaire, it covers household assets, employment, health, education, water, etc., and focuses particularly on access, use and satisfaction levels. The welfare indicators include:

- percentage reporting diminishing or increasing assets (land and livestock);
- employment rates of men and women;
- literacy levels;
- access, enrolment and satisfaction with primary and secondary schools;
- access to and satisfaction with medical services
- child nutrition (percentage stunted, wasted and overweight)
- access (distance) to safe water sources;
- housing (quality and mean number of persons per room).

Source: http://www4.worldbank.org/afr/stats/cwiq.cfm

10.4 Social Performance Indicators from the Microfinance Sector

The 'Social Performance Working Group' has developed a core or common set of 'social performance indicators' for evaluating microfinance institutions (MFIs). A related initiative is the Social Impact Measurement (SIM) Tool developed by the International Network of Alternative Financial Institutions (INAFI), composed of Oxfam, Novib and Ordina, as a cost-effective approach to evaluation. The focus is on easy to measure indicators of performance, including beneficiary perceptions of change. Commonly used indicators by the micro-finance sector are:

Indicators of changes in assets:

- value of equipment/building for non-farm enterprises
- animal ownership;
- land ownership;
- ownership of transport assets
- ownership of consumer appliances

Indicators of changes in living conditions and reduced vulnerability:

- housing conditions
- type and level of cooking fuel
- access to drinking water
- regularity or frequency of meals
- quality of food
- an expenditure based index showing whether people have reduced or increased their expenditure on livestock, production materials, housing, and other assets
- savings (increase or decrease)

Schooling indicators:

- % of children reaching 5th grade[23] or finishing primary school
- % of primary school aged daughters/sons attending school
- % of secondary school aged daughters/sons attending school

Health indicators:

- Number of meals per day (strong correlation between nutrition and health)
- Number of days sick during a given period
- % of births attended by skilled personnel
- Under 5 mortality rate

[23] This is the preferred indicator of the multiple donor Education For All (EFA) program since grade 5 of primary school has been identified as the 'threshold for sustainable literacy'.

Empowerment of women indicators:

- economic, social and political indicators are under development by INAFI
  Social capital indicators:
- degree of social organization - average number of community organizations participated in by beneficiaries
- social and political empowerment - perceived freedom to actively participate in meetings or collective social actions
- decision-making power - perceived degree of power to take decisions; number of beneficiaries holding a leadership position

Sources: SEEP Network. 2006. Social Performance Map. The SEEP Network Social Performance Working Group. Washington, DC. www.seepnetwork.org; *INAFI. 2006. Social Impact Assessment. Theoretical background paper for SIM tool INFAFI.* www.inafiinternational.org

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