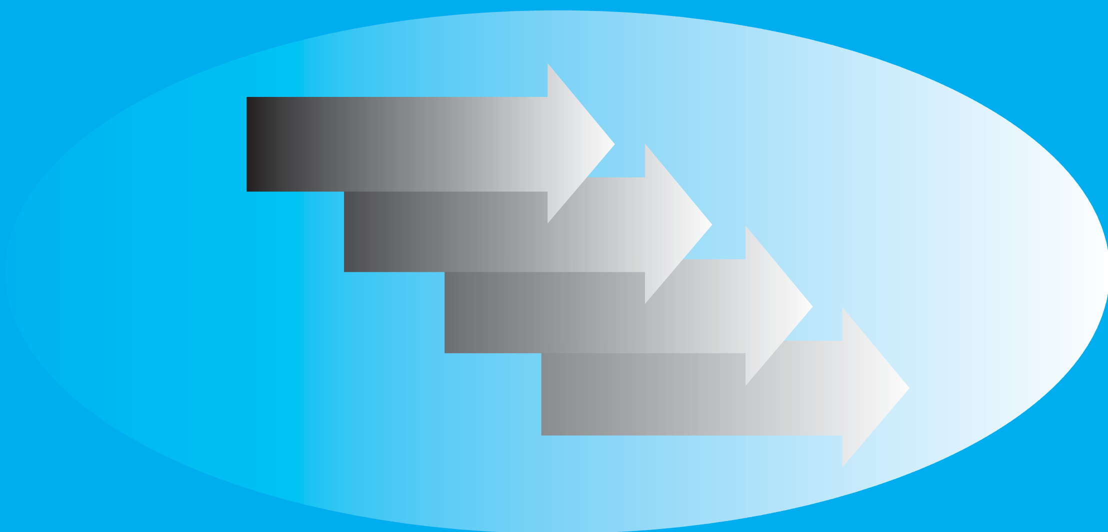
Impact Monitoring & Assessment

Instruments for Use in Rural Development Projects with a Focus on Sustainable Land Management

Volume 1: Procedure



Karl Herweg & Kurt Steiner

2002

Synopsis

Impact Monitoring & Assessment (IMA) as part of the Project Cycle Management (PCM)

Steps in PCM	Steps in IMA	Reasoning & Key Questions of IMA
Planning Stakeholder Analysis	**Step 1: Involvement of Stakeholders and Information Management**	**Reason**: Initiating participatory IMA and preparing the documentation of the entire IMA procedure **Key questions**: Who participates in IMA? Who can provide and who needs what information, and in what form? How will information be disseminated and stored so it is accessible by anyone?
Problem Analysis	**Step 2: Review of Problem Analysis**	**Reason**: Sound understanding of the project context, its elements and their interrelations **Key questions**: What are the most important elements of the project context? How are they interlinked? What role do they play in the context? Is the context moving towards or away from sustainability?
Objectives Analysis (Analysis of Alternatives)	**Step 3: Formulation of Impact Hypotheses**	**Reason**: Predicting possible positive and negative impacts **Key questions**: What impulses can a project give towards more sustainable development? What positive and negative impacts might this imply?
Indicator Selection	**Step 4: Selection of Impact Indicators**	**Reason**: Preparing the IMA baseline and assessment **Key questions**: What indicates changes in the project context? What reveals which impact hypotheses materialise? What set of indicators will tell if changes help achieve the project purpose and goal? Can local indicators be used? How can a reasonable number of indicators be selected? How can impact assessment be prepared?
Monitoring	**Step 5: Development and Application of Impact Monitoring Methods**	**Reason**: Observation and documentation of changes in the context **Key questions**: How can the context and impact indicators be monitored and documented? Which methods are applicable within the means and capacities of the project? How can methods best be combined?
Evaluation	**Step 6: Impact Assessment**	**Reason**: Interpreting changes in the context **Key questions**: How did the context change in the eyes of different stakeholders? What did they learn from these changes? Do the lessons learnt indicate that the project has stimulated important social processes? What is the connection between these processes and (development) goals? Which processes should be strengthened specifically in future?

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INTERCOOPERATION

helvetas

IMPACT MONITORING & ASSESSMENT

**Instruments for
Use in Rural Development Projects with
a Focus on Sustainable Land Management**

Volume 1: Procedure

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Acknowledgements

The present document is a revised version of the previous publication: *Sustainable Land Management – Guidelines for Impact Monitoring* (Herweg, Steiner & Slaats 1998). These guidelines – published as working documents for public discussion – were the result of collaboration among international development agencies, universities and individuals from several continents. From the beginning, all parties shared the need for practical tools and cost-effective impact monitoring, particularly in the field of sustainable land management. This made it possible to bring a critical mass of professionals together to make optimal use of the tremendous work that had already been done, and thus to avoid reinventing the wheel. The authors wish to express their deep gratitude to all those who contributed their time, be it through their participation in workshops, their assistance in identifying relevant documents, or their part in writing up and editing the guidelines. Our thanks also go to numerous colleagues in many countries, who critically reviewed, commented on and applied the guidelines. Simultaneously, participants in several workshops provided precious time and project documents to test the guidelines and review the impact monitoring and assessment (IMA) procedure in order to make it more practical. The controlling divisions of SDC and GTZ supported the present revision with a number of useful inputs that will help promote better integration of IMA into project cycle management (PCM). Our sincere thanks go to all those who contributed to the present document, and last but not least, to SDC and GTZ for their generous funding.

Foreword

The sustainable use of natural resources has long been accepted as a priority issue on the global development agenda. A number of international conventions and conferences have underlined its importance. At the same time, reports of on-going land degradation and decreased soil productivity are ever present, indicating that the issue of sustainable land management (SLM) is being addressed insufficiently and/or in an ineffective way.

Implementing SLM strategies has increasingly become a transversal issue in development. For good reasons economic and livelihood strategies have become more prominent, with a focus on multiple-win-situations. The unfortunate consequence of this fact is that often the monitoring of impacts on the natural environment is even less thoroughly followed up than before. As is frequently the case with complex issues, good monitoring instruments, indicators and procedures are lacking or not available in a ready-to-use form. Consequently, the development of an instrument for impact monitoring and assessment (IMA) of SLM is crucial, especially as SLM is a complex issue that includes socio-economic and biophysical aspects.

The instrument presented here is not only meant to provide a thorough guide to processes of monitoring and assessment, but also to encourage potential users to give SLM a new focus in accordance with its priority in an intervention. The IMA procedure (Volume 1) and the related toolbox (Volume 2) make it obvious that the present instrument is responding to a need. But it is also expected that the instrument will create a new interest in impact monitoring where the emphasis is not on land management and environmental aspects. The instrument is the result of a compilation of global experience in the field, including that of experts from different institutional backgrounds who have tested its usefulness and given valuable feedback. Published in the year of the World Summit for Sustainable Development (Rio +10), the present publication is timely and will encourage all actors to link the global policy debate with action at the field level.

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About this Document

There is an on-going discussion among development agencies and their partners about how the impact of development cooperation can be determined. The present document on "Impact Monitoring and Assessment" is a contribution to this discussion. It offers one option for use by development projects in addressing this topic, but it is not the only one.

Users

This document is designed for managers and staff of rural development projects and their consultants. Volume 1 contains a description of an impact monitoring and assessment (IMA) procedure, integrated into project cycle management (PCM). For those in need of more detailed information, Volume 2 supplies additional tools, examples, selected monitoring methods and references. There is no universal procedure, which means that IMA must be adapted to each project-specific local context. The present document provides some building blocks for the development of project-specific IMA.

Figure 1: Integrating impact monitoring & assessment into project cycle management

IMA as an Integral Part of Project Cycle Management

The present document focuses on IMA as part of self-evaluation of a project, an instrument of reflection and learning to adapt and improve project activities. Therefore, IMA needs to be integrated into PCM, as a steering instrument for quality control throughout the project's life cycle. For better integration into PCM, IMA has been divided into six steps which can be attached to already existing PCM procedures (see Figure 1).

Participatory IMA

Whether an impact is considered positive or negative, sustainable or unsustainable, etc., depends on who assesses it (a farmer, his wife, a researcher, a policy-maker, etc.), and his or her interests (economic, social, ecological). An impact may be positive in the view of some stakeholders, while others may consider it negative. It is therefore indispensable to involve different stakeholders in IMA, e.g. to harmonise social, economic and ecological interests, to select meaningful impact indicators, and to assess and discuss changes and impacts from different perceptions. A variety of subjective views may not be easy to manage. But such detailed analyses from different points of view also reveal a variety of development opportunities for a project.

For the stakeholders of a development project IMA is not only a management tool, but an instrument for learning about the context in which one is involved. A strong involvement by stakeholders during the entire IMA can play a central role in their empowerment. IMA is a contribution to local capacity building because it helps stakeholders to present their perceptions, to analyse, negotiate and make joint decisions. Participatory IMA can even go much further in the sense that stakeholder groups carry out their own impact monitoring (cf. PASOLAC / PROASEL: beneficiaries' impact assessment). This, however, is not a subject of the present document.

Cost-Effective IMA

The present document takes time and money constraints of development projects into account, and suggests only simple and therefore cost-effective tools and instruments that have already been tested in practice. Scientific methods are not included because they require specialists who make use of their own methodologies. Cost-effective tools cannot be as accurate and precise as scientific methods. The aim of IMA is thus to find plausible indications – and not scientific proof – of a project's impact. The basic procedure of IMA should be carried out by the project and its stakeholders. Additional questions can then be addressed through special studies by universities, colleges or local consultants.

Topical Focus

Volume 1 contains a general description of an impact monitoring & assessment process, as this is something that most rural development projects can use. In Volume 2, this procedure is supplemented with examples and tools from "sustainable land management" (SLM), an important component of sustainable development. These examples should also help projects in other sectors, such as health, education, infrastructure, etc., to adapt the basic IMA procedure to their needs.

The Process of Developing the Present Document

In 1996/97, the Swiss Agency for Development and Cooperation (SDC), the GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit), Intercooperation and Helvetas (Switzerland), and many of their partners expressed the need for practical impact monitoring tools at the project level. By this time, many bilateral or multilateral organisations had already done some work in this area, particularly regarding conceptual frameworks and indicators of sustainability and sustainable land management. In May and November 1997, a critical mass of international expertise in the form of people representing many organisations gathered to design a preliminary version of the impact monitoring (IM) guidelines, with a focus on sustainable land management (SLM). These SLM-IM guidelines were disseminated as working documents for public discussion after July 1998 in English, French and Spanish. Many projects and consultants worldwide have been asked to test this version, adapt it to their situation, and supply feedback, in order to make the guidelines user-friendlier and more applicable to real-life situations. At the same time, the Centre for Development and Environment (CDE, University of Bern, Switzerland) and the GTZ conducted a number of orientation workshops in Africa, Asia and Latin America to share experience in impact monitoring and assessment, and to further develop an IMA procedure and tools. Experience and feedback from the years 1998 to 2001 provided the basis for the elaboration of the present document.

Clarification of Terms

Not all development organisations and references use terms related to project cycle management and impact monitoring in the same manner. Therefore, in what follows, we shall briefly describe how terms are interpreted in the present document.

Project: Throughout the present document, the term "project" is used as a generic term for development actions, in this case actions that enhance rural development.

Context: Every development project exists within a specific context, i.e. its bio-physical, socio-cultural, economic, institutional and political milieu or environment. The context comprises several levels, from the micro-level (local level) to the macro-level (policy, economy, etc.), and includes different stakeholders, such as local land users, women's groups, extension workers, trainers, teachers, health specialists, economists, policy-makers, etc.

Change: Changes in the context are the result of the influence of many internal and external factors (see Figure 2). Internal factors include power constellations and social mechanisms of learning, adaptation, rejection, etc.; external factors, such as the national and international economy and different policies also initiate changes in the context. A development project itself can be considered another external factor, that is specifically designed to trigger changes in specific sectors (e.g. agriculture, education, infrastructure, etc.).

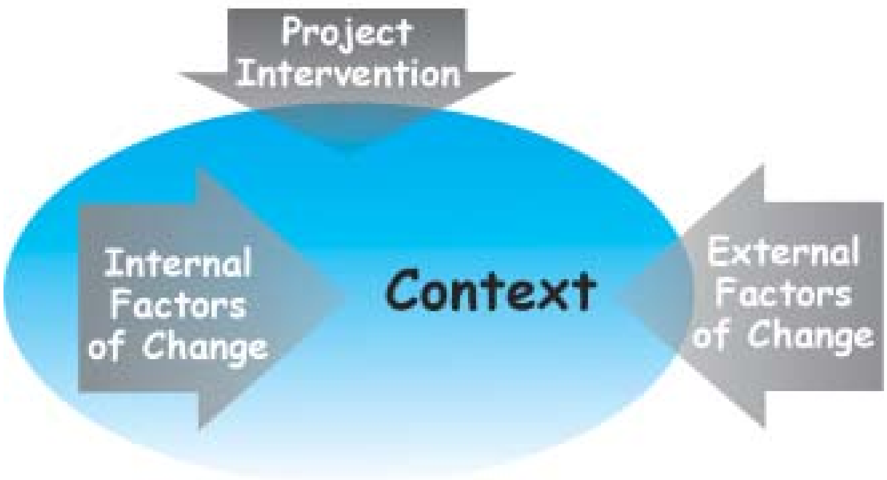


Figure 2: Factors contributing to changes in the project context

Project cycle management: Project cycle management (PCM) indicates that the lifetime of a development project is basically a sequence of phases, each containing planning, implementation, monitoring and evaluation. Within PCM, IMA is the tool that helps project staff to keep in touch with the project context, continuously learn lessons from the implementation of each cycle, and adapt the project accordingly.

Goal (overall goal): In a wider sense, the overall goal is the ultimate change desired in a context, e.g. poverty alleviation, sustainable resource management, empowerment of the local population, etc. The goal cannot be reached by a project alone, but a project should make a relevant contribution to the goal.

Project purpose (objective): The project purpose is a more specific objective. It describes the concrete contribution of a project to its overall goal. It reflects the achievement of an improved state of the context in the future. The purpose is fulfilled when all project results are attained and all assumptions are confirmed. Fulfilling the purpose is not the sole responsibility of the project alone; it can only be achieved together with project stakeholders.

Expected result and output: The term "expected result" refers to project planning. It corresponds with the term "output", which describes a short- to mid-term result that is actually achieved as part of the responsibility of a project. Achieving outputs relates to the **efficiency** (functioning, performance) of a project.

Impact: "Impact" comprises the mid- to long-term implications a project has for the context and its population, be they **intended** (planned) or **unintended**. Even the presence of development workers or the mere existence of a project can have implications. Expectations are created, stakeholders may change their behaviour, etc., without a project having any input or conducting any activity. But as soon as a project is planned, the purpose and goal reflect intended impacts. Therefore, "impact" is often related to the **effectiveness** of a project, i.e. its success in contributing to its goal. In the present document, "impact" is used as a generic term for an entire impact chain (cf. below); it is not restricted to the level of "goal". Certainly, a project will always intend **positive** impacts, but there may also be **negative** impacts. Besides, stakeholders may not consider an impact totally positive or negative.

Impact chain: The term "impact" covers a wide range of implications, which can be seen as an impact chain of overlapping links (see Figure 3). The **utilisation** of project outputs already implies the idea of a broad impact (e.g. adaptation of a new crop production system with greater area coverage). As a consequence of utilisation, initial **effects** (outcomes, direct impacts) can be observed (e.g. crop yield increases, soil erosion decreases, etc.). These effects may imply both **benefits** and **drawbacks** (e.g. increased crop yield must be marketable to increase household income). This can stimulate a learning process, people's attitudes and perceptions can change, and further (indirect) **impacts** may be triggered (e.g. local people gain self-confidence and further explore their potential). In the end, at least some of the impacts should relate to the overall goals of development cooperation (e.g. empowerment of local people, poverty alleviation, etc.).

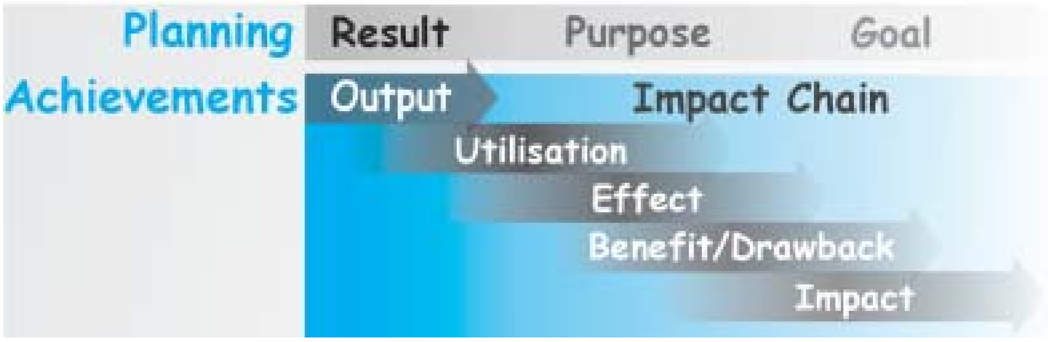


Figure 3: Impact chain

Impact monitoring & assessment: "Impact monitoring" can refer to different instruments, such as environmental / social impact assessment (prediction) and impact studies (retrospective impact evaluation). In the present document, by contrast, "impact monitoring and assessment" (IMA) is considered part of a project's process of self-evaluation, an instrument of reflection and learning to better adapt project activities to a changing context. IMA comprises two aspects: **observation** (monitoring) and **interpretation** (assessment) of the changing context and the project's implications. Only a combination of both aspects provides a useful instrument for **quality control** in project cycle management. Monitoring should be done "objectively" to establish an information base. Assessment involves the "subjective" judgement of different stakeholders in accordance with their individual perceptions.

Attribution gap: During planning, a project and its stakeholders define an overall goal, project purpose, expected results, activities and inputs (see Figure 4). Achieving outputs is the first responsibility of a project; therefore, outputs can be related to the expected results relatively clearly. But beyond that, the impact chain (utilisation, effect, benefit / drawback, impact) needs time to develop, time during which the number of actors and their interactions increases. This makes it more and more difficult to attribute a change to a single factor or project. This is called the "attribution gap". Even with costly investigations, a project can only narrow, but not close this gap. Realistically, a project can only establish and show **plausible relations** between its actions and changes in the context.

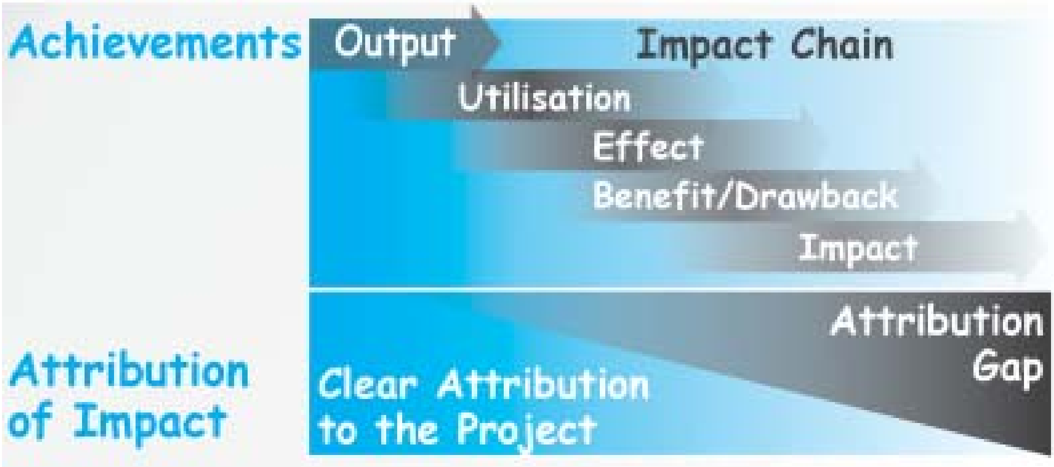


Figure 4: Attribution gap

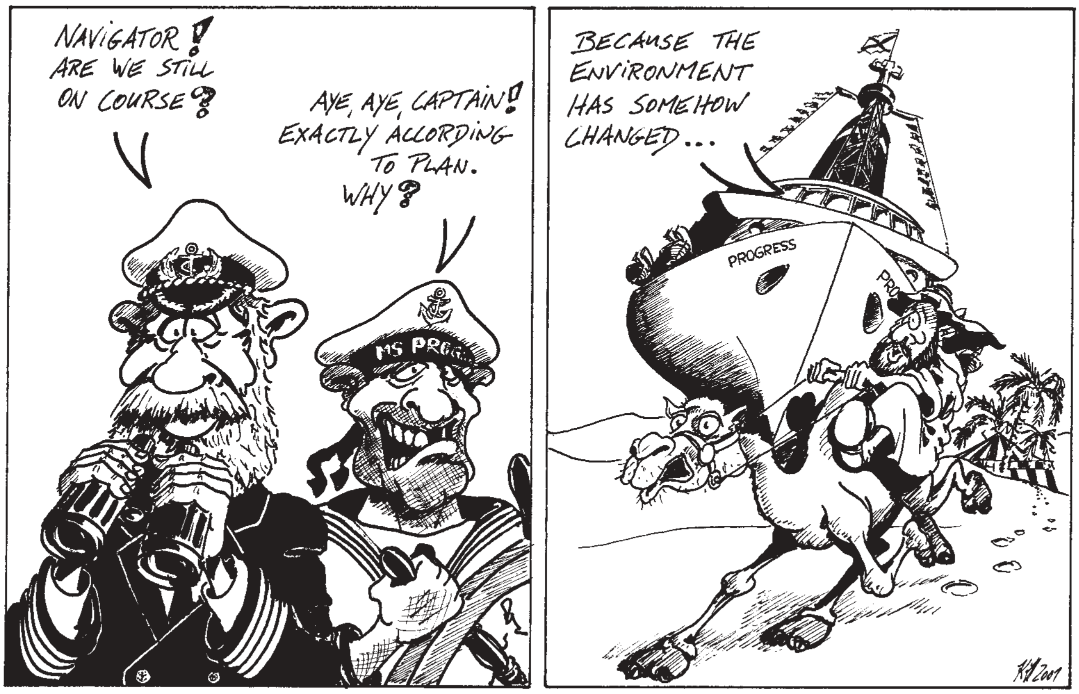
Indicator: A project context is highly complex, and in order to make planning, monitoring and evaluation manageable, this complexity needs to be simplified. For this purpose, the components of a context and their interactions are symbolised by simple and measurable quantities known as indicators. Principally, project cycle management applies indicators in two ways. **Output (performance) indicators** help to monitor and evaluate a project's efficiency. They are used to determine whether planned activities or expected results were achieved within a given time and budget. **Impact indicators** are used to monitor and assess a project's effectiveness. They describe whether the outputs of a project had further implications, intended or unintended, positive or negative, on the context and its population.

Whether an indicator is considered a performance or an impact indicator depends on the formulation of the project goal, purpose and results. Rather than a clear-cut distinction there is a gradual transition between these two types. For example: an agricultural project that helps develop improved crop production systems may use the measure "60 % of the farmers have increased their maize production by 20 % within 3 years" as a performance indicator to show its efficiency. But the same indicator also addresses some links in the impact chain, such as "utilisation" of the outputs (broad impact, area coverage), and "effect" (production increase). A single indicator can describe neither the performance nor the impact of a project sufficiently. The challenge, therefore, is to select a **set of impact indicators** that covers all important aspects of the context and that is manageable given the means and capacity of a project.

Sustainable land management: Sustainable land management (SLM) refers to the use of renewable land resources (soils, water, plants and animals) for the production of goods – to meet changing human needs – while protecting the long-term productive potential of these resources at the same time. The central question of SLM is not how to preserve nature in a pristine state but how to co-exist with nature in order to maintain the productive, physiological, cultural and ecological functions of natural resources for the benefit of society in a sustainable manner. SLM tries to harmonise the complementary but often conflicting goals of production and environmental protection.

In contrast to the situation just a few decades ago, there are currently only a few countries in the world that still have spare land resources to meet the needs of their expanding populations. In most countries, production must be increased and intensified on land that is already under cultivation and also subject to resource degradation. Furthermore, in most developing countries, the majority of people are still engaged in agriculture, livestock production, forestry and fishery, and their livelihoods and options for economic development are directly linked to the quality of their land and its resources. For such rural societies SLM is the basis for sustainable development.

Global definitions will not help to determine whether land management in a real-life context – e.g. that of a development project – is moving towards or away from sustainability. Instead, stakeholders need to define what they mean by "sustainable" for the context in question. In the present document, SLM is approached through the **social / institutional, economic and ecological dimensions of sustainability**. For a rural development project, this means that land management becomes more sustainable if progress can be made in all dimension at the same time. For example, the goods and services provided must be compatible with local social structures (social and institutional dimension, adaptability), the livelihoods of stakeholders must be ensured (economic dimension, viability), and resource degradation processes must be minimised (ecological dimension, protection). Should there be movement towards unsustainability in only one dimension, development cannot be considered sustainable.



Approach to Impact Monitoring & Assessment

To what extent has a development project achieved its purpose and reached its goal? This question was the starting point for the preparation of the present document. While trying to conduct all planned activities and achieve expected results, it is easy to lose sight of the goal. Indeed, in the view of many donor agencies, projects focus too strongly on functioning and performance (efficiency) and not enough on its context (effectiveness). It is important not only to ask, "Are we doing things right?" but also, "Are we doing the right things?"

Development agencies justify their actions in terms of impact on the context, and projects justify themselves through good performance. Theoretically, both aspects – performance and impact – are included in project cycle management. On the one hand, the context is represented in the formulation of the project purpose and an overall goal, such as "empowerment", "poverty alleviation", "sustainable land management", etc. On the other hand, performance is expressed in the expected results. In practical terms, however, the impact is often not sufficiently addressed. From a donor's perspective, therefore, a shift of paradigm is necessary – from performance towards impact, and from efficiency towards effectiveness. From a project's perspective, the question is how to make this shift.

Project cycle management (PCM) already offers basic instruments but requires supplementary tools that give more emphasis to context and impact. Figure 5 shows the complementary PCM instruments of a project: planning actions on the one hand, and

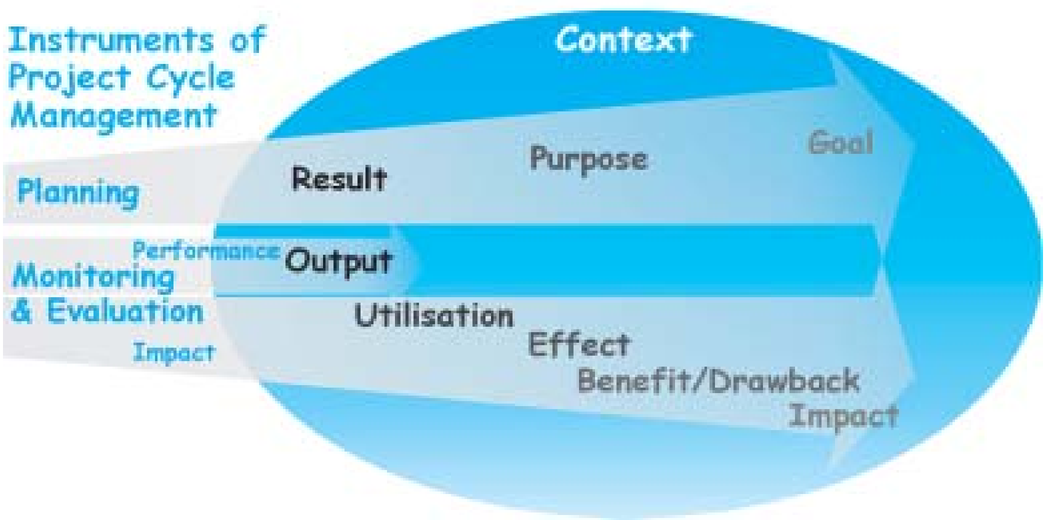


Figure 5: Positioning of impact monitoring & assessment

monitoring and evaluation (M&E) of achievements on the other hand. In formulating a goal and project purpose, planning takes a wider view of the project's context. Concrete results and activities are then defined to fulfil the purpose and contribute to the goal. But in contrast to planning, M&E focuses mostly on the outputs – i.e. the performance – of a project (result level). Therefore, it should be supplemented by impact monitoring and assessment (IMA), in order to restore the wider view of the context present during planning.

Message

IMA is used by development projects to better adapt their activities to a changing context.

Creating positive impacts implies that the main elements of the context and their interplay are sufficiently understood. In the best case, a project starts with an orientation phase that provides a constructive framework for stakeholders and project staff to get a clear picture of the context, its problems and opportunities. Without the orientation phase, a participatory context analysis would be the minimum requirement for relevant project planning. Assuming that the planning is well done, the weak point in PCM is still M&E. How can a project keep a permanent eye on the context when it is already overburdened justifying itself through its performance? Would it be worthwhile to allocate 5 % of the budget to IMA? These are questions that should be discussed by the donor agencies themselves. But in the meantime, projects need a practical tool that helps them to keep in close touch with their context.

Until the outputs of a project are utilised and impacts are achieved, a certain amount of time passes during which the context changes. It will change in any case, with or without the project. On the one hand, there are internal (context-specific) mechanisms of change, e.g. social processes such as changing power relations, learning, integration, adaptation, rejection, etc. On the other hand, there are external factors of change, such as the national and international economy, different policies, etc. There must be complete awareness that the project is only one factor among many, and finally, that a change in the context is the result of the influence of all factors. This makes it very difficult to determine an impact precisely, i.e. to attribute a change to a single project. But despite this "attribution gap", every project is in a position to monitor and assess its changing context, to search for and show plausible relations between its actions and these changes, and to learn lessons from changes in order to modify and adapt its activities in the future. The present document has been designed to help projects in setting up their own tailor-made impact monitoring system.

Message

There is no universal procedure – impact monitoring and assessment must be adapted to project-specific conditions and the respective local context.

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Six Steps in Impact Monitoring & Assessment

How to Initiate IMA

- If you are about to **design** and **plan** a project, or if your project is in the orientation phase, begin with **Step 1**: Involvement of stakeholders and information management.
- If you are **already running** a project, begin with **Step 3**: Formulation of impact hypotheses.

N.B. You can use the project planning matrix to start with IMA, but keep in mind that IMA needs to shift the focus from performance to the context of a project. An existing planning matrix, however, is often rather strictly related to project performance. To ensure that the context is understood and well represented, it is strongly recommended that the problem analysis be re-examined and a wide range of impact hypotheses be formulated.

Step 1: Involvement of Stakeholders and Information Management

Involvement of Stakeholders

Participation is a matter of compromising the various perceptions, attitudes, opinions and objectives of different stakeholders through negotiations in a real-life local context. Stakeholder diversity means managing conflicting interests but also involves a huge potential of choices to solve prevailing problems. Therefore, one of the first tasks in project planning is a stakeholder analysis that can simultaneously be used for Impact Monitoring and Assessment (IMA).

A project may trigger changes in its context through its outputs. But it is the stakeholders who actually make the changes through social processes such as learning, adaptation, rejection, etc. Therefore it is necessary that stakeholders are actively involved in the IMA procedure from the beginning. Stakeholders bring their deep knowledge and perception of the context into the analysis of problems and alternatives (Step 2). They provide a large number of positive and negative impact hypotheses which may otherwise be overlooked by the project team (Step 3), and they provide local indicators (Step 4). They become actively involved in observation and data collection (Step 5), and changes in the context cannot be assessed without them (Step 6). At the end of a project phase, stakeholders provide new opportunities for improving the project's work.

Message

The active participation of stakeholders throughout the IMA procedure provides new opportunities for improving a project's work.

Information Management

Participatory IMA can only be successful if it is transparent and if the information collected is relevant to different stakeholder groups. For each group, information must be presented in an appropriate and understandable form or media. Similarly, the means of communication and dissemination of information are determined by the needs of each group. Finally, information must be stored accessibly for everyone who is interested in it.

The following guiding questions to be answered in a participatory exercise will help to structure information management:

- Which stakeholders will participate in IMA (local land users, women's associations, project staff, university students, etc.)?
- What kind of information can they provide (technical, cultural background, etc.)?
- What kind of information do they need / is relevant to them (technical, economic, etc.)?
- Which form of presentation do they prefer (reports, discussions, etc.)?
- What is the best way to communicate and disseminate the information (leaflets, radio programmes, etc.)?
- How should the information be stored so that it is permanently accessible (databases, files, etc.)?

Example

Stakeholders and information management

Stakeholders	Provision of information	Information needs	Preferred form / media	Dissemination	Storage
Male farmers	Indigenous knowledge about land resources and management, …	Technical information to improve farm management, …	Oral communication, practical demonstrations, …	Informal discussion platforms, leaflets, filing cards, …	Individually and by elected representatives, …
Female farmers	Education of children, food storage, water and fuelwood management, …	Economic and management information to improve household management, …	Oral communication, short handouts, …	Women's associations, …	Individually and by elected representatives, …
District authorities	Demographic statistics, maps, development reports, …	Administrative information for planning purposes, conflict management, …	Reports, leaflets, discussions, …	Workshops, planning sessions, Email, …	Files, printed media, digital database, at municipalities and district offices, …
International agencies	Services that can be made available, …	Strategic information for formulating development policies, selecting projects, …	Short reports, graphic summaries, …	Reports, Email, …	Meta database, Geographical Information Systems, …
…	…	…	…	…	…

Preparation of IMA Documentation

The matrix concerned with "stakeholders and information management" is the first document in the IMA procedure. To make the procedure transparent and replicable, the entire IMA should be thoroughly documented as well, which should be prepared already at this stage. IMA documentation will contain information gathered during each step, for example:

- Who used what arguments during stakeholders' discussions and which decisions were taken? (Steps 1 and 2)
- Which positive and negative impact hypotheses were formulated? (Step 3)

- Which impact indicators were discussed, which ones were chosen, which indicators were replaced or modified later on during the IMA process and why? (Step 4)
- Which monitoring methods were chosen, how were they adapted / modified during the monitoring process? (Step 5)
- Who was interviewed, what was asked and what was observed, when and where? (Step 5)
- How was the information collected, interpreted and judged, and who used which arguments? (Step 6)
- …

Cross-Reference

Additional references and an empty matrix "stakeholders & information management" for photocopying can be found in Volume 2, Step 1.

Bookshelf

Germann, D., Gohl, E., Schwarz, B. **1996**. Participatory impact monitoring. Booklets 1–4. Gate/GTZ.

Guijt, I. **1998**. Participatory monitoring and impact assessment of sustainable agriculture initiatives. SARL Discussion Paper No. 1. IIED: 112 p.; London.

Step 2: Review of Problem Analysis

The Project Context – a Living System

What are the most important aspects or elements in a project context? How are they interlinked? What role do they play in the context? Is the context moving towards or away from sustainability? The project context, i.e. its biophysical, socio-cultural, economic, institutional and political environment should be well understood before a development operation is initiated. An orientation phase leaves ample time for that. But most projects have to rely on a rather short problem analysis that is – hopefully – carried out with stakeholders who know the context well enough. A common method is the problem tree, which requires the selection of a core problem (the stem), defining causes (the roots) and consequences (the branches). But focusing on only one problem with linear and causal relationships is critical.

The elements of a context – i.e. people, institutions, resources, etc. – are highly inter-connected, and not all elements and interrelations are known, even to insiders. Stakeholders with their different agendas represent an additional degree of uncertainty and unpredictability. A problem within such a system (e.g. soil degradation) usually has complex causes and consequences, and also a "solution" to it (e.g. soil conservation) will create multiple, positive and negative side-effects. Consequently, a problem cannot be solved with a "repair-shop mentality", i.e. tackling only the most obvious cause. Because the reactions of a system cannot be precisely predicted, a project in a rural context cannot be expected to provide simple solutions. It can only provide various "impulses", such as enhancing co-operation and training stakeholders, introducing a new technology, etc. in order to stimulate partners to move the context in a certain direction. And because it is not certain whether these impulses will finally lead to the desired changes, there is a need to observe and assess the changes constantly to decide which impulses to give next.

Message

A project context is a living system; it implies a high degree of uncertainty and unpredictability.

Analysis of the Context

Analysing a project context is a form of systems or network analysis. It is conducted with stakeholders to involve a variety of different backgrounds, knowledge and experience. It may be difficult to agree on a common picture of a context in the short run. But the debate about different perceptions of the same context helps to avoid predetermined thinking at an early stage.

Analysis of the context can start with development of a flow chart (see Figure 6). Important elements (issues, problems, opportunities) can be the starting point. At the beginning, the analysis should be broad in order not to miss any important aspect. Besides elements there are interrelations of different types, e.g. flows of information, energy, nutrients, dependencies, etc. Written on cards, the elements and their interrelations can be rearranged and replaced until an agreeable result has been achieved. A flow diagram will be used to determine important and less important elements, to categorise stronger or weaker interrelations, and finally, to identify possible starting points for project activities. This discussion, interpretation and conclusions of the network automatically involve impact hypotheses (cf. Step 3) at a broader context level: Where could the project intervene? What will happen if it intervenes? Disagreements during discussion only indicate the need for further clarification. They can be considered as a wealth of alternative development options.

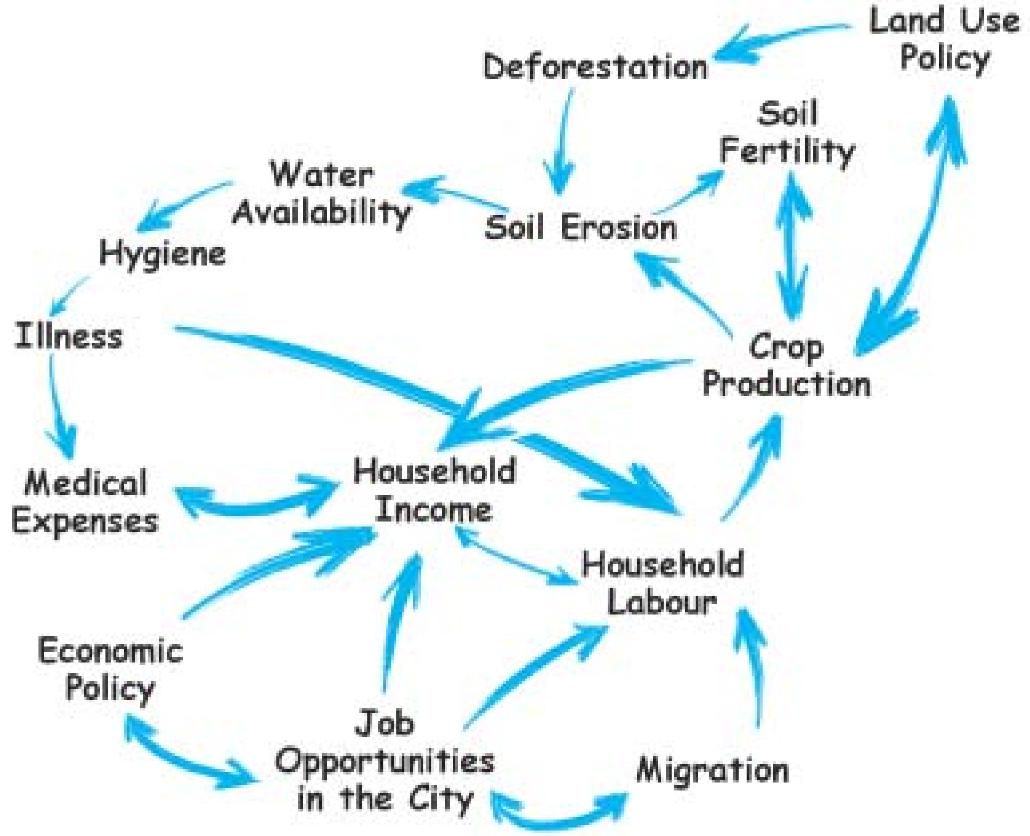

Figure 6: Network analysis

While a problem tree is focused on one core problem and mostly linear relations, the network or systems analysis is broader and allows complex interrelations. This difference will be essential for all following steps in IMA, from the formulation of impact hypotheses to impact assessment. All these steps require a broader view of the context rather than a narrow focus on a core problem.

Cross-Reference

A detailed example and description of a "Participatory Systems Analysis" and additional references can be found in Volume 2, Step 2.

Bookshelf

Bellows, B. **1996**. Indicators of sustainability. Workbook for the SANREM CRSP. Washington State University / University of Wisconsin.

Kläy, A., Huguenin, A., Hurni, H., Perich, I., Schläfli, K. **1994**. Environmental assessment in development co-operation. Principles of ecological planning. Development and environment reports 4: 46 p.; Bern.

THE MULTI-STAKEHOLDER APPROACH

Step 3: Formulation of Impact Hypotheses

Starting with the Project Planning Matrix

Is the project context moving towards or away from sustainability? What impulses can a project give towards more sustainable development? What positive and negative impacts might this imply? Many projects that start with IMA have already completed their planning. Goal, project purpose, results, activities, indicators, etc. are formulated and compiled, for example in a project planning matrix. This matrix can be used to initiate IMA for the first time. The precondition, however, is that the wider project context be taken into consideration. Therefore, the formulation of impact hypotheses begins with the goal and project purpose. Later, it may be continued with expected results.

Projects that have not yet established a planning matrix formulate impact hypotheses on the basis of a sound context analysis (Step 2). A participatory network or systems analysis will automatically lead to questions about where the project could intervene, which elements and interrelations will be involved, what would happen after an intervention, etc.

Clarifying the Project Goal, Purpose and Expected Results

The formulation of the project goal, purpose and expected results should reflect a situation to be achieved. In this case, the focus is more likely on the context, and it is much easier to establish impact hypotheses comprising utilisation, effect, benefit / drawback and impact. If the formulation reflects an activity, the focus is likely to remain on performance. It is therefore helpful to check and clarify these formulations, to determine whether they sound like an activity, are formulated vaguely, or contain catchwords which need further explanation.

Example

Formulation of a project purpose

*The project purpose, for example, should describe a "situation to be achieved". Formulations such as "the purpose is **to enhance** sustainable farming practices" indicate an activity. An "effect" or "impact" is better addressed by "agricultural production has increased, degradation of natural resources has decreased", etc. The achievement of a vaguely formulated purpose such as "farmers **are ready to** adopt new farming practices" will be more difficult to prove than "farmers have adapted new farming practices to their conditions". And finally, catchwords such as "the **living conditions** of farmers are improved" or "land management is **more sustainable**" require clarification of what is meant: "living conditions" means increased income, better housing, clothing, etc. and "more sustainable" means increased production, reduced degradation, social adaptability, etc.*

Formulating Positive and Negative Impact Hypotheses

Anyone planning a project intends to create positive impacts. But experience shows that negative impacts are often a by-product of development actions. Because not all elements of a project context can be considered in the problem analysis (Step 2) and not all possible changes can be predicted, it is natural that not only intended, but also unintended changes – both positive and negative – will occur. Not all, but a considerable number of possible impacts can be foreseen by participatory exercises that formulate impact hypotheses. It is helpful if stakeholders formulate their hypotheses as an impact chain, which reveals their views on the mechanisms of change. This would also allow critical inquiry into doubtful statements. Even if it is not possible to predict everything, the project and its stakeholders are at least better prepared. And they are in a better position to manage negative issues when they arise. The mere consideration of negative impacts – besides the positive ones – during the planning stage is already one big step forward. It is also worthwhile to visualise impact chains – utilisation, effect, benefit / drawback and impact – implicit in stakeholders' impact hypotheses (cf. example below).

Message

Development activities may have more than the intended positive impact.

Example

Formulation of positive and negative impact hypotheses by different stakeholders (in brackets: links of the impact chain, cf. Clarification of Terms)

Project goal: *Poverty of the rural population has been reduced and management of natural resources has become ecologically sound, economically viable and socially acceptable.*
Project purpose: *Crop production of small farmers has increased with environmentally friendly farming practices.*
Expected results: *(e.g.) New production systems have been developed on-farm; farmers have been trained in concepts and practices of production and resource protection; etc.*

Stakeholder group	Positive (intended) impacts	Negative or no impacts
Male farmers	Due to the new production systems, crop production is higher (effect), we are able to sell on the market and household income has increased (benefit).	Because we lack experience with the new practices, pests and diseases appear (effect); this might reduce the yield (drawback).
Female farmers	Since some of the new practices address women's home gardens, women's own capital increases (benefit) and women gain greater financial independence (impact).	The new practices increase women's workload (effect), and there is less time to spend with children and relatives (drawback). Social relationships may suffer as a result (impact).
Landless people	New production systems may increase the demand for our labour (effect). We get better jobs in the village and have a secure income (benefit) that we can invest in sending our children to school so they get a better education (impact).	New practices change the land use (effect) and we have problems finding grazing land for our animals (drawback).
Extension workers	Innovations increase the demand for agricultural extension (effect), we get better training opportunities and increased qualifications (benefit), and finally, we get better paid office jobs (impact).	New production practices increase our workload (effect).
District officials	Increased production (effect) stimulates demand and supply (benefit) and creates a fertile ground for better economic development in the entire district (impact).	Increased economic well-being (benefit) in the district will lead to a gradual withdrawal of development agencies and their inputs (impact).
Project staff	Through positive experience with higher production and better protection (effect, benefit), farmers will detect their potential to further improve the production system (impact). This will finally improve soil fertility and guarantee stable agricultural production at a higher level (impact).	Some resource protection technologies reduce the cropping area as well as production (effect) and will be rejected (drawback).
…	…	…

Cross-Reference

Detailed examples of positive and negative impact hypotheses related to sustainable land management can be found in Volume 2, Step 3.

Bookshelf

Kläy, A., Huguenin, A., Hurni, H., Perich, I., Schläfli, K. **1994**. Environmental assessment in development co-operation. Principles of ecological planning. Development and environment reports 4: 46 p.; Bern.

Swiss Development Cooperation & Centre for Development and Environment **1994**. Impact hypotheses, development and its environmental impacts: 101 p.; Bern.

Swiss Agency for Development and Cooperation **1997**. Monitoring – keeping in touch with reality. 20 + 54 p.; Bern.

Step 4: Selection of Impact Indicators

What indicates changes in the project context? What reveals which impact hypotheses materialise? What set of indicators will tell if changes ultimately contribute to achieving the project purpose and goal? The planning matrix already contains some indicators. Usually, most of them are output indicators designed to evaluate the project performance. What is often lacking are impact indicators that represent the context. They will be developed from the impact hypotheses. The impact chain (utilisation, effect, benefit / drawback, impact) can be of great help during the selection process. An existing indicator may already address one of these aspects and can thus serve as an impact indicator. Beyond that, additional impact indicators need to be found.

Example

Possible impact chain resulting from new production and conservation technologies (output), and corresponding impact indicators

Links of the impact chain	*Impact chain (positive & negative implications)*	*Possible impact indicators*
Utilisation of outputs	*Most (only a few) farmers in the project area apply new production and conservation technologies (applicability) and adapt them to their specific situations (adaptability)*	• *% of farmers adapting new technologies without incentives*
Effects	*Crop production increases (decreases), pests and diseases are minimised (increase), soil degradation decreases (increases)*	• *Crop yield* • *Occurrence of pests & diseases* • *Soil erosion*
Benefits / Drawbacks	*Improved agricultural production is (not) marketable, household income increases (decreases), and women's economic position is strengthened (weakened)*	• *Household income* • *Women's labour income*
Impacts	*Men and women decide jointly (men decide) how to re-invest household income; farmers experiment more (less) than before; soil fertility improves (decreases); more (fewer) boys and girls attend school*	• *Household decision-making* • *% of farmers experimenting with cropping practices* • *Soil fertility status* • *Boys and girls with school leaving certificate*

The Baseline Dilemma

Indicators not only represent components of a project context; they are also a means of communication between stakeholders. Thus they must be selected jointly. On the one hand, it is recommendable to have a set of indicators fixed as early as possible, because it helps to establish a baseline (reference), particularly for long-term observations. On the other hand, there are good reasons to take time with the selection. For example, the project context and the stakeholders cannot be well known and understood in the beginning. During the lifetime of a project the context and the views of the stakeholders change, and so may the indicators. Some of the initially selected indicators may become impractical to observe and need to be replaced. Furthermore, unexpected impacts may require additional indicators at a later stage. But sound indicator selection only at the end of the project is too late. As a compromise, several months should be dedicated to a participatory search for a set of impact indicators, to adapting the initial choice, and to incorporating "emerging" indicators. This is important because it documents the learning process of a project and its stakeholders. Single indicators can always be added, but a basic number of indicators should be found, say after six to twelve months, to ensure long-term monitoring.

Message
Sound selection and formulation of impact indicators cannot be achieved in one short planning session! It is a process of optimisation that may take several months.

Principles of Indicator Selection

The aim of IMA is to achieve a reasonable quality of information in order to find reliable connections between the project and changes in the context. A representative selection of indicators and systematic monitoring build the basis for this. But not all indicators that are identified can be monitored. The project's means, time and resources on the one hand, and the stakeholders' interests in IMA on the other hand, will lead to a final selection of impact indicators.

It should be kept in mind that these indicators are the basis for but not the only source of valuable information. Systematic monitoring can always be combined with gathering and documenting information from statistics, newspapers, discussions with partners, consultants, and informants, one's own observations and the like. There is no need to wait three years for the first results of the impact monitoring. For example, market prices of cereals and their fluctuations could also be determined by project staff while shopping for their families. Negative developments in the agricultural sector will come out during talks in a village or with colleagues. Such information can always be documented and serve as a background for an interpretation of changes at a later stage.

Message
You cannot monitor everything; make a relevant and realistic choice of impact indicators.

The following principles and examples can help to make a definite selection of impact indicators:

Principle	*Guiding question*
Relevance	*Is the indicator essential, i.e. does it really provide the information required for making relevant decisions?*
Reliability	*Is there a need for quantitative or qualitative indicators for a decision?*
User-orientation & transparency	*Is the indicator understandable and meaningful for the relevant stake-holders (land users, policy-makers, etc.)? Are there local indicators that can be used?*
Feasibility	*Do the project or the stakeholders have the means, skills and time to monitor the indicator?*
Gender-orientation	*Does the indicator bring to light gender-specific knowledge and issues?*
Hierarchy / Area coverage	*Do all indicators reveal changes at the same spatial / decision-making level (field, household, community, catchment, district, etc.)?*
Sensitivity	*Is the indicator sensitive to short-, mid-, or long-term changes?*
Sustainability-orientation	*Do the selected indicators represent all dimensions of sustainability (social / institutional, economic and ecological)?*

Example

Local indicators

Not all relevant stakeholders such as farmers, landless people, etc. may have been able to participate during indicator selection. In this case some time should also be devoted to getting their opinion, e.g. in the form of local indicators often hidden to outsiders. If at least some of these indicators are found and incorporated into the IMA procedure, communication among stakeholders will be considerably facilitated.

Generic indicators	*Corresponding local indicators*
Soil erosion in t/ha	***Increased seeding rate;*** *seeds are washed away as a consequence of soil erosion, and need to be re-sown*
Organic matter content, cation exchange capacity, nutrient content (soil fertility indicators)	***Indicator plants;*** *these point to locations where soil fertility is high, where the nutrient status of the soil has recovered during a fallow period; where the ground water table is high or waterlogging occurs frequently, etc.*
Human nutrition	***Fat / slim cats and dogs;*** *in villages where the human population does not have enough to eat domestic animals such as dogs and cats will be slim*
Increased household income	***Men have two or more wives;*** *in some Muslim areas this is a sign of economic well-being*

Example

Indicator sensitivity

Since sustainability implies a long-term perspective, each indicator should be checked to determine whether it is sensitive to short-, mid- or long-term changes (see Figure 7). Indicators of short-term sensitivity (1–3 years) will be highly relevant for IMA as part of the project's self-evaluation process. They are helpful for immediate correction of project activities that are taking a negative direction and can also be monitored over a long period. Indicators that are not sensitive to short- and mid-term changes are more important for monitoring far-reaching or late impacts. They only help the project to adjust its activities after 5 years or more.

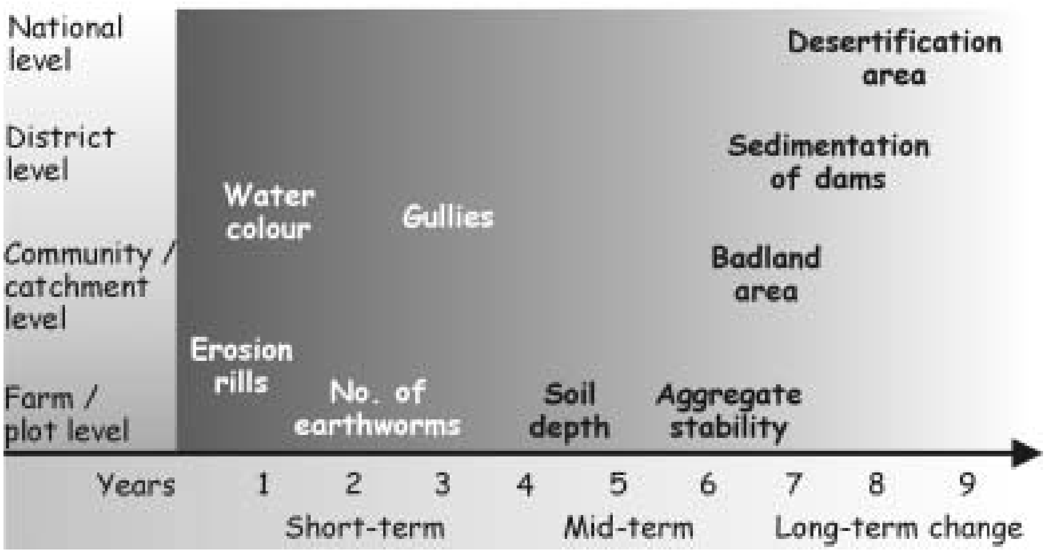

Figure 7: *Sensitivity of indicators (example: soil degradation indicators)*

Example

Selecting a set of impact indicators (supplementary to project planning matrix)

Project goal: *Poverty of the rural population has been reduced and management of natural resources has become ecologically sound, economically viable and socially acceptable.*
Project purpose: *Crop production of small farmers has increased with environmentally friendly farming practices.*
Expected results: *(e.g.) New production systems have been developed on-farm; farmers have been trained in concepts and practices of production and resource protection; etc.*

Impact hypotheses	*Impact indicators**	*Sustainability dimensions*			*Sensitivity*			*Suitable local indicators*	*Means of verification*
		so	*en*	*el*	*s*	*m*	*l*		
(cf. Step 3)	*% of farmers adapting new technologies without incentives*	x	x		y				*Interviews with heads of farmers' associations and farmers during every field trip*
	Crop yield (maize)		x		y				*Measurement at representative locations, discussions with farmers on their fields*
	Occurrence of pests & diseases		x	x	y				*Observation during field trips, interviews with farmers during transect walks*
	Soil erosion			x	y			*Erosion rills and gullies*	*Rills and gullies can be easily observed and reported by farmers during rainy season*
	Household income		x		y			*Tin roof, radio, motorcycle*	*Observations and interviews with women and their husbands, twice a year*
	Women's labour income	x	x		y				*Interviews with women, cross-checked with observations*
	Household decision-making	x				y			*Interviews with all household members, cross-checked with observations*
	% of farmers experimenting with cropping practices	x				y			*Interviews with heads of farmers' associations and farmers during every field trip*
	Soil fertility status			x			y	*Indicator plants*	*Measurement at representative locations every 5 years (soil specialist), annual transect walks with farmers*
	Boys and girls with school leaving certificate	x				y			*School files, discussion with teachers*

** formulation of indicators is preliminary; it needs to be more specific when the selection is finalised*
Sustainability dimensions: *so = social / institutional, en = economic, el = ecological*
Sensitivity: *s = short-term, m = mid-term, l = long-term*

Preparing for Impact Assessment

Later, when assessing the results of monitoring in Step 6, changes in the indicators will be discussed and evaluated: are they positive or negative, satisfactory or not, how did changes happen, etc. This is a process of individual judgement that will reveal many different opinions. Change in the context will then be visualised, for example, in a "spider" or "amoeba" diagram (see Figure 8). For this purpose a rating for each indicator is helpful (e.g. from 5 "change is considered very good" to 1 "change is considered very bad"). The benchmarks (see example below) for each indicator should already be prepared at this stage, during a debate among all stakeholders. The questions "Where are we?" and "Where do we want to be?" need to be asked in relation to each selected indicator. The best possible realistic achievement for each indicator is 5 (very good), and the worst possible achievement is 1 (very bad).

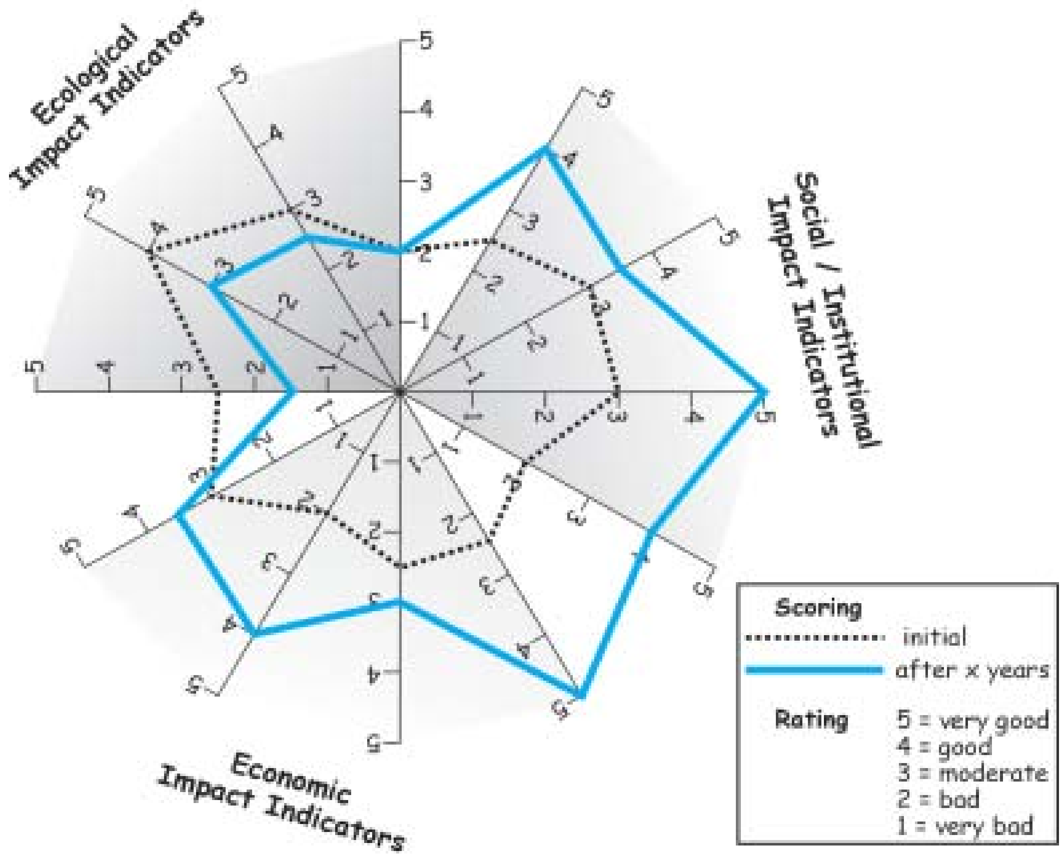

Figure 8: Visualising changes in the project context

Preparing the benchmarks (reference values) for each impact indicator in view of impact assessment

Impact indicators	*Rating**				
	5 Very good	*4 Good*	*3 Moderate*	*2 Bad*	*1 Very bad*
Short-term indicators					
Crop yield (maize)	*> 3 t/ha*	*> 2–3 t/ha*	*> 1.5–2 t/ha*	*1–1.5 t/ha*	*< 1 t/ha*
Household income	*> 20 % increase*	*> 10–20 % increase*	*1–10 % increase*	*stagnating*	*decreasing*
Women's labour income	*> 20 % increase*	*> 10–20 % increase*	*1–10 % increase*	*stagnating*	*decreasing*
% of farmers adapting new technologies without incentives	*> 60 %*	*> 40–60 %*	*> 20–40 %*	*10–20 %*	*< 10 %*
Occurrence of pests & diseases	*none*	*rarely, little evidence*	*sometimes, but can be controlled*	*control is often diffi-cult*	*high, every year*
Soil erosion (rills and gullies)	*no signs of erosion*	*smoothened soil surface, but no rills*	*sometimes, few rills*	*most years, many rills*	*every year, rills and gullies*
Mid- to long-term indicators					
Household decision-making	*jointly in most households*		*jointly in a few households*		*by men in most households*
% of farmers experi-menting with cropping practices	*regular modifications by > 70 %*	*regular modi-fications by > 50–70 %*	*regular modi-fications by > 30–50 %*	*irregular modifications by 5–30 %*	*< 5 %*
Boys and girls with school leaving certificate	*> 80*	*> 60–80*	*> 40–60*	*30–40*	*< 30*
*Soil fertility status***	*deep, dark topsoil, high earthworm acti-vity, high root density*		*moderately deep and dark topsoil, earthworm activity, root density*		*light soil colour, yellow & red plant leaves, no earthworms, low root density*

* *N.B.: the rating is highly site-specific and requires intensive discussion with stakeholders*
** *Rating of soil fertility status requires consultation with soil specialists*

In preparing for impact assessment, some more important details need to be considered:

- Ideally, all stakeholders agree on a common rating for all impact indicators. But it can also be interesting to carry out impact assessment separately for each stakeholder group, and each group's findings will be communicated to the others.
- It should be determined at what level the assessment will be made (household, community, etc.). For example, if there is a great heterogeneity of household categories (such as poor and wealthy households), changes in their context should be assessed

individually, or at least separately for each household category. If all households are judged together at the community level, the result will be an average. This average, however, may not reflect important changes in individual households. It would thus be meaningless!

- After a set of impact indicators has been selected, an initial observation (monitoring) that takes all of them into account produces the baseline. In the first years to come, monitoring and assessment will only include those indicators that are sensitive to short-term changes. Indicators sensitive to mid- or long-term changes will gradually be added after several years.

Cross-Reference

Detailed examples of impact indicators related to sustainable land management and additional references can be found in Volume 2, Step 4.

Bookshelf

Bellows, B. **1996**. Indicators of sustainability. Workbook for the SUNREM CRSP. Washington State University / University of Wisconsin, USA.

Kirsch-Jung, K.P., Görgen, M., Nill, D. (eds.) **2000**. Mesurer les effets des projets. Suivi d'impact et calcul de rentabilité économique. Contributions de trois ateliers sur la Gestion des Ressources Naturelles. GTZ, OE 45: 266 p.

Step 5: Development and Application of Impact Monitoring Methods

Cost-Effective Monitoring Methods

How can impact indicators and the context be monitored and documented? Which methods are applicable within the means and capacities of the project? How can methods best be combined? There are usually several ways and methods of monitoring a parameter or indicator. If highly accurate (scientific) data are required, it is assumed that a project will call upon specialists who apply their own methods. In this case, there is no need to describe these methods here. In the event that development projects do not have the capacity and resources to apply sophisticated methods, the present document emphasises cost-effective monitoring tools that can be handled in a flexible way by project staff themselves.

Three types of monitoring methods are described below. They probably have the greatest chance of being applied because they build on what many projects already practice. These tools can be considered the basis for IMA, but project staff would still need to adapt them to the specific project context, in accordance with the impact hypotheses formulated and impact indicators chosen. Therefore, only general descriptions and explanations can be given here.

Triangulation

How good is the quality of the information obtained? If the budget for monitoring is low, not all methods can be highly accurate. Therefore, the principle of triangulation is used, which combines reliability with participation. This means that all individual perceptions which are obtained through interviews and discussions must be cross-checked with the perceptions of others and, if possible, compared with direct observations.

- **Interviews and discussions** with local stakeholders are the basis for IMA. The information obtained can be very detailed but will be guided by individual perceptions and the different (often hidden) agendas of the stakeholders. Although all kinds of visible and invisible changes might be discussed, socio-economic aspects may dominate. A cross-check of the information, in particular invisible (e.g. social) changes, can be made through interviews with other stakeholders. Visible improvements or deteriorations can be cross-checked with photo-monitoring and participatory transect walks.

- **Photo-monitoring** provides an overview of visible changes in the project context, which may be predominantly related to biophysical and economic issues. But photos require interpretation and further investigation of the background. This can be done through interviews and discussions, as well as during participatory transect walks, depending on which aspects need further clarification.
- **Observations** made and discussed during a **participatory transect walk** provide a detailed view, especially of biophysical issues, although social and economic issues can also be addressed. A transect walk highlights the spatial interrelations of soil degradation and nutrient, water and energy flows, etc. Discussions often start with visible aspects but can ultimately include links with invisible aspects. A transect walk is an excellent opportunity to identify local impact indicators. The information can be cross-checked with interviews and photo-monitoring.

Message

Monitoring methods must be developed and adapted to the specific project needs, in accordance with the impact hypotheses formulated and impact indicators chosen.

The following principles and guiding questions provide assistance when adapting monitoring methods to a specific project situation:

Principle	*Guiding question*
Accuracy	*Which stakeholders will use the information and for what purposes? How accurate must the information really be in view of these purposes? Would the same method applied by different persons provide comparable results?*
Area coverage	*Is there a need for results with great area coverage, or is there a need for more detailed information from a few representative locations, households, etc.?*
Frequency	*How often should information be updated, thus repeating the observation (this is strongly related to the accuracy of the method and the sensitivity of the corresponding indicator)?*
Feasibility	*Can the method be applied with the resources available to the project (field equipment, laboratory facilities, transport, labour, skills, funds, etc.)? If not, how can the method be adapted to the project's resources? Can parts of the monitoring be out-sourced, i.e. be conducted by universities, private companies, etc.?*

Brief Descriptions of Monitoring Methods

Interview and Discussion

Almost all biophysical and socio-economic fields of observation can be monitored by obtaining people's opinions of them. Discussions can encompass, for example, gender aspects, labour division, workload, wealth, production and market prices, household income, land use and land management, resource degradation and protection, technological and management innovations, etc. Packages such as RRA (Rapid Rural Appraisal), PRA (Participatory Rural Appraisal), and PLA (Participatory Learning and Action) contain many well-tested and cost-effective tools consisting of group exercises, semi-structured interviews, informal discussions and visualisation (mapping, modelling, rating matrices, causal diagramming, mind-maps). They are characterised as rather qualitative approaches marked by "optimal ignorance" and "appropriate imprecision". These methods were primarily designed for mutual learning, and therefore assist local people to gain confidence in conducting their own appraisal and analysis and help external experts to understand local perceptions.

Photo-Monitoring

Development cooperation is intended to initiate changes, and at least some of them should be visible after a couple of years. Rural development projects, for example, should enhance household income and living standards, which would then be visible in terms of better housing and clothing, more children going to school, better means of private and public transport, etc. Similarly, if land and resource management has become more sustainable, it should be evident in improved crop stands, controlled soil degradation, effective conservation measures, etc. Photo-monitoring is a comprehensive method for documenting all visual changes that can be used to cross-check individually perceived changes.

Several series of photos from specific locations and standpoints taken at different times over a longer period document how things change. Photo documentation can range from overview pictures (e.g. showing an entire slope, valley, farm, village, etc.) to detailed views of specific objects (houses, rooms, people, conservation measures, etc.). Where changes are intended and expected, photos can be taken from permanent standpoints at regular time intervals. Complementary photos can be taken occasionally wherever and whenever unexpected visible changes occur. However, photos alone do not tell much about how and why changes occurred. They provide an overview that requires further discussion and interpretation with stakeholders at regular intervals.

Participatory Transect Walk and Observation

The fact that interviews and discussions with people bring to light useful information for IMA should not lead to the conclusion that direct observations and measurements by project staff or outsiders are no longer necessary! Particularly biophysical and some economic aspects can be directly observed in the field to cross-check the results of other methods. A participatory transect walk will not only provide a detailed view of a farm or valley, critical sites of resource degradation and areas of promising management. It will also help to establish connections between those sites, i.e. flows of nutrients, water, sediment and energy. Thus regular transect walks, as well as farm and field visits are not only recommended to maintain close contact with local stakeholders and their reality. Different indicators and parameters also require different observation times. For example, pests and diseases are observed during the cropping season, production during harvest, soil degradation at the onset of a rainy season, water shortage during the dry season, etc.

Cross-Reference

Detailed descriptions, field forms, and additional references related to "Interview and Discussion", "Photo-Monitoring" and "Participatory Transect Walk" can be found in Volume 2, Step 5.

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Step 6: Impact Assessment

Assessing Changes in the Project Context

How did the context change in the eyes of different stakeholders? What did they learn from these changes? In Step 4 (selection of impact indicators) stakeholders prepared an assessment (fixing benchmarks and rating), which will now be visualised by using a "spider" or "amoeba" diagram. The diagram has one "line" or "spoke" for each selected impact indicator. Impact indicators can be grouped and placed according to dimensions of sustainability (social / institutional, economic, ecological), in order to visualise in which dimensions changes are moving towards or away from sustainability. All units (e.g. kg, minutes, tons, etc.) have already been converted into a neutral numeric scale ranging from 5 (change considered very good) to 1 (change considered very bad).

The results of the initial monitoring – the status quo of the project context at the beginning of IMA – are marked for each indicator on the diagram. This serves as the "baseline" – a reference for all future monitoring. After each indicator ("spoke") is assessed separately, all marks can be connected with a line to form the "spider web" or "amoeba" (the scoring). After a certain time – depending on the sensitivity of the indicators this can be one, five or even ten years – each indicator is monitored again, and the results are marked on the spider diagram and compared with the baseline. This graph needs to be discussed and interpreted. Is the change achieved in all indicators satisfactory? If not, which indicators or which dimensions of sustainability show weak monitoring results? What might be the reasons for a remarkable good or bad rating? How did the changes come about? Is there a need to adapt the project's plan and activities?

Example

Based on the impact hypotheses (cf. example in Step 3) project stakeholders select ten impact indicators (cf. example in Step 4) covering all dimensions of sustainability. Six of these indicators are sensitive to short-term changes and can be used for an impact assessment every year (or three years). Four indicators are sensitive to mid- and long-term changes and can be used for an impact assessment every five to ten years (see Figures 9 and 10). The ratings of most indicators at the initiation of the project are relatively low (see Table below). In the short term, three years after the initiation of the project, stakeholders assess a slight improvement in all short-term indicators, except for soil erosion. Discussion reveals that agricultural production increases at the cost of higher soil erosion. Therefore, the overall assessment cannot "certify" that the land management as a whole is more sustainable. This assessment of change needs to be taken as an early warning signal to discuss the details of what happens, and where, when and why erosion occurs. Apparently, the conservation aspect (ecological) needs more emphasis, however, without neglecting the aspects of economic viability and social acceptance. Over the mid- to long term, ten years after the initiation of the project, stakeholders can assess an improvement in all indicators.

Impact indicator	***Sustainability dimensions***	***Baseline at initiation of the project***	***Short-term rating 3 years after initiation***	***Mid- to long-term rating 10 years after initiation***
Crop yield (maize)	Economic	*2*	*3*	*4*
Household income	Economic	*2*	*3*	*4*
Women's labour income	Social / institutional	*2*	*3*	*4*
% of farmers adapting new technologies without incentives	Social / institutional	*1*	*3*	*4*
Household decision-making	Social / institutional	*1*	–	*3*
Boys and girls with school leaving certificate	Social / institutional	*1*	–	*3*
% of farmers experimenting with cropping practices	Social / institutional	*2*	–	*4*
Soil erosion (rills and gullies)	Ecological	*3*	*2*	*4*
Soil fertility status	Ecological	*3*	–	*4*
Occurrence of pests & diseases	Ecological	*2*	*3*	*4*

All ratings refer to farms actually adapting the new technologies

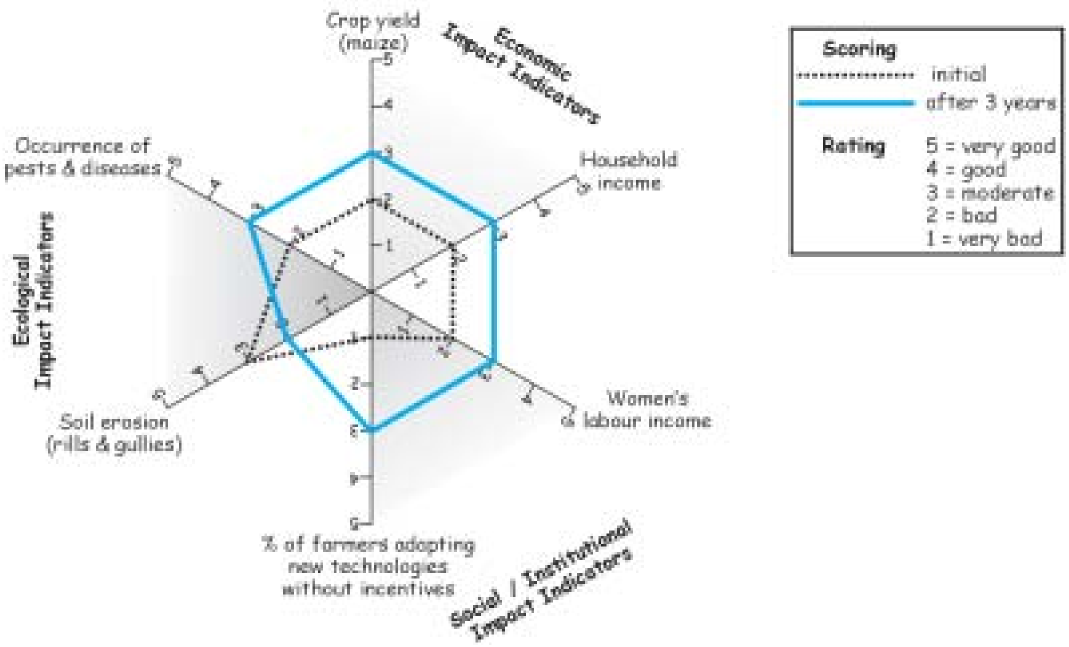

Figure 9: Assessing short-term changes in the project context

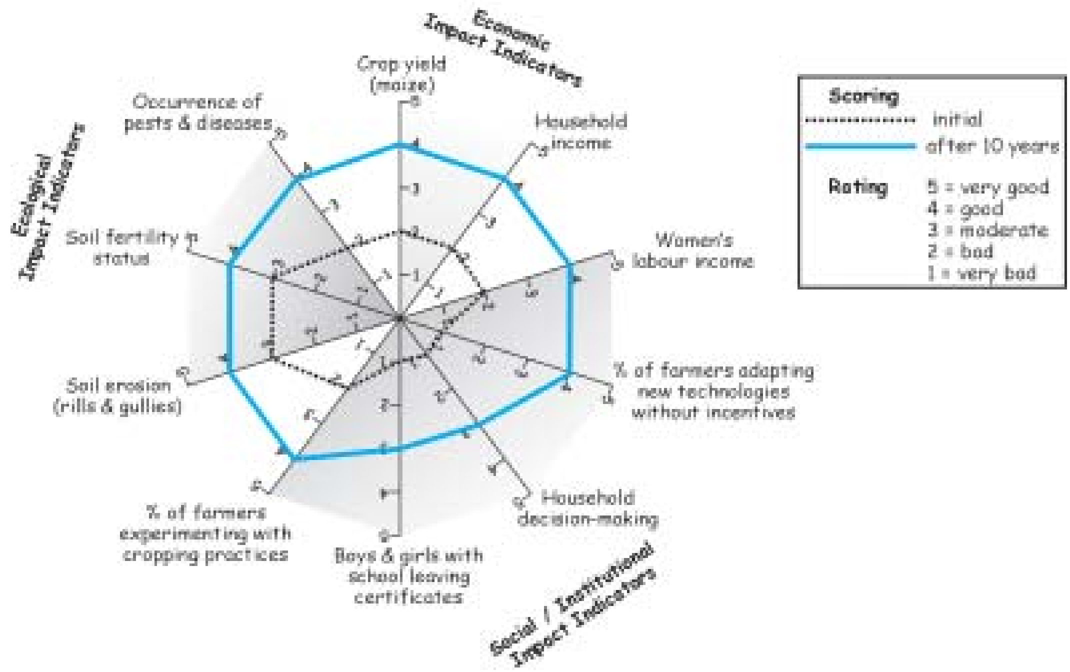

Figure 10: Assessing mid- to long-term changes in the project context

Attribution – Assessing the Impact of the Project

Naturally, the spider diagram can only reflect changes covered by selected impact indicators. How can these changes be attributed to the project? Were there additional changes that were not expected and, therefore, could not be covered? Which changes contribute to the goal of the project? Due to the attribution gap (cf. Clarification of Terms) it is not easy to attribute changes to a project. The challenge is rather to find plausible relations between the project's outputs and the changes rather than scientific proof.

Changes in the context can be considered the result of social processes, i.e. interactions between individuals or groups, such as learning, adaptation, communication, decision, integration, etc. The project "only" tries to trigger or strengthen these processes with its outputs. For example, any new technology must be utilised and adapted or rejected by stakeholders; members of a society communicate their experience and learn from it; when the biophysical environment or the economic situation changes, people adapt their perception and react to it. The question for a project is whether the project outputs have stimulated changes and social processes, and whether these processes are likely to help reach development goals.

Message

Impact assessment means finding plausible relations between a project's activities and changes in the context rather than scientific proof.

The following guiding questions can be helpful in attributing changes to project actions:

- What changes can be recognised by the stakeholders since project activities were started (at the household level, at community level, at other levels)?
- What did stakeholders learn from these changes?
- Stakeholders point towards important social processes by mentioning lessons learnt. Which social processes do they indicate (individuation, self-determination, empowerment, innovation, adaptation, ethnic integration, participation, social learning, etc.)?
- What plausible relations can be determined between the project, social processes and changes in the context? Would the changes have occurred anyway, i.e. even without the project? Which factors have – alone or in combination – contributed to the changes (the project in question, external factors such as policies, other projects, etc.)?
- What is the connection between social processes and (development) goals? Which processes should be strengthened specifically in future?

Example

*A project in semi-arid West Africa helps rural communities to build and maintain drinking water systems. The local people involved are asked what has changed in their lives since the project started, and what they learnt from this. People stated that **utilisation** of the project outputs had a number of **effects** and **benefits** at the **household level**. For example, the new water systems saved time for women in particular and made household work easier. Now, men's meals are no longer delayed and there are much fewer conflicts about who will go to fetch the daily drinking water. In addition, the occurrence of water-born diseases has been reduced considerably and so have the costs for medication. Households learnt that they themselves are responsible for improving the situation of the family and began to discover additional opportunities. Their new self-confidence, as well as the time people gained and the additional water, created a number of subsequent (indirect) **impacts**. For example, women started to explore new sources of additional household income, children went to school in time, and there were fewer accidents involving children fetching water.*

*To ensure proper **utilisation** of the water systems, new water committees were democratically elected (**effect**) at the **community level**. But it was a **drawback** that the maintenance of the water systems was blocked by rivalry between the new committees and traditional institutions in many communities. However, the community learnt to overcome the social isolation of the committees through intensive participation, debate and integration of both institutions. People considered it a **benefit** that they learnt how to negotiate village development plans and respect other viewpoints, and realised that development activities can be more successful if they are carried out jointly. The **impact** was not only the proper maintenance of the water systems and their advantages for the community members. The integrated and thus stronger village institutions, as well as increased competence in negotiation, led to better co-ordination of natural resource management between different villages. Animal and crop production systems of different ethnic groups of herders and farmers were integrated much more easily. This finally contributed to diversification of household production and income strategies.*

Thus, through its outputs, the project stimulated social processes of learning, integration, participation and empowerment. There was a plausible link between its actions and positive impacts, and between social processes and development goals, i.e. the empowerment of local people and institutions, and more sustainable management of natural resources. The project is now in a position to support these processes more specifically.

Follow-Up

At this stage, the next phase of project management begins. Assessment and the attribution of changes will be used to make the necessary strategic adjustments in the project. At the same time, the IMA system needs to be adapted as well. In order to achieve positive impacts:

- Are there new stakeholder groups that should be involved during the next project phase (Step 1)?
- Is the analysis of the project context still relevant and representative (Step 2)?

- Do the impact hypotheses have to be revised or supplemented, after initial changes and impacts appear (Step 3)?
- Is the selection of impact indicators still relevant, and can it represent all important changes (Step 4)?
- Did the monitoring methods applied produce useful data and information? How can methods be optimised or simplified? What should be added or omitted (Step 5)?
- Was the impact assessment (spider diagram) satisfactory or does it need to be modified (Step 6)?

Message

Impact assessment provides information for strategic adjustments of plans.

Cross-Reference

An alternative way to visualise changes and additional references can be found in Volume 2, Step 6.

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Impact Monitoring & Assessment

Instruments for
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Volume 2: Toolbox

Karl Herweg & Kurt Steiner

2002

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IMPACT MONITORING & ASSESSMENT

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INDEED..., THE TOOLS LOOK CLEAN...

Step 1: Involvement of Stakeholders and Information Management

Bookshelf

NARMS (Pilot Project Natural Resource Management by Self-help Promotion) **1996**. Process Monitoring (ProM), Work Document for project staff, GTZ, department 402, (402/96, 22e NARMS); Eschborn.

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Matrix: Stakeholders and Information Management

Stakeholders	Provision of information	Information needs	Preferred form / media	Dissemination	Storage

Step 2: Review of Problem Analysis

Participatory Systems Analysis

Objective and Brief Description of the Method

A network or systems analysis is more appropriate than a simple cause-effect analysis for understanding how a project context functions, why problems occur, why an intervention does or does not lead to achieving a goal, etc. However, a sound scientific systems analysis would be too costly and too complicated for most development projects. In this sense, the Participatory Systems Analysis (PSA) presented here is a manageable compromise.

PSA led to interesting results in several workshops. A variety of stakeholders defined important elements of a project context and their relationships during a participatory exercise, based on their specific backgrounds, knowledge, expertise and experiences. After some initial astonishment and learning about how different perceptions of the same context can be, PSA always stimulated fascinating discussions among participants. It is a good starting point for obtaining more complex views of reality, particularly for people with little experience in systems thinking. PSA is a first step in moving away from "repair-shop thinking" towards more flexible management of an unpredictable project context.

PSA complements problem analysis (e.g. problem tree), it serves as a basis for further project planning, and finally, it helps to structure the project planning matrix. It is designed to evaluate the relationships among relevant elements within a project context. It reveals which elements can be potential starting points for project activities, and which ones may require further investigation and better understanding (e.g. field trips, discussions, interviews, transect walks; cf. Step 5).

PSA is neither a mathematical model nor a scientific method and does not reveal a "right" or "wrong" way of looking at a project context. Rather it reflects the perceptions and knowledge of the participants. The more seriously the elements are chosen and their relationships are evaluated, the more realistic will be the results.

Procedure / Steps – and an Explanatory Example

(1) Setting the stage

- The exercise should be carried out in groups with no less than 5 or 6 persons, in order to incorporate differing points of view and to stimulate worthwhile discussions. Homogeneous groups are likely to arrive at the expected results and may miss the chance to look at the context from different angles! Even though the ratings of the relationships are done jointly, the results can often be surprising and provoke a debate. This may require a repetition of the exercise with improved ratings.

- A participatory systems analysis can be carried out with a random number of elements, but our experience indicates that the optimal number is 12. Less than 12 elements may not represent the complexity of the context sufficiently, while more than 12 elements are difficult to manage in a short time.
- In order to incorporate the idea of "sustainability", we propose including all dimensions of sustainability. In the example, we have selected 4 ecological, 4 economic and 4 social / institutional elements. But the number of elements in each dimension does not need to be 4; it can vary according to the project context. It is more important that no dimension be neglected if sustainable development or sustainable resource management is mentioned in the project goal or purpose.
- The ratings (2 = strong influence; 1 = moderate influence; 0.5 = weak influence; 0.1 = very weak influence) are experiential values and do not reflect scientific knowledge. They may be changed, but this will only influence the scales and not the relative location in the system of co-ordinates. The rating 0 (= no influence) cannot be used because calculations include a division. All elements in a system are assumed to have at least a weak and indirect influence on each other.

(2) Selecting the elements of the project context

The elements of the project context in question are listed. The justification of a selection is the basis for a common understanding of why exactly these elements were chosen and how the relationships were estimated. It is particularly helpful at a later stage when details will be forgotten.

Example

Selection of important elements in a project context: a smallholder village in the rangelands of the southern part of Africa. The elements represent the three dimensions of sustainability.

No.	Dimension of sustainability	Element	Description / Justification
1	*Ecological*	*Water availability*	*Low due to rainfall, no maintenance of supply pipeline*
2		*Overgrazing*	*Low rainfall and uncontrolled grazing*
3		*Soil erosion*	*High on crop and grazing land*
4		*Water quality*	*Poor because wells are not maintained*
5	*Economic*	*Household (HH) income*	*Low due to declining yields and market prices*
6		*Off-farm jobs*	*Limited, no small-scale industries, handicrafts, etc.*
7		*Crop production*	*Low due to subsistence agriculture, no external inputs*
8		*Distance to market*	*Difficulties in marketing of products*
9	*Social / institutional*	*Level of education*	*Low because teachers not motivated to work here*
10		*Social conflicts*	*Increasing social disparities*
11		*Access to land*	*Limited due to insecure land use rights*
12		*Innovative potential*	*Low due to out-migration of young men*

Matrix: Participatory Systems Analysis

No.		1	2	3	4	5	6	7	8	9	10	11	12		
	Elements													**Active sum (AS)**	**Degree of interrel. (AS·PS)**
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
	Passive sum (PS)														
	Activity ratio (AS/PS)														

(3) Determination of the relationships between all elements: completing the matrix

Rating:

2.0 strong influence
1.0 moderate influence
0.5 weak influence
0.1 very weak influence

The basis for the PSA is the matrix presented on the previous page. To fill in the matrix, it is important to start with **line No. 1** (not the column!) and to ask: **what is the "influence" of element No. 1 on elements No. 2 (column 2)**, No. 3 (column 3), etc. Whether the influence is positive or negative plays only a minor role at the moment. After the rating is completed, each line will reflect the influence that the element in question has on the other elements of the system. This can be called the **active** character of an element. Similarly, each **column** reflects the influence of all other elements on the element in question. This can be called the **passive** character of an element.

No.		**1**	**2**	**3**	**...**
	Elements	*Water availab.*	*Over-grazing*	*Soil erosion*	...
1	*Water availability*		→	→	
2	*Overgrazing*				
3	*Soil erosion*				
...	...				

N.B. Start with **line No. 1** and the influence of element No. 1 on elements No. 2 (column 2), No. 3 (column 3), etc.

(4) Calculation of active sum and passive sum

Adding up all values of one **line** results in the **active sum** of the element in question.

No.		**1**	**2**		**12**	
	Elements	*Water availab.*	*Over-grazing*	...	*Innovative potential*	**Active sum (AS)**
1	*Water availability*		*2*	►	*0.5*	***11.9***
2	...	...		...	...	**...**

Adding up all values of one **column** results in the **passive sum** of this element.

No.		1	2
	Elements	*Water availab.*	...
1	*Water availability*		...
2	*Overgrazing*	*2*	
...	...		...
12	*Innovative potential*	*2*	...
	Passive sum (PS)	***8.0***	**...**

(5) Calculation of the degree of interrelation and the activity ratio

Multiplying the active sum by the passive sum of each element gives its **degree of interrelation** within the system. This reflects how strongly or how weakly an element is "networking" within the project context. A high degree of interrelation implies, for example, that there are many direct and indirect ways to influence this element.

Dividing the active sum of each element by its passive sum gives its **activity ratio**. This reflects the proportion of active influences and passive influences in each element and indicates whether an element plays a rather active role (> 1) or a rather passive role (< 1) within the project context. Passive elements, for example, are not the best starting points for changing a context.

No.		1	...	12		
	Elements	*Water availab.*	...	*Innovative potential*	**Active sum (AS)**	**Deg. of interrel. (AS·PS)**
1	*Water availability*		...	...	***11.9***	***95.2***
...	...	...	...	...	...	...
12	*Innovative potential*	...	...		***10.3***	***80.3***
	Passive sum (PS)	***8.0***	**...**	***7.8***		
	Activity ratio (AS/PS)	***1.5***	**...**	***1.3***		

Example

Participatory systems analysis: a complete rating for a smallholder village in the rangelands of the southern part of Africa

No.		1	2	3	4	5	6	7	8	9	10	11	12		
	Elements	*(WA)*	*(OG)*	*(SE)*	*(WQ)*	*(HI)*	*(OJ)*	*(CP)*	*(DM)*	*(LE)*	*(SC)*	*(AL)*	*(IP)*	**Active sum (AS)**	**Degree of interrel. (AS·PS)**
1	*Water availability (WA)*		2	1	2	2	0.1	2	0.1	0.1	2	0.1	0.5	***11.9***	***95.2***
2	*Overgrazing (OG)*	2		2	1	1	0.1	0.5	0.1	0.1	1	0.5	0.1	***8.4***	***110.0***
3	*Soil erosion (SE)*	1	1		1	2	0.1	2	0.1	0.1	0.1	0.1	0.1	***7.6***	***96.5***
4	*Water quality (WQ)*	0.1	0.1	0.1		1	0.1	0.1	0.1	1	1	0.5	0.5	***4.6***	***38.2***
5	*Household income (HI)*	1	2	0.5	1		0.1	0.5	0.1	2	2	2	0.5	***10.7***	***214.0***
6	*Off-farm jobs (OJ)*	0.1	2	2	0.5	2		0.5	0.1	2	0.5	0.5	1	***11.2***	***37.0***
7	*Crop production (CP)*	0.1	0.5	1	0.1	2	0.1		0.5	0.1	2	0.1	0.1	***6.6***	***73.3***
8	*Long distance to market (DM)*	0.1	0.5	0.1	0.1	2	0.1	0.5		2	0.1	0.1	2	***6.6***	***15.8***
9	*Level of education (LE)*	0.5	1	2	0.5	2	1	2	0.1		1	0.1	2	***12.2***	***104.9***
10	*Social conflicts (SC)*	2	1	1	1	2	1	1	1	1		2	1	***13.0***	***158.6***
11	*Access to land (AL)*	0.1	2	1	0.1	2	0.1	1	0.1	0.1	2		1	***9.5***	***48.5***
12	*Innovative potential (IP)*	2	1	2	1	2	0.5	1	0.1	0.5	0.5	0.1		***10.3***	***80.3***
	Passive sum (PS)	***8.0***	***13.1***	***12.7***	***8.3***	***20.0***	***3.3***	***11.1***	***2.4***	***8.6***	***12.2***	***5.1***	***7.8***		
	Activity ratio (AS/PS)	***1.5***	***0.6***	***0.6***	***0.6***	***0.5***	***3.4***	***0.6***	***2.8***	***1.4***	***1.1***	***1.9***	***1.3***		

(6) Establishing the system of co-ordinates

In order to get an overview of all elements and their role within the context, the **degree of interrelation** and **activity ratio** are positioned in a system of co-ordinates. This illustrates the "relative" position of each element vis-à-vis the others (cf. Figure 12).

- The **Y-axis** has a linear scale, and the length of the axis is determined by the highest **degree of interrelation** obtained in the exercise (rule of thumb: calculated maximum degree of interrelation + 20 to 30 to round it up).
- To keep the size of the system of co-ordinates small, the **X-axis** (**activity ratio**) has a logarithmic scale with a total length of 10, while the middle of the X-axis is 1.

Example

Co-ordinates of elements

No.	Elements	Activity ratio	Degree of interrelation
1	Water availability	1.5	95.2
2	Overgrazing	0.6	110.0
3	Soil erosion	0.6	96.5
4	Water quality	0.6	38.2
5	Household income	0.5	214.0
6	Off-farm jobs	3.4	37.0
7	Crop production	0.6	73.3
8	Long distance to market	2.8	15.8
9	Level of education	1.4	104.9
10	Social conflicts	1.1	158.6
11	Access to land	1.9	48.5
12	Innovative potential	1.3	80.3

(7) Interpreting the results of the PSA

The system of co-ordinates is divided into four main sectors. Each sector implies a certain character or function within the system (see Figure 11). Note that in reality the "borders" between the four sectors are gradual transitions and not sharp lines. As all numerical values reflect the experiences and knowledge of the participants (and not a mathematical algorithm), it is the relative (and not the absolute) position of each element in relation to others that is important!

- A **symptom** is an element that is greatly influenced by other elements but may not have much power to change the system itself. Symptoms can be useful indicators of context changes, but development activities in this sector may only amount to a "treatment of the symptom, not the cause".
- A **buffer** is characterised by low importance in the context. It is rather unremarkable because it neither influences other elements much nor is it influenced much by others. Development activities in this sector are expected to have little impact on the context.

- A **critical element** is an accelerator or catalyst in the system. It changes many things quickly, but may also create many unexpected and undesired side effects. Development activities in this sector can be highly uncertain, and impacts may be unpredictable. Therefore, critical elements have to be treated very carefully. It is particularly important to formulate impact hypotheses for this sector (cf. Step 3)!
- A **motor** or **lever** is an active element with predictable impacts. This is the most interesting sector for development activities.

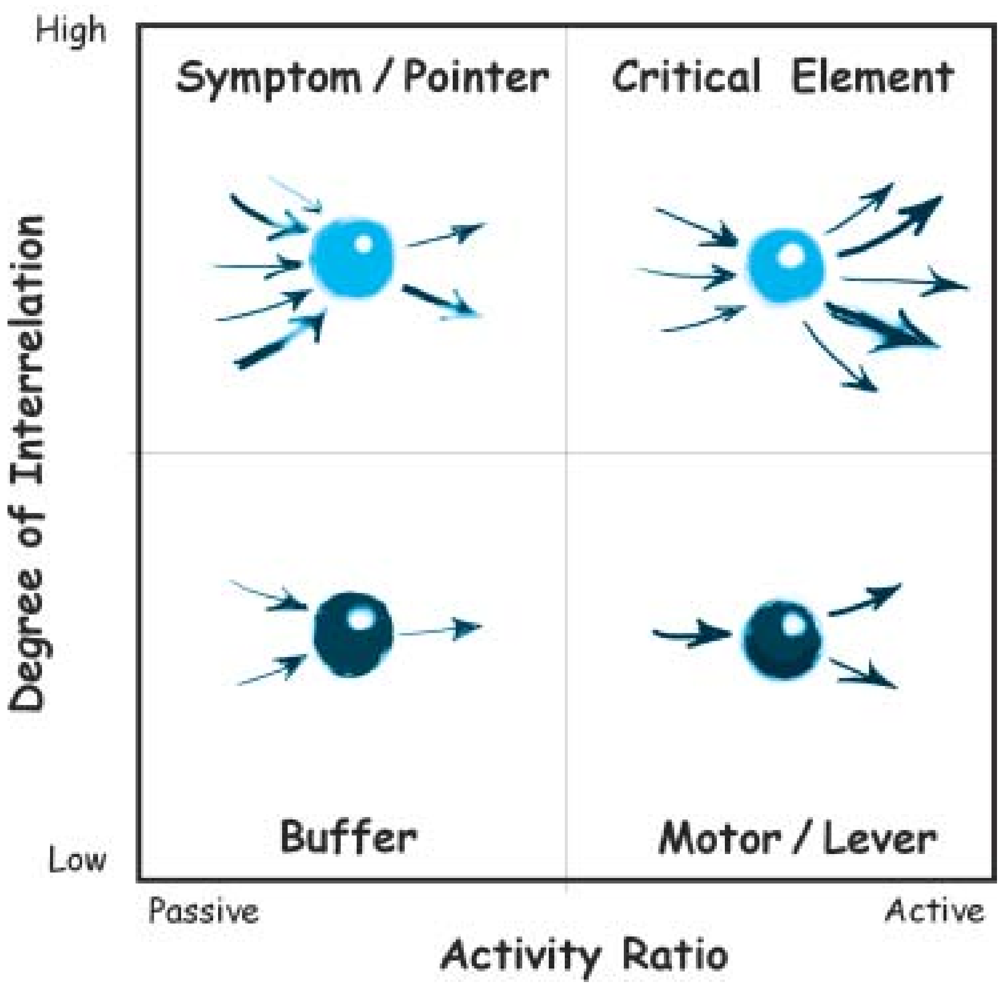

Figure 11: The functions of elements within a project context

- Elements in the two sectors on the left **(symptom & buffer)** are rather passive, i.e. they are influenced by other elements more than they influence others.
- Elements in the two sectors on the right **(critical element & motor)** are rather active, i.e. they influence other elements more than they are influenced.
- Elements in the two lower sectors **(buffer & motor)** are rather weakly interrelated.
- Elements in the two upper sectors **(symptom & critical element)** are rather highly interrelated.

Example

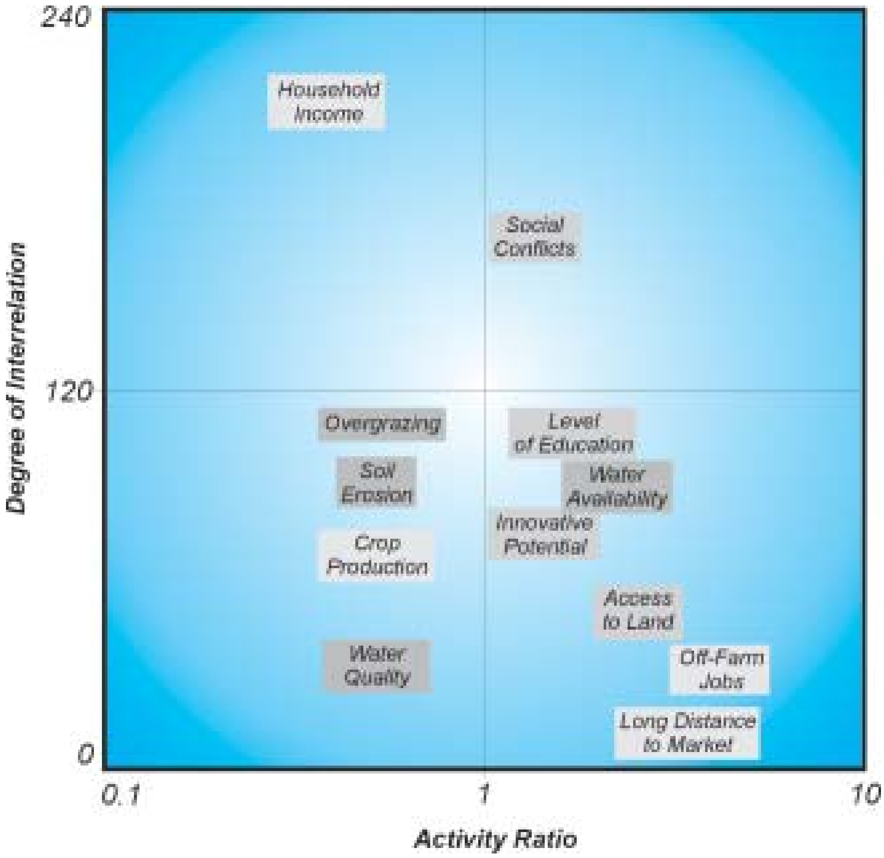

Figure 12: PSA in a Southern African rangeland context

Starting points for interpretation (Figure 12):

- *Household income appears to be a **symptom**, which means it can be influenced by many other factors. It would be a good indicator for a change in the project context.*
- *Most **buffers** are – surprisingly for some people – the ecological elements, which means that influencing them would probably alleviate the respective problem (e.g. soil erosion) but not change the context as a whole.*
- *Social conflicts are a **critical element**. Trying to solve them directly might produce unpredictable positive and negative impacts. This element requires more detailed analysis before intervening.*
- ***Motors** or **levers** of the system are mostly social / institutional and economic elements. These seem to be promising points of "intervention" for a development project. However, there is a need for careful monitoring to determine whether and how these and all other elements of the project context would change over time.*

Interpretation and conclusions based on the exercise are the subjects of an open discussion which automatically leads to Step 3, the formulation of impact hypotheses. For example, although soil erosion is characterised as a buffer in this case, some stakeholders may insist that it is a serious problem that needs to be addressed. The discussion should then focus on how to approach the problem. Erosion control may eventually be more effective if it is addressed through education and attempts to strengthen the innovative potential of the land users.

(8) Cross-checking the results

Even though the locations of the elements in the system of co-ordinates reflect the group's judgement and ratings, some results seem obvious while others may be surprising, and not everybody may agree. It must be kept in mind that the matrix and the system of co-ordinates reflect the participants' knowledge and perceptions. Therefore, there is no "right" or "wrong" way of looking at the context of a project as such, and nobody can claim to have a complete overview. Disagreements only indicate the need for further clarification and discussion. In this case, the group can cross-check the ratings again (strong, moderate, weak influence) and – if necessary and desirable – modify the matrix. Our experience indicates that this may change some details but rarely gives an entirely new picture of the system. However, the participants themselves must gain this experience in order to come to a common understanding. Disagreement should also be considered a pool of different development options for a project, which can then be treated as alternative scenarios.

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Step 3: Formulation of Impact Hypotheses

Examples of Impact Hypotheses: Sustainable Land Management

Sustainable land management (SLM) can be considered one of the ultimate and therefore indirect impacts of rural development projects. Formulated as a project goal or purpose, the desired situation might be "land management is more sustainable". But there is a need to clarify what is meant by "SLM". Is it increased production, decreased resource degradation, increased wealth and social well-being? SLM can be described by several dimensions of sustainability: an institutional, a social (socio-cultural), an economic, and an ecological dimension. The subdivision into dimensions prevents important aspects of sustainability from being forgotten. For practical purposes, some dimensions may be merged later on, such as socio-economic, or social / institutional.

Example

Checklist 1: Fields of observation of sustainable land management

<table>
<tr><th rowspan="2">Level</th><th colspan="4">Dimensions of sustainability</th></tr>
<tr><th>Institutional</th><th>Socio-cultural</th><th>Economic</th><th>Ecological</th></tr>
<tr><td>Household (including farm plot level)</td><td colspan="2">• Education and knowledge
• Access to natural resources
• Household strategies
• …</td><td>• Household income, assets and consumption
• Labour and workload
• Land management and farming system
• …</td><td>• State of natural resources
• …</td></tr>
<tr><td rowspan="2">Community</td><td rowspan="2">• Local leadership
• Local institutions
• Producer and self-help organisations
• …</td><td>• Gender issues
• Conflict management
• Innovation
• …</td><td>• Markets, prices and credit
• Public property
• …</td><td rowspan="2">• Land use
• Water resources
• …</td></tr>
<tr><td colspan="2">• Social & economic disparities
• …</td></tr>
<tr><td>District</td><td>• Education, training and extension
• Land and water rights, tenure
• …</td><td>• Change in social values
• …</td><td>• Employment opportunities / migration
• Infrastructure
• …</td><td>• Land cover
• Off-site effects
• …</td></tr>
</table>

In the framework above (Checklist 1), SLM is segregated into "fields of observation", classified according to dimensions of sustainability and spatial decision-making levels. Attribution to a particular dimension or level may vary according to the specific project context. Elements can be formulated neutrally (e.g. socio-economic disparities), as a problem (e.g. increased disparities) or as a desired scenario (e.g. decreased disparities). They can also be used in problem analysis (cf. Step 2).

A development project may support activities related to all dimensions of sustainability, e.g. to increase the economic and social well-being of the population, to strengthen local institutions, and to develop environmental protection practices. On the following pages, Checklist 1 (fields of observation in SLM) is used as a framework (cf. Figure 13) to present examples of impact hypotheses (Step 3, Checklists 2a–2c) and impact indicators (Step 4, Checklists 3a–3c, and 4a–4c). It must be kept in mind that the checklists contain examples of hypotheses and indicators. "Positive" and "negative" formulations are context- and stakeholder-specific, which means they must always be adapted to the situation they are used in.

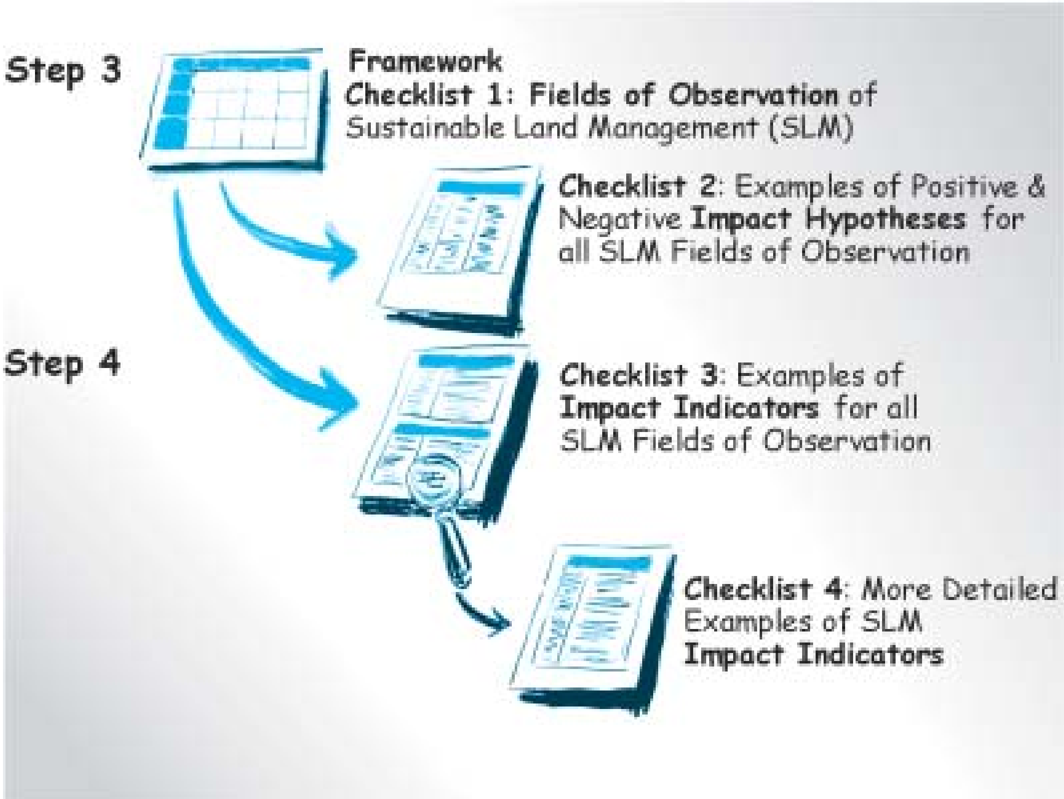

Figure 13: Checklists 1 to 4: Examples of impact hypotheses & impact indicators (Steps 3 & 4)

Example

Checklist 2: Examples of positive and negative impact hypotheses for all SLM fields of observation

Checklist 2a: Household level (including farm plot level)

Fields of observation of SLM	*Positive impact hypotheses*	*Negative impact hypotheses*
Education and knowledge	*Indigenous knowledge is recognised and strengthened*	*School leavers ignore local knowledge and refuse farm work*
Access to natural resources	*There is adequate and secure access to natural resources for all HH – women and men*	*Giving attention to farmers causes further marginalisation of landless people*
Household (HH) strategies	*HH give equal importance to production and protection aspects*	*Increasing market demand for certain crops leads to over-exploitation of land resources*
HH income, assets and consumption	*HH income increases; assets are increasingly re-invested in conservation-effective practices*	*Increased HH income strengthens men's dominance over women; assets are spent for consumption of alcohol and prostitution*
Labour and work-load	*Labour income for women and men increases*	*Women's workload increases*
Land management and farming system	*New practices increasingly integrate production and protection*	*Production factors are used inefficiently*
State of natural resources	*Soil fertility is maintained and improved; soil degradation is minimised; agro-biodiversity is maintained; livestock rates are adapted to the carrying capacity*	*Inadequate soil and water conservation technologies increase soil degradation*

Example

Checklist 2b: Community level

Fields of observation of SLM	Positive impact hypotheses	Negative impact hypotheses
Local leadership	*Local leadership permits access to resources and regulations are enforced*	*Conflicts among community members increase due to nepotism*
Local institutions	*Local institutions are actively involved in resource protection*	*Local institutions are an obstacle to better land management*
Producer and self-help organisations	*Land users increasingly organise themselves*	*Self-help groups are inefficient because of bad management*
Gender issues	*Women are increasingly organised and involved in decision-making processes*	*Women face problems in the family due to their commitments*
Conflict management	*Local institutions / regulations for conflict management are functional*	*Conflicts are used by influential groups to maintain their position*
Social and economic disparities	*Social and economic disparities decrease*	*Profitable production encourages influential stakeholders to appropriate land*
Innovation	*Experimentation and innovation are recognised as integral parts of the land management system; innovators are socially accepted*	*Innovators are socially isolated*
Markets, prices and credit	*Products are sold at a profit and necessary inputs are available*	*Repair services for maintenance of new technologies are not available*
Land use	*Land use becomes more conservation-effective, i.e. degradation processes are controlled*	*Reduced grazing on private land triggers degradation of communal pasture land*
Water resources	*Sufficient water of adequate quality is always available*	*Water resources are not equally available to all community members*

Example

Checklist 2c: District level

Fields of observation of SLM	*Positive impact hypotheses*	*Negative impact hypotheses*
Education, training and extension	*Extensionists, teachers, land users and children are increasingly trained in sustainable land management*	*Indigenous knowledge is marginalised by formal education*
Land and water rights, tenure	*Rural population is increasingly involved in decision-making regarding land and water rights*	*By-laws are not enforced*
Change in social values	*Social control and negotiation mechanisms are maintained despite changes in social values*	*The younger generation loses its orientation and social roots*
Employment opportunities / migration	*Non-agricultural employment opportunities improve*	*Out-migration from the villages (loss of indigenous knowledge) increases due to more attractive income opportunities*
Infrastructure	*Infrastructure (roads, markets, transport, banking, etc.) improves and supports sustainable land management*	*Prostitution, diseases, drug trafficking and crime spread quickly*
Land cover	*Vegetative cover of the land increases*	*Farming expands to marginal lands due to higher product prices*
Off-site effects	*Off-site effects of resource degradation decrease*	*Floods affecting urban centres increase due to reduced land cover; water reservoirs are filled with sediment*


PM
PPM

Step 4: Selection of Impact Indicators

Examples of Impact Indicators: Sustainable Land Management

Example

Checklist 3: Examples of impact indicators for all SLM fields of observation

Checklist 3a: Household level	
Fields of observation of SLM	***Impact indicators***
Education and knowledge	*% of school children / No. of school drop-outs (separate for boys and girls), No. of people with school leaving certificate*
Access to natural resources	*No. and size of plots managed by women and men, management of communal land*
Household (HH) strategies	*HH structure, labour division, changes in perceptions and behaviour, innovations*
HH income, assets and consumption	*HH income, male and female earnings, gross margins, clothing, housing, nutrition, purchasing power, spending power, months of food security, re-investment in new farm implements, seeds, etc.*
Labour and workload	*Labour division, labour income*
Land management & farming system	*Labour income, change in farming system, adapted farming practices, abandoned technologies, application rate of conservation-effective practices*
State of natural resources	*Soil fertility status, soil erosion, salinity, compaction, water availability and water quality, biodiversity, plant growth, plant cover, pests & diseases, No. and quality of animals*

N.B. that the formulation of the impact indicators needs to be adapted to the specific project situation!

Example

Checklist 3b: Community level

Fields of observation of SLM	Impact indicators
Local leadership	Access to natural resources by women / men, actions taken when local by-laws are neglected
Local institutions	Active participation, survival rates of trees, conservation structures maintained without incentive, representation of social strata
Producer and self-help organisations	No. of farmers' associations, representation of social strata
Gender issues	% of women in decision-making institutions and meetings, % of women with land titles; gender-specific access to credit, workload, income
Conflict management	Conflicts over natural resources, taboos with regulatory character, binding local agreements
Social and economic disparities	Wealth, status of minorities, clothing, housing, % of landless people
Innovation	No. of innovative technologies, social status of innovators
Markets, prices and credit	Distance to markets, new shops and businesses, No. of credits, interest rates
Land use	% of cropland, pasture, forest / bush land & other, visible signs of resource degradation, deforestation rate, cultivation of marginal land, overgrazing, abandonment of cropland
Water resources	No. of people suffering from water-borne diseases; No. of conflicts over water resources, water colour, months when springs and rivers have water

Example

Checklist 3c: District level

Fields of observation of SLM	Impact indicators
Education, training and extension	District radio programmes with environmental messages, farmers' and school children's environmental awareness
Land and water rights, tenure	Environmental laws, regulations, land titles, land price, local taboos with regulatory character, enforcement of regulations
Change in social values	Crime, conflicts between generations; social status of farmers
Employment opportunities / migration	Unemployment rate, vacancies, in- & out-migration, No. of female HH heads
Infrastructure	Access to markets, schools, services, credit, scholars per family, frequency, price and reliability of transport, frequency of power cuts
Land cover	% of crop, pasture, forest land
Off-site effects	Flash floods, sedimentation of dams, water quality, destruction of roads and bridges

Example

Checklist 4: More detailed examples of SLM impact indicators

Checklist 4a: Institutional, socio-cultural, and economic aspects of SLM

Institutional / socio-cultural aspects	
Education and knowledge	% of school children / No. of school drop-outs (separate for boys and girls), No. of people with school leaving certificate, % of illiterate people per social strata, No. of women and men with further education & training, success rate (people trained with certificate), No. of people applying their training, No. of people instructed by those who received training (self-dissemination)
Access to resources (natural, financial, agri-services, information)	No. of households (HH) with owned, rented and leased land, land holding size per social strata (e.g. poor farms, wealthy farms), use of credits, use of production inputs
Institutions, organisational capacity, management	No. of planned development activities carried out, rate of uncompleted workdays, duration of administrative procedures, transparency of administrative procedures, application of laws and by-laws (e.g. tax recovery, declared and sanctioned violations), public reputation of institutions, No. of binding / respected local agreements on resource use, No. of groups applying sanctions in case of violation of regulations, No. and % of functional organisations, No. of groups initiating self-help activities independent of external assistance
Gender issues	% of female HH heads, % of women in decision-making meetings, % of women with access to land, % of women in land user groups, % of women with access to extension services, % of women with access to credit, average daily workload of men and women, female and male earnings
Economic aspects	
Household income, micro-economy	Net HH income, alternative income options, % of agricultural products sold on markets, gross / net margins of individual (men's, women's) production system components, internal rate of return, purchasing and spending power, No. of (truck) loads with products arriving at local markets, No. of merchants coming to markets, quantity of produce offered on markets, fluctuation of market prices, No. of people with bank accounts, No. of houses with corrugated iron roofs, No. of people with status symbols (e.g. radio, TV, bicycle, motorcycle, etc.)

It is not possible to define "sustainable land management" globally. But it is possible to develop a vision of land management at the **local level** in terms of what is **more** or **less sustainable**, compared to previous years. This vision must be jointly developed with stakeholders, e.g. when planning a project. Since different actors have diverse perceptions of what they think is sustainable, it is not easy to select indicators of sustainability (e.g. environmental health). In contrast to this, indicators of unsustainability (poverty, overgrazing, symptoms of resource degradation, etc.) are usually easier to identify. But it must be kept in mind that the absence of indicators of unsustainability alone does not mean that land management is sustainable. It is therefore important to use both types of indicators.

- **Indicators of environmental health** describe a **vision** of greater sustainability of land management. They help formulate goals and indicate the directions to take.
- **Indicators of unsustainable land management** suggest that something is going wrong and serve as an **early warning system**. They show the need to confront problem issues and spend time to find the reasons as well as potential solutions.

Indicators represent a complex reality. For example, crop yield may be taken as an indicator of soil fertility. However, yield is influenced by many other factors, such as pests and diseases, rainfall variability, etc. Therefore, single indicators cannot represent a project context sufficiently. Only a **set of indicators** will provide plausible information on whether land management is moving towards or away from sustainability.

Example

Checklist 4b: Land use and farm management aspects of SLM

Land use types	*Environmental health indicators*	*Indicators of unsustainability*
Woodland	*Afforestation, high variety of non-timber forest products*	*Rate of deforestation, illegal cutting*
Cropland	*Appropriate tillage practices, good crop stand, crop rotation, integrated pest management, integrated soil and water conservation*	*Monoculture, inappropriate crop rotation, soil-borne parasitic weeds and nematodes, termites and leaf-eating ants, aggressive weed (*Imperata, Cyperus*), decreasing length of fallow period, absence of conservation activities, abandonment of cropland, cultivation of marginal land (steep land with shallow soils)*
Pasture land	*Dense plant cover, high variety of species*	*Overgrazing, rangeland degradation, bare soil, trampled area, poor plant cover, change in species composition, increase of unpalatable species*
Farm management	*Good efficiency of farm resource management, high gross margins, increasing degree of organisation (farmers' organisations), high return on labour, good input use efficiency, application of conservation-effective practices*	*Rapid changes in farming system, low gross margins, absence of farmers' organisations, low return on labour, low input use efficiency, no application of conservation-effective practices*

Example

Checklist 4c: Ecological aspects of SLM (natural resources)

Resources	Indicators	Environmental health scenarios	Scenarios of unsustainability
Soils	Soil fertility, nutrient status (organic matter, acidity), toxicity	Dark, deep topsoil (humus), good drainage, high soil biological activity, earth-worm casts, high earth-worm density, high crop yield, high root density	Light, pale soil colour, indicator plants, yellow & red colour of plant leaves, small plants, poor soil drainage, no earthworms, low yield, low root density, limited rooting depth
	Creeping soil erosion: reduced top-soil depth (reduced water and nutrient retention capacity)		On-site: smoothened soil surface, accumulations, light soil colour, exposed plant roots, increased seeding rate. Off-site: brown rivers, sedimentation of water reservoirs
	Severe soil erosion, loss of entire topsoil	No indications of unsustainability	Erosion rills, gullies and large concentrated accumulations
	Wind erosion		Dust storms, mobile dunes, accumulations behind wind breaks
	Salinity & alkalinity		Salt, colour of plant leaves, level of salinity in water
	Compaction		Crust formation, increased runoff, less infiltration, difficult to plough
Water	Water availability	Sufficient water	Water shortage: depletion of groundwater table, drying wells, dying trees, increase of unpalatable species, excess water, increasing runoff, flash floods
	Water quality	Good water quality, good hygiene, clear colour, no odour	Algae, bad odour, brown colour, minimal variety of fish in rivers, human diseases
Vegetation	Biodiversity	Great variety of species	Minimal variety of species, high % of unpalatable species (pasture land)
	Biomass and nutritive value	Crop residues and dung remain on the field as fertilisers	Low crop yield and biomass, high yield variability, use of crop residues and dung as fuel
	Plant growth	Uniform plant growth, tall & dense stands, green, good crop	Low plant height & cover, pests and diseases, light green or yellow / purple colour of plant leaves, stunted corn, non-homogeneous ground cover
Animals	Quantity	Reasonable herd size, sufficient draught power	Overstocking: low grass cover on pasture land, encroachment on cropland
	Quality	Good livestock appearance, good productivity	Malnutrition & diseases, high mortality, low productivity, fodder shortage

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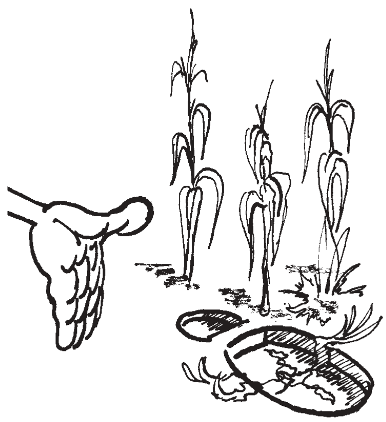

Step 5: Development and Application of Impact Monitoring Methods

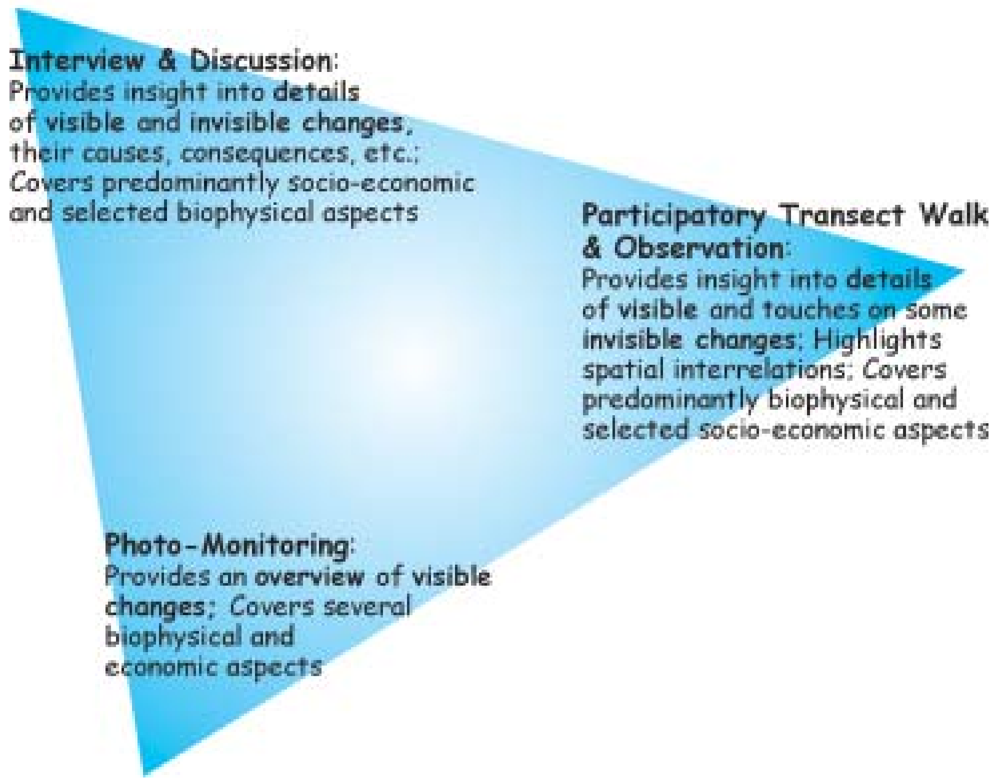

Figure 14: Triangulation

Interview and Discussion

Objective and Brief Description of the Method

Interview and discussion as participatory tools cover quite a wide range of indicators. They usually produce qualitative results and also serve as a cross-check on quantitative results, for example from structured interviews or biophysical measurements. The tools are used best in combination with complementary approaches and methods (triangulation) to ensure a quality of information appropriate for decision-making. They involve a shift of orientation in development cooperation, giving much more emphasis to indigenous knowledge systems. This is a shift from:

- dominance by Northern countries to facilitation, promoting assumption of responsibilities by local stakeholders (actors) for designing, monitoring and assessing their own development projects
- ready-made solutions to strategic diversity
- individual perception to group interests
- measurement to comparison
- data analysis to social interaction
- one-way data abstraction to mutual communication and learning

Procedure / Steps

(1) Local stakeholders have to be informed about the intentions of outsiders; procedures and the objectives of IMA activities have to be explained (even if the objectives are to be determined by local stakeholders). Participatory methods are two-sided processes: there is a need to get information from / about local people (for their own benefit!) who also want to know about outsiders. This forms the basis for a process of "mutual learning". It is not only results that count; reflection on processes is also important. 'Participatory' means involvement of all relevant social groups. Make a special effort to ensure that underprivileged groups are not neglected.

(2) Identify key persons who can provide advice, assist in applying some methods, and give valuable background information. This might also stimulate continuation of IMA by local stakeholders after projects have been phased out.

(3) Start by getting an overview of local circumstances first (e.g. participatory transect walk) before concentrating on specific issues. Don't start applying methods without a concept or an analytical framework into which the information can fit.

(4) Projects are more likely to be on the right track and results are more likely to be reliable if an appropriate mix of tools is applied in an analytical framework. Cross-checking is inevitable: as participatory methods are rather subjective, results have to be verified by different approaches (triangulation). Avoid standardised procedures, use the best possible judgement at all times. Only the specific situation can give hints about follow-up; stakeholders should decide how to go ahead.

(5) Repeat methods with different groups if they seem suitable.

(6) Discuss and determine where information will be stored and how to ensure access to it.

Potentials of the method	Limitations of the method
• can be used in all project phases • comparatively cost-effective, rapid, qualitative appraisals • integrates local / indigenous and external knowledge • allows in-depth investigation • hidden aspects can be discovered that are not obvious at first glance	• statistical evaluation is not necessarily ensured; need for verification by other methods • depends a lot on the behaviour, attitudes, values and beliefs of the surveyor; therefore, quality control is necessary to avoid abuse and to maintain certain professional ethics • methods have to be accepted and must be applicable by local stakeholders • exaggerated, standardised and routine use of participatory methods will "saturate" people • even if the tools / methods are allegedly participatory, there must be reflection about what ends are really served by the results: solution of locally perceived problems or project staff reports

Investments and prerequisites	
Essential equipment	• memo-block, cards, pens • materials found at the site (stones, seeds, etc. for visualisation)
Desirable equipment	• measuring instruments • tapes, cameras
Labour requirements	• survey team composition depends on the situation • well-trained, experienced and sensitised staff • several observers / interviewers would give a more objective picture • assistants are useful for some methods (e.g. semi-structured interviewing: someone who takes notes) • local stakeholders on the team facilitate access to and acceptance by a local community • it is essential that both women and men be on the team
Time expenditure	• little preparation time for the development of an analytical framework, but relatively time-intensive repeated visits and interviews. Local time schedules must be respected.

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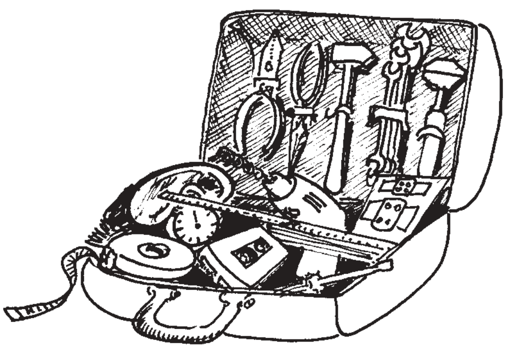


Photo-Monitoring

Objective and Brief Description of the Method

Development projects are implemented to improve selected components of a context, for example to achieve better living conditions, improve training and education for rural people, to achieve better production and resource protection, etc. Many of these changes are visible, and photo-monitoring (PM) is a good method for recording these **visual changes**.

Procedure / Steps

(1) Preparatory work

- Clarify the **reasons** for PM: In the present case, the purpose of PM is to monitor changes in order to assess the impact of a project. Photos encompass visible changes in the context, not only the direct and indirect impacts of the project activities in question, but also the influence of other factors (other projects, national policies, etc.). Photos alone do not constitute proof, but they can trigger a fruitful discussion among project stakeholders about changes.
- Clarify the **objects** of PM: The objects of PM correspond with **visible** impact indicators (cf. Step 4). Rural development projects should contribute, for example, to higher household income and living standards, which can be seen in terms of better housing and clothing, more children going to school, better means of private and public transport, etc. Similarly, if land use has changed and land management has improved, this should be visible in the form of improved crop stands, controlled soil degradation, conservation measures, etc.

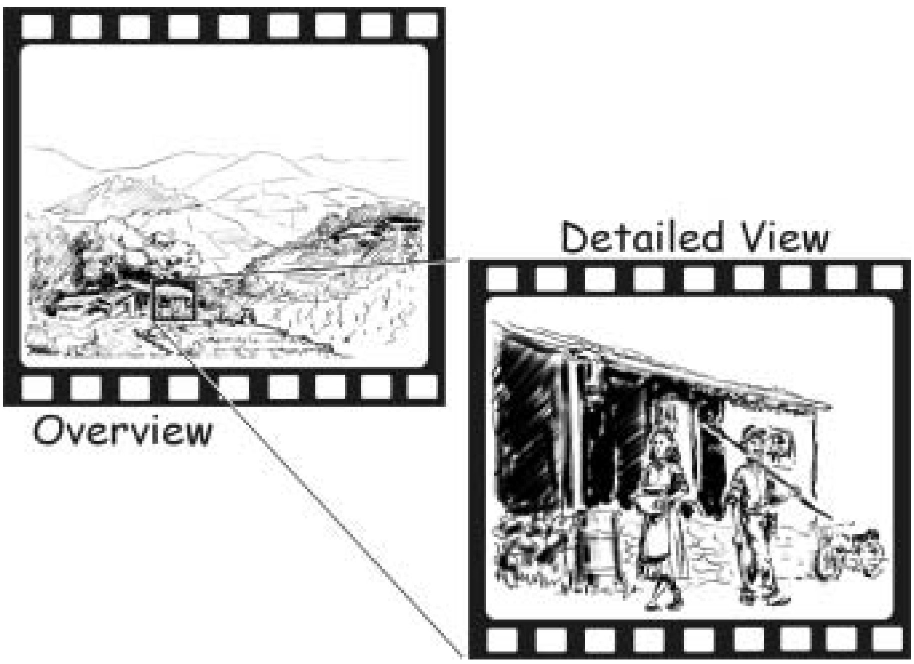


Figure 15: Photo-monitoring – overview and detail

- Determine the **locations** of PM: The examples of "better housing and clothing" and "better land management" constitute quite different photographic objects which require different types and scales of photography (Figure 15):
  - **Overviews**, showing a large part of the project area, e.g. the land use of a valley, an entire slope, a village, etc.
  - **Detailed views**, showing important particulars in the area, such as people, houses, rooms, agricultural technologies, constructions, means of transport, etc.

  This scenario refers to locations and indicators where visible changes can be expected (systematic monitoring). Additional photos should be taken whenever and wherever remarkable changes occur (occasional monitoring).
- Determine the **timing** of PM for each location: The timing depends on the indicators of change seen in the photos. For example: Quality of housing can be documented at any time. People can be documented every year, but always during the same activities or weekdays. Agricultural production can be documented shortly before or during harvest. Soil degradation can be documented shortly after the onset of the rains when vegetation cover is low.
- Determine the **responsibilities** for PM and its documentation.
- Plan discussion and **interpretation** of the photographs with stakeholders.
- It becomes clear that only those locations where changes are expected can be determined in advance (systematic monitoring). Any occurrence of new indicators or unexpected events and changes (occasional monitoring) requires an **adaptation** of the locations and the timing.

(2) Field work

Slides are the preferred film material, because they are more appropriate for oral presentations during stakeholder meetings. Prints of any size can also be produced from slides. Field work begins by finding the best standpoint (photo-viewpoint) to take pictures in accordance with the impact indicators (chosen in Step 4). In order to be able to take subsequent photos from the same spots in the future, the standpoints must be identified clearly. The best way to do this is to choose standpoints near a noticeable landmark or benchmark, such as a tree, the edge of a building, etc. Alternatively, standpoints can also be permanently marked in the field by (iron) poles, piles of stones, and the like. However, these "landmarks" might be removed. A third option is finding the standpoint with a global positioning system (GPS) or compass bearings, which requires additional equipment, training and experience. In any case, the definite standpoints and the directions of view of all photos are indicated on a map (Figure 16). A good sketch is a minimum requirement if there is no map available. Additional details such as the date and time of day, film and photo No., name of the location, focal length, etc. are documented on the field form (see below).

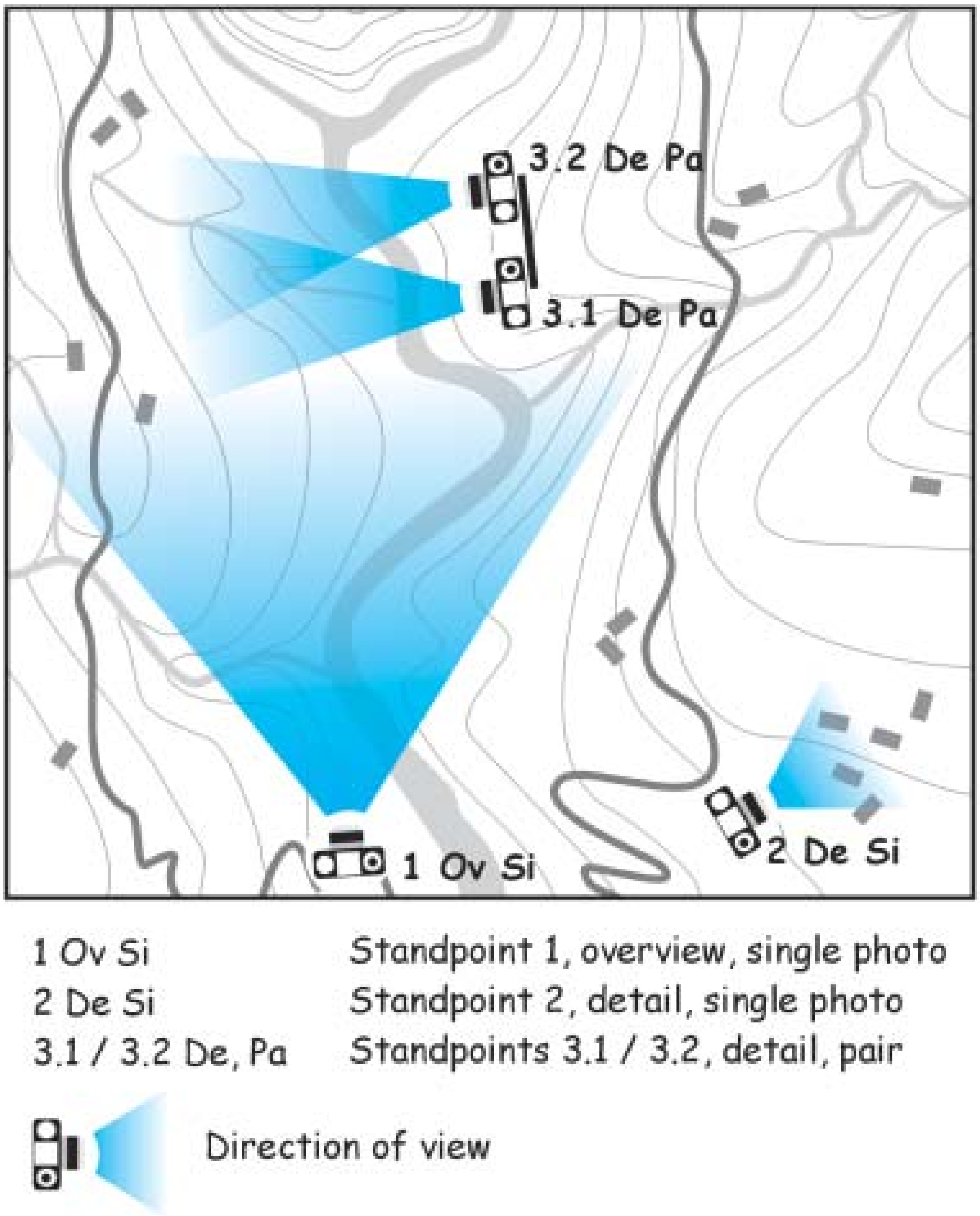


Figure 16: Photo-monitoring – map of standpoints

While detailed views (a house, a room, a person, a conservation measure, etc.) may require only one photo at a time, overview photos may comprise a sequence of adjacent pictures (Figure 17) made one after another by choosing a slightly different angle for each photo.

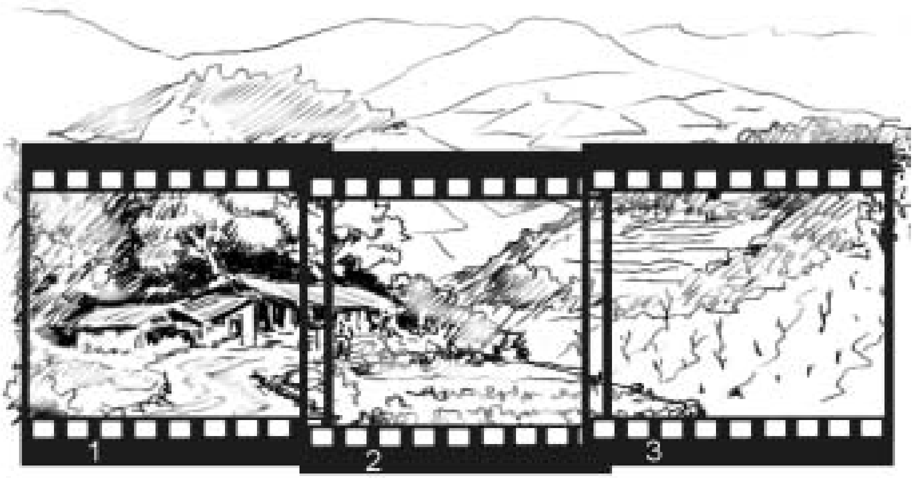


Figure 17: *Photo-monitoring – photo sequence*

In case a three-dimensional view and partially quantitative interpretation is desired, pairs of photographs of the same object are taken (Figure 18). Both photos are made from two adjacent standpoints, i.e. from the endpoints of an approximately 30-m-long "baseline". This line is preferably located on the slope opposite the object. The same object is thus taken from two slightly different angles, which allows a 3-dimensional view with the help of a stereoscope. The baseline, and its endpoints (standpoints) and the direction of view, are also indicated on the map (Figure 16), and further details are documented on the field form.

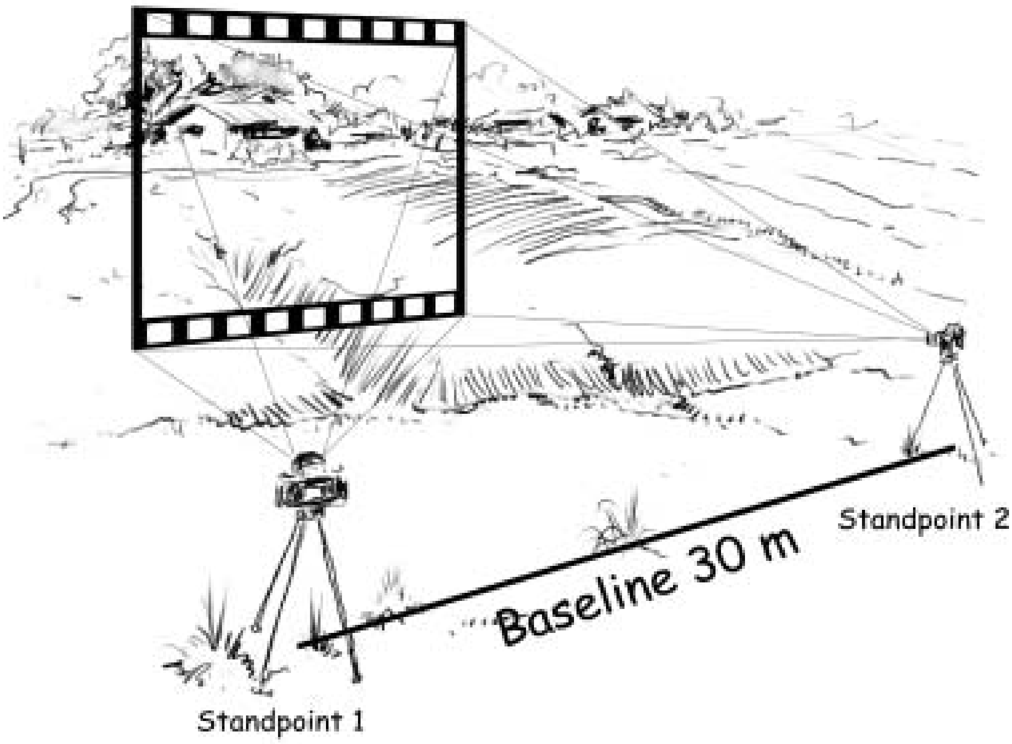


Figure 18: *Photo-monitoring – taking a pair of photos (stereo photos)*

Field Form: Photo-Monitoring

Name of area / village:								**Photographer:**
Film No.	**Photo No.**	**Type of photo***	**Date**	**Time of day**	**Focal length (mm)**	**Stand-point No.**	**Direc-tion of view****	**Description of subject, other information**
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							

* Type of photo: **Ov** = Overview; **De** = Detailed view; **Si** = Single photo; **Se** = Photo sequence; **Pa** = Pair of photos

** Direction of view: North, Northeast, East, etc. or any other description (towards main road, etc.)

(3) Documentation

Slides and photographs should be kept in files together with maps, field forms and other notes and materials. Reactions and interpretations when the pictures are discussed with the stakeholders are part of the impact assessment (cf. Step 6), which can be done together with the presentation of results obtained through other monitoring methods. The entire outcome of such discussions will be stored together with other IMA data and information.

Potentials of the method	Limitations of the method
• comprehensive and fast method • professional manpower or sophisticated equipment would improve the quality but are not necessary (reflex camera desirable, but pocket camera can also be used)	• restricted to visual changes; should be used together with other monitoring methods

Investments and prerequisites	
Essential equipment	• camera • field forms • 100–200 ASA film
Desirable equipment	• reflex camera (35-mm camera, changeable lenses, filters, tripod and cable release) (Costs of sophisticated equipment are estimated at US$ 1,200–2,200) • filing cabinet for slides and photos • light box for examination of negatives or slides • large-scale topographic maps or altimeter and compass • (pocket) stereoscope is needed only for pairs of photos (stereo photos)
Labour requirements	• people with basic experience in photography
Time expenditure	• time input depends on the number of sites and distance to sites

Bookshelf

Bosshart, U. **1997**. Photo-Monitoring. Centre for Development and Environment, University of Bern: 44 p.; Bern.

Swiss Agency for Development and Cooperation **1992**. Photography in project work. Uses and limits in photo-observation: 50 p.; Bern.

Participatory Transect Walk and Observation

Objective and Brief Description of the Method

A participatory transect walk is conducted by a team to observe and talk about issues of local importance. The area under study is systematically traversed by experts (outsiders) and local informants (insiders). The team is preferably composed of people representing different disciplines – biophysical and socio-economic – in order to cover a wide range of topics during the walk. The walk follows a specific route, e.g. from the highest to the lowest point, from north to south, etc. Everything mentioned by the informants and everything observed and questioned by the outsiders is discussed and noticed. The walk supplements "official" information (reports, secondary literature, etc.) with subjective and lateral observations and experiences. This method can be used for a qualitative approach as well as for a rapid semi-quantitative assessment.

The participatory transect walk is a particularly good chance to get an overview of visible resource degradation as a sign of unsustainable land management: Which degradation processes prevail, when do they occur, and where are areas of particular hazards (hot spots)? Such visible signs are a starting point for further informal discussions with local and other stakeholders on the spot, and consequently for understanding different perceptions of the same issue. Socio-economic topics are already subject to interviews and discussions, but may also be taken up during the walk.

Procedure / Steps

(1) Local key informants are asked to form an observation team together with outsiders.

(2) A route is identified by the group.

(3) If possible, the team develops its own norms for group behaviour (team contracts).

(4) The transect walk is planned (definition of the subjects, methods used). To identify signs of unsustainable land management, for example, the attached field form (see below) will give initial hints about what to look at. Discussions prior to and during the walk may give further clues about observable symptoms and indicators.

(5) The timing of the walk depends on the subject. For example, soil erosion can best be observed at the beginning of a rainy season, crop pests and diseases during the cropping period, crop yield before harvesting, water problems during dry and rainy seasons, etc.

(6) During the transect walk, new findings are considered and pursued if they seem to be important to the overall subject.

(7) Different land units (slope, level terrain, forest, cropland, natural sites, village, etc.) and problem areas (erosion hazards, water problems, malaria, etc.) are distinguished. During the walk, relevant observations are marked on the map and accompanied by extended remarks and descriptions in a field book. Sketches of the area enhance detailed observation more than photos. Like photographs, sketching can be used to visualise impressions or changes after a certain period of time.

(8) Symptoms of unsustainable land management, for example, will be observed within their topographic sequence, with a continual search for possible interrelations or causes of degradation up- and downslope, or up- and downstream.

(9) Information is shown on a general transect map. Sketches, photos and notes can be used to reflect on the mapping and for discussions with others who did not see the location. Sketches can be used on the same day, while photos may take longer to be developed. In view of the long-term nature of IMA, field maps may need to be redrawn on clean paper while the field impressions are still vivid, preferably on the evening of the field day.

Potentials of the method	Limitations of the method
• provides a good overview and a rather intensive impression of a new location • closely considers the local knowledge base • all local land users can participate • important new issues arise which may have been overlooked • provides basically qualitative results, but some indicators can be quantified • signs of unsustainable land management can be mapped within a topographic sequence, which reveals spatial interrelations of bio-physical and socio-economic processes	• subjective information; mapping reveals only what is visible to the person who applies the method • quantitative statements, in particular, must be supported by additional investigations

Investments and prerequisites	
Essential equipment	• field book, pens • clip board • topographic maps, sketch maps • compass, altimeter
Desirable equipment	• large sheets of paper • camera, binoculars • metre, measuring tape • spade, soil auger • field pH meter
Labour requirements	• depending on the subject: 1–3 persons, with background in both social and natural sciences
Time expenditure	• one person or team needs approximately one day for detailed mapping of 3–4 km^2

Bookshelf

Germann, D., Gohl, E., Schwarz, B. **1996**. Participatory impact monitoring. Booklets 1–4. Gate/GTZ.

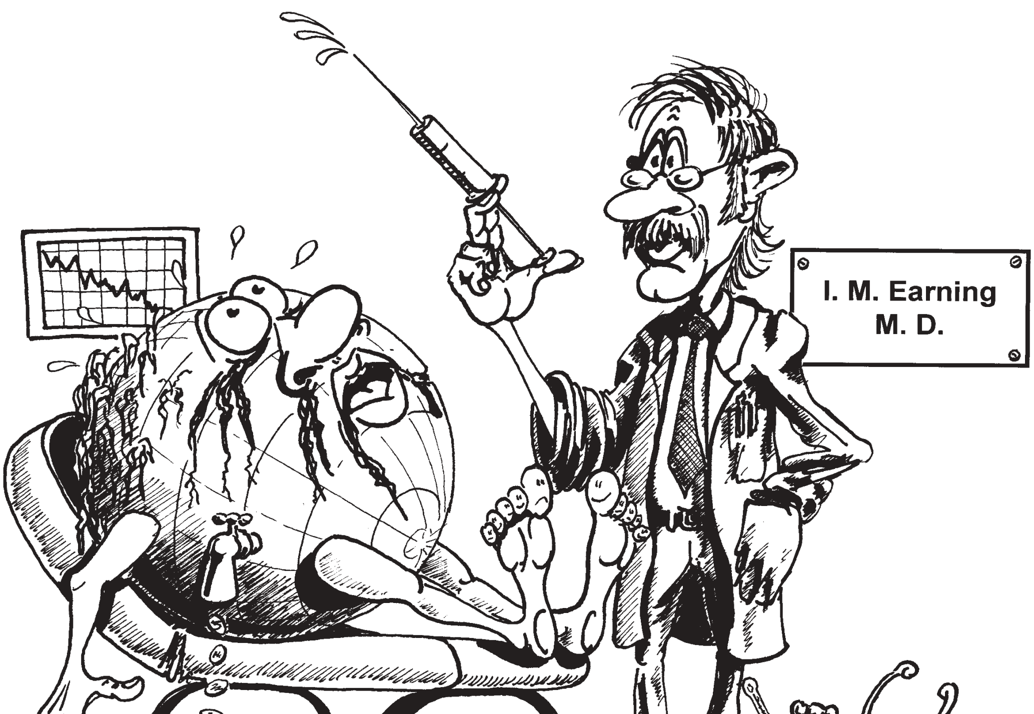
Pretty, J.N. **1990**. Rapid catchment analysis for extension agents. Notes on the 1990 Kericho workshop for the Ministry of Agriculture, Kenya. IIED; London.

Field Form: Participatory Transect Walk and Observation

Checklist: Signs of unsustainable land management

Signs of unsustainable land management	Indicators (what to observe)	X
Soil fertility decline	changing colour of plant leaves	
	reduced plant cover / production	
	salt on soil surface	
	abandonment of cropland	
	soil colour changes	
	decreasing root density	
	poor soil drainage	
	compaction: crust thickness, strength (break by hand)	
	indicator plants	
	…	
Degradation of plant resources (possibly as a consequence of soil / water degradation)	changing colour of plant leaves (yellow)	
	pests and diseases	
	low plant ground cover (estimation in %)	
	low variety of plants / high variety of weeds (species composition)	
	…	
Soil erosion by water	exposed plant roots (cm)	
	rills, gullies and accumulations (No., density, volume)	
	reduced topsoil depth (spade or drill)	
	change in soil colour indicates subsoil exposure	
	increasing runoff, periodic flash floods (time)	
	sedimentation of reservoirs, deposition visible during low water table	
	water turns brown	
	increased seeding rate	
	increasing stone cover (topsoil already washed away)	
	…	
Wind erosion	dust storms, mobile dunes (pegs as reference points)	
	nutrient depletion (incl. acidity), toxicity (pH)	
	…	
Declining water quality and quantity	water has brown colour (soil erosion)	
	algae	
	bad odour	
	months of water shortage	
	diminishing groundwater table	
	drying up of wells, springs and rivers	
	dying trees	
	more unpalatable weeds – fewer fodder species	
	…	
Degradation of animal resources (possibly as a consequence of plant degradation)	changing No. of livestock per household or village	
	malnutrition / shortage of fodder	
	animal diseases	
	…	
Land use changes	increasing % of cropland	
	deforestation	
	shortening fallow period	
	pasture turned into cropland	
	…	

... list of indicators should be supplemented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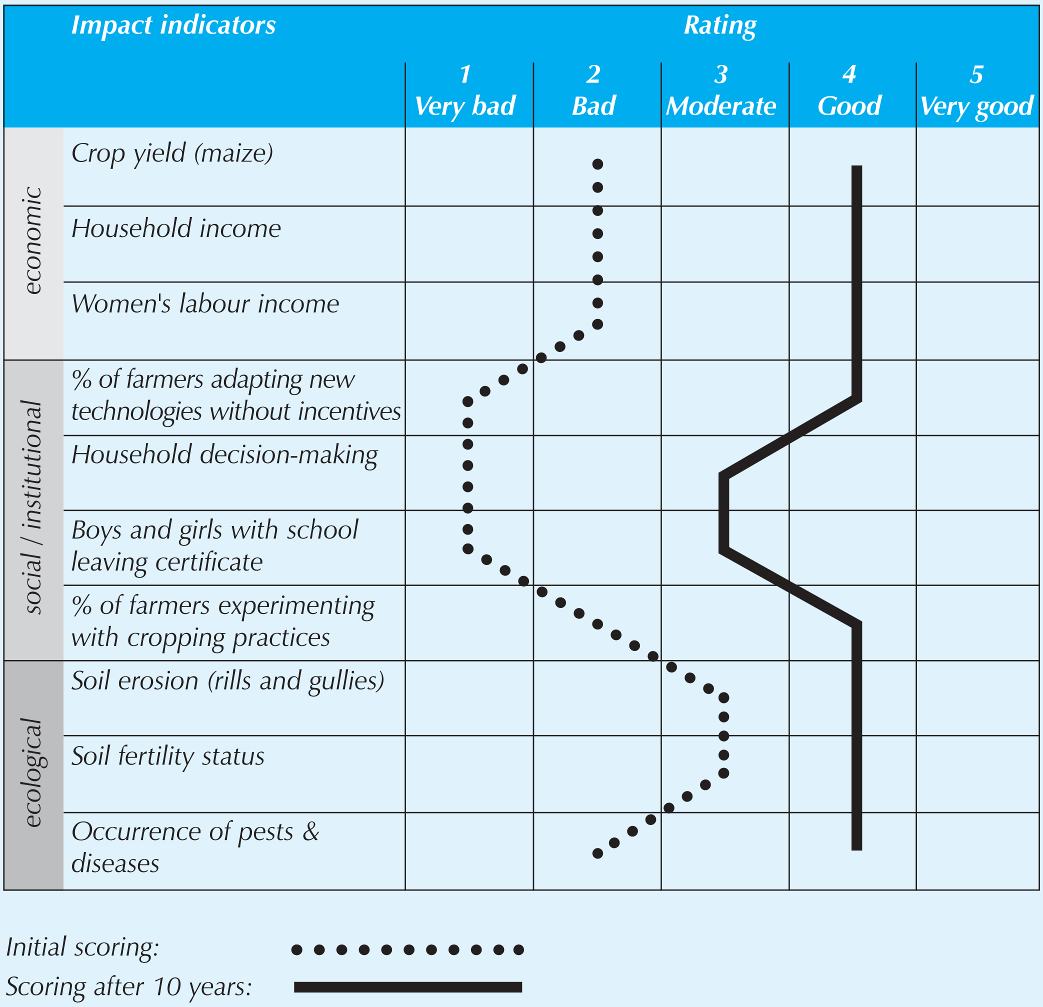
Step 6: Impact Assessment

Example

As an alternative to the spider diagram, changes in the context can also be visualised as an impact profile.



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Gohl, E. **2000**. Prüfen und lernen. Praxisorientierte Handreichung zur Wirkungsbeobachtung und Evaluation. Association of German Development NGOs: 104 p.

Herweg, K., Slaats, J., Steiner, K. **1998**. Sustainable land management – guidelines for impact monitoring. Working documents for public discussion. Workbook 79 p. and Toolkit 128 p.; Bern.

IUCN. **1997**. An approach to assessing progress towards sustainability – Tools and training series. IUCN / IDRC; Gland.

McMay, V., Treffgarne, C. (eds.) (**no date**). Evaluating Impact. DFID, Education research, Serial No. 35.

Mutter, T. **2000**. Evaluieren NGOs anders? Die Folgen von Partnerautonomie und Organisationsgrösse. Entwicklung und Zusammenarbeit, No. 12: pp. 351–353.

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PASOLAC / INTERCOOPERATION **1999**. Evaluación participativa por productores. Programa para la agricultura sostenible en laderas de América Central; Doc. No. 216: 58 p.; Managua.

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PROASEL / INTERCOOPERATION **1999**. Evaluación participativa por productores. Programa Suizo con organizaciones privadas para la agricultura sostenible en laderas de América Central; Doc. No. 57: 30 p.; Tegucigalpa.