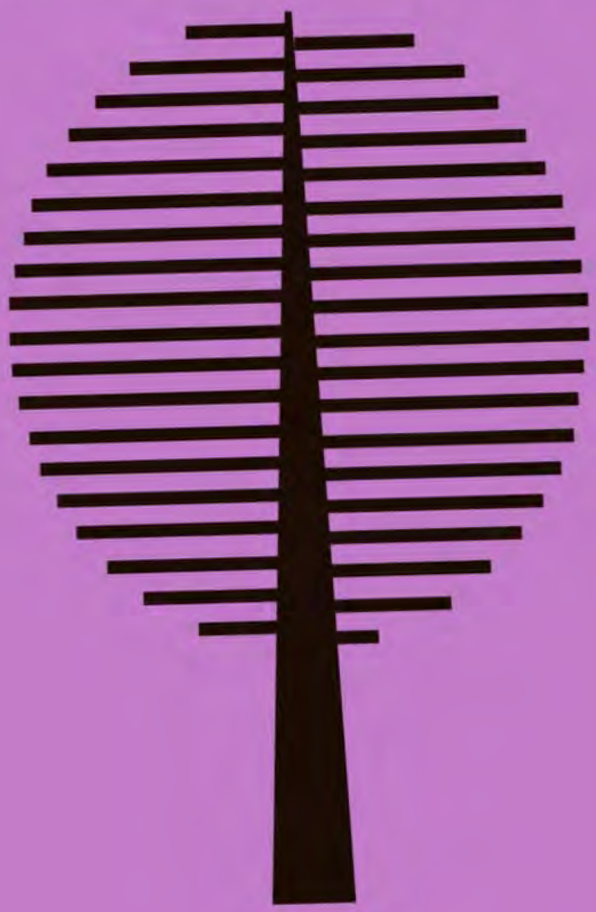
An Approach to Assessing Progress Toward Sustainability

Tools and Training Series

Community-based Indicators

A guide for field workers carrying out monitoring and assessment at the community level



Diana Lee-Smith

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IUCN
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This booklet was written by Diana Lee-Smith, a member of the IUCN International Assessment Team which also includes Robert Prescott-Allen, Diana Lee-Smith, Ashoke Chatterjee, Adil Najam and Tony Hodge. The group is coordinated by Nancy MacPherson of IUCN.

This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada. These publications are one outcome of the project on assessing progress towards sustainability of IUCN (World Conservation Union) supported by IDRC. The project started by bringing together an international working group to discuss the problems of monitoring and evaluating sustainable development. The group soon realised that there was little point in monitoring and evaluating unless one had an idea of where one wanted to go, and that this understanding could best be developed through a questioning approach. A set of methods and tools, including the early drafts of this booklet, were developed and tested in pilot field trials in Colombia, India and Zimbabwe.

Print production of this booklet has been assisted by grants from the International Development Research Centre (IDRC, Canada) and the Swiss Agency for Development Cooperation (SDC).

About the Series

This series of eight volumes has been developed by a cross-disciplinary team for people interested in assessing progress toward sustainability. Despite differences in emphasis, the materials share a common framework and key principles. We suggest that there are four basic linked steps to understanding sustainable and equitable development:

1. Wholeness. People are an inextricable part of the ecosystem: people and the environment need to be treated together as equally important. Interactions among people and between people and the environment are complex and poorly understood. Thus we need start by...

2. Asking questions. We must recognize our ignorance, and ask questions. We cannot assess anything unless we know which questions to ask. To be useful — to help make progress — questions need a context. Therefore we need...

3. Reflective institutions. The context for the questioning approach is institutional: groups of people coming together to question and to learn collectively. The process of reflection will, we suggest, lead inevitably to an approach that is...

4. People-focused. People are both the problem and the solution. Our principal arena for action lies in influencing the motivation for human behaviour.

The series starts with the summary document, *Overview of Methods, Tools and Field Experiences: Assessing Progress Toward Sustainability.* The other seven volumes fall into three sets:

Methods of system assessment (people and the ecosystem)

- Participatory and Reflective Analytical Mapping (PRAM)
- Assessing Rural Sustainability
- Planning Action for Rural Sustainability

Methods of self assessment (for organizations and communities to examine their own attitudes, capacities and experiences)

- Reflective Institutions

Tools (for use in conjunction with any of the methods or with other methods)

- Barometer of Sustainability
- Community-based Indicators
- Questions of Survival

Assessing Rural Sustainability and *Planning Action for Rural Sustainability* are designed to be used together. They can also be used with *Participatory and Reflective Analytical Mapping (PRAM)*, although this is conceived as a separate method. *Barometer of Sustainability* and *Community-based Indicators* may be used with any method of system assessment. *Questions of Survival* may be used with any method of system assessment or self assessment.

Methods and tools may have to be adapted to local circumstances, and some may not be relevant. Solutions must be people-focused to be sustained. We urge the user, when using these documents, to keep in mind the underlying approach:

- recognize the wholeness of people and the ecosystem together;
- decide which questions to ask before searching for indicators; and
- create opportunities for groups to reflect and learn as institutions.

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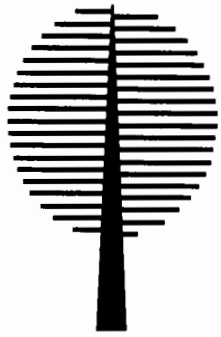


Introduction

This booklet explains the general purpose and method of developing indicators. It was developed as part of the assessment work for the District Environmental Action Plans (DEAPs) during 1995-96 in Zimbabwe, where it has been used for training field workers. In this version, the text has been written for general use, although the examples given are taken from Zimbabwe.

It can be used with all of the methods of system assessment developed by the IUCN/IDRC project on Assessing Progress Toward Sustainability; as well as any method of assessment intended for use at community level.

The method is based on developing a common understanding that human wellbeing is dependent on the wellbeing of the surrounding ecosystem. This is as true at the level of the planet as it is at community level.

At whatever level sustainability is assessed, the process involves setting common goals, identifying conflicting interests, devising and applying strategies and ways of measuring. It is a learning process involving reflection, argument, negotiation, strategising, measurement, action and continuous reassessment.

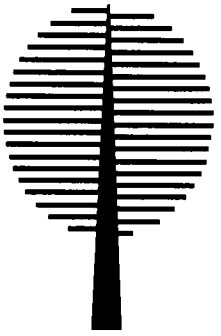
It involves identifying ill-health in the human and ecosystems and devising strategies to prevent further decline and to bring about improvement. Indicators are tools of measurement that help to make an assessment precise. They help to make the basis of judgment and evaluation explicit.

The processes of assessment and strategy development are closely intertwined in practice. When discussions are proceeding at community level, ideas about action may be continuously reviewed and combined with ideas about what is going right or wrong (assessment).

For conceptual purposes, assessment may be broadly divided into assessment of the system and assessment of the strategy. Assessment of the system may also be divided into assessment of the state of the system (human and ecosystem wellbeing) and assessment of change (improvement or decline).

This booklet deals with how to develop indicators for assessing communities' strategies. The types of indicators discussed can be used to annotate the Barometer of Sustainability (see companion booklet). Combining the two tools, the barometer and community-based indicators, can help communities measure their own strategies for sustainability.

Assessment and strategic action based on assessment must be rethought and negotiated in every place. This is not a search for universal indicators but for ways of measuring and assessing that can be shared.



Why use indicators at the community level?

Measurement as a tool for empowerment

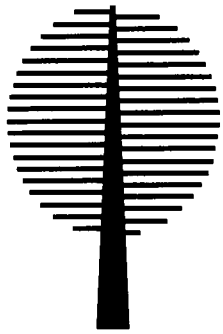
Placing indicators in the control of communities gives them the potential to control their own lives and resources. If they have identified what needs to be measured based on their own analysis, they can have ownership over the process and can use assessment effectively.

Developing data systematises knowledge. It helps communities learn about their resources and empowers them to control the process of change. Systematically recording data can also help different interests within the community negotiate by making things explicit and countable, and increases the community's power in relation to outside groups, such as local authorities and government agencies.

Our job is to provide communities with tools that they can use. Once they have said what they want to measure, we need to help them design indicators that are accurate and meaningful. They may use entirely qualitative data, such as sketch maps, anecdotes and stories. Or we may help them derive quantitative indicators based on counting things and analysing what they mean.

Typical indicators that can be shared between communities may emerge from this process. These could become inputs to computerised mapping systems for local use.

It is possible that such locally generated data could form the basis for government planning statistics in future, contributing to a community-based system of governance. This is an alternative way of looking at community-based indicators as a tool of empowerment. But for now, community-based indicators are seen as empowering through developing the local knowledge system.



Framework for developing indicators

Sharing a common understanding

Assessment implies both something to measure and a way of measuring it. For this process at community level, the something being measured is progress towards ecosystem and human wellbeing in the local environment. Indicators are tools a community will use to measure these.

Rather than presenting communities with examples of indicators, it is better to listen to them and facilitate a discussion about their measurement needs, and then to provide the service of developing useful indicators based on previous experience. The purpose of this guide is to help field workers understand indicators. The examples provided in later sections of the booklet are to show how the process of indicator development works, and not to predetermine what the community should measure.

Each community will identify its own indicators when it:

- shares the understanding of working towards human and ecosystem wellbeing;
- decides on a strategy for action; and
- decides what measurements are needed and feasible.

Each community knows its situation, and we facilitate the explanation and understanding of that situation. It selects tools to measure what it thinks it needs to measure. We help design those tools through discussion.

A forum for the different interest groups is needed in each community to develop discussion and working relationships around their various:

- explanations of reality (the way they understand human and ecosystem wellbeing and the way they interact); and
- strategies and measurements they want to use.

There will be a discussion among the various interest groups about who values what, both before and after they decide on strategies and what to measure. Different interest groups may want to measure different things. We should help facilitate the process of negotiation and the selection and design of different indicators that suit different needs or explanations.

Questions for discussion

Assessment is the process of describing the state of a system and judging progress towards a goal. Indicators are measurements taken to describe the state of something or to monitor changes. The "assessment questions" we have developed are a guideline to have in mind as discussion takes place in the communities. Keeping these questions in mind, we need to provide a framework for the community to identify the things to be measured that fit their ecosystem and means of livelihood:

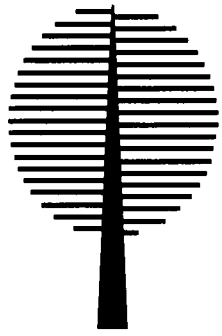
- how are you doing?
- how is the ecosystem doing?
- what needs to be done?

The first two questions are about the state of the system and the way it is changing, while the third is about strategies. A fourth question is required as a follow-up to find out whether or not the strategy is working:

- how would you know if things were getting better or worse?

This is the question that leads to indicators. The stage of planning action is when field workers need to be ready with questions and advice on techniques for developing indicators. Related questions are:

- where would you get that information?
- who has that information?
- what would you need to look at in order to find out?
- what would you need to count or measure in order to find out?



Tools for measuring and aggregating at community level

People are continually assessing their situation and surroundings. For effective community-based indicators we need to translate the things people want to measure into a manageable form. The purpose of measurement is to make values more precise, to compare and evaluate one thing against another.

Quantitative indicators may include trees, animals, incidence of sickness, sacks of maize, etc. They may include the nominal incidence of such things (e.g. present/not present), numbers compared to before (a trend or percentage can be derived) or per hectare. They may include complex ratios or percentages that indicate the incidence of important phenomena.

Scales

Value measurements are derived from the nature of the thing valued and translated onto a scale. There are four different types of scales:

Nominal scales identify categories or classes. For example: red, blue, green, or red, not red.
Ordinal scales identify category and rank order. Terms that may be used are identity/non-identity, greater than or less than.
Interval scales identify rank order and have equal intervals. Addition and subtraction may be used.
Ratio scales identify rank order and interval and have an absolute zero. This allows for more complex mathematical operations.

The more complex scales may be mapped onto the simpler but not vice versa. In assessing sustainability we normally use ordinal or interval scales. For example the Barometer of Sustainability uses an interval scale of 1-100 which can be mapped onto the ordinal scale: bad – poor – medium – OK – good.

Aggregation

The best way to aggregate this type of measurement at community level is through discussion to arrive at a consensus. This reveals both the nature of

the value judgments, and who makes them. Aggregation involves subjective judgment, whether arbitrary or based on experience. The danger in using quantitative indicators and aggregate measures is the assumption of their objectivity. The judgment involved in assigning the nature and values of variables may be forgotten, as is the case with measures such as GDP.

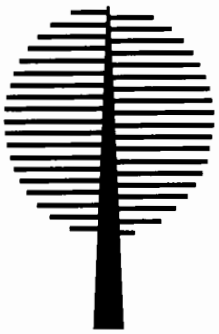
We must assume that decision-making and assignment of value are inherently political, involving multiple biases or areas of interest, and the interaction of numerous groups or organisations with different goals. Decision-making needs to be perceived as an inherently argumentative process.

If indicators are being selected for use with the Barometer of Sustainability, discuss whether all of the issues should be used in coming to an overall judgment about how the human system and ecosystem are doing.

There are three ways to aggregate:

1. If they are all seen as equally important, you can add them all up and take the average (e.g. if there are two bad and one OK, the average is bad).
2. If some are more important than others, use pair-wise ranking. You can ask people to say how much more important one is than another, and then take a weighted average (e.g. if the most important one is OK and the two bad are less important, the weighted average could be OK).
3. If one is seen as critical, it can be used as a veto function. That is, if it is bad or poor, that becomes the overall reading, regardless of how well the ecosystem is doing on the other issues.

This process can be done separately for issues dealing with human and ecosystem wellbeing. Then, for example, if the ecosystem is poor and the human system is OK, the barometer tells us that the situation is unsustainable. Even if you do not have time to hold such a lengthy meeting, you can carry out the reading among the team members. The value of doing this with the community is that learning takes place and participants develop control over their situation through understanding it better.



An example of how to select indicators

Time needs to be spent with the community in deciding which indicators to use. Different groups may want to use different indicators (just as they may want to use different strategies) and they should allow for some flexibility.

In particular, it is important to involve women in the design of both strategies and indicators. Men's and women's relationships to the management of natural resources differ in most societies. It has been shown by research in African countries that women are those most concerned with the management of natural resources at the point where they are transformed and used as food, fuel, water and other items of domestic consumption.

People may use indicators to describe the state of a system as well as to measure how it is changing as a result of a strategy. Very often, the same indicator can be used. For example, people in Chiwundura, Zimbabwe, used fuelwood shortage as an indicator of declining human wellbeing.

To be made more precise, this indicator could measure the number of families in a community who have no access to their own fuel supply, or the time taken by people who have to gather wood. To indicate a trend, the number of people who have to buy wood, or the time taken to gather it would need to be measured at different points in time.

Strategies to address fuelwood shortage could be:

- people planting live fences around their farms;
- community woodlots; and
- seedling nurseries.

Indicators to assess whether the strategies were working could measure:

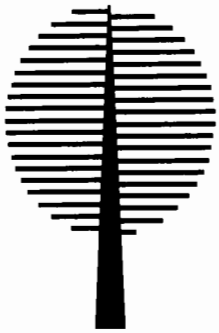
- number of farms with live fences;
- number of seedlings planted in community woodlots; and
- number of seedlings produced.

If any of these measurements are taken at different points in time, it could indicate a trend and show the effect of the strategy.

Another indicator of the strategy working effectively would be reduction in the time taken to collect fuelwood. However, this would be a longer term measure and no progress would be likely to show soon after the strategy started to be implemented, whereas seedling production and tree planting and propagation can be measured in a shorter time.

For comparison between communities, or to indicate an important statistic to national agencies to bring something to their attention, percentages are very useful. For example: "40 per cent of the women in Mateza village have to walk for two hours to collect firewood for cooking. This compares to 5 per cent two years ago and to 8 per cent in Varozvi". This statistic can be used to compare with earlier or later readings in the same place, to compare with other places, including using it on maps to show patterns in a larger area, or for lobbying with government or other agencies about resources.

You can encourage the community to select several indicators to assess their strategy, as long as a manageable system can be set up for recording and managing the data. This implies a level of cooperation and communication among various individuals, groups and organisations in the community. In turn, this contributes to community-level institution building.



Setting up a process for recording data

Whatever indicator or set of indicators is selected, you need to plan with the community:

- how the data are to be collected;
- how often and by whom the data are to be collected; and
- how and where they are to be recorded.

Let us assume the strategy decided is to produce and propagate seedlings for erosion control, and that it has also been decided to use two indicators:

- the number of seedlings produced; and
- the time taken to collect fuelwood.

Number of seedlings produced

For the first indicator, someone needs to take responsibility for counting the number of seedlings at a regular interval.

The point at which seedlings should be counted needs to be decided. The best time is probably when they are put out in plastic tubes or boxes for use or sale, but they could also be counted when they are transplanted at the place of use.

If several groups or households are producing seedlings, the persons doing data recording need to decide when and how they are going to collect the numbers from each of them. For example, they could make a list of each producer, and record how many seedlings each producer has put in plastic tubes and seedling boxes every three months.

It is important to decide if the number recorded is the cumulative total or only those produced since the last count. And if some have been planted out, counting the total you can see will not give the right picture. It is probably better to record those produced since the last count, or to count how many have been transplanted. A notebook could be used for this purpose.

Figure 1. Seedlings produced or transplanted

	June	September	December	total
Mai Varozvi	15	12	20	47
St. Patrick's Form IV	108	64	140	312
St. Patrick's PTA	60	20	102	182
Total	183	96	262	541

Time taken to collect fuelwood

For the second indicator, someone in the community will have to:

- count the number of households;
- ask who in each household collects firewood (from where and how often); and
- ask how long it takes this person to fetch firewood, or how long they took the last time they went, including going there, collecting and coming back.

If the same community is using several indicators and these involve measuring things that every household does or does not do, then the questions can be organised in a list, like a questionnaire, and asked at the same regular interval.

If it is the only question being asked, this can be done more informally by going round with a notebook and finding each family. It may only need to be done twice: before starting to implement the strategy; and some time after the strategy has been put in place. In either case, it is useful to have a list that shows the following.

Figure 2. Firewood collection

household number	household name	who collects fuelwood?	where from?	how long it takes
1	Varozvi	Mai Varozvi	own farm	1/2 hour
2	Dube	Mai Dube	next village	1 1/2 hours
3	Moyo	Mai Moyo	commercial farm	3 hours

Setting up a process for analysing and using data

Even before the information to be used for the indicators is collected, it must also be decided:

- by whom and when it is going to be analysed; and
- how and where it is going to be discussed or displayed.

Figure 3. Number of seedlings produced

The people doing data recording could prepare a bar chart display at the village meeting-place. It would be quite easy to just read off the numbers and transfer them to the bar chart.

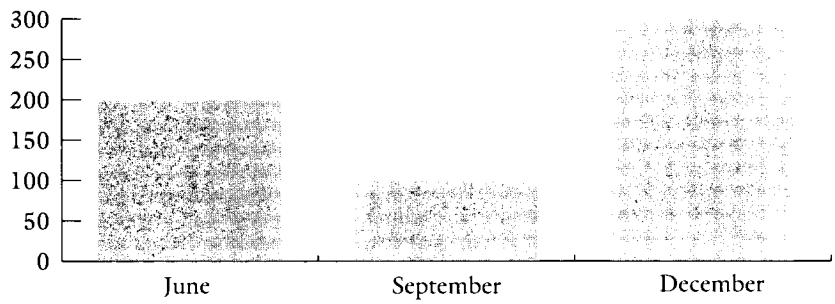


Figure 4. Time taken to collect fuelwood

This is a more complex indicator and another step is needed in the analysis. First, list the data in categories:

less than 1 hour	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	11	
1 to 2 hours	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	1111			
more than 2 hours	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	𝍸	𝍸	𝍸	𝍸
	𝍸	11		

These lists can be easily compiled in an exercise book using a pencil. As each entry is read off by one person, another makes a stroke under the right category. Strokes are arranged in groups of five, and the total number is then readily visible for quick counting of the total in each category. This technique can easily be learned by people with adult literacy training.

Using this list, a table showing the results can then be compiled.

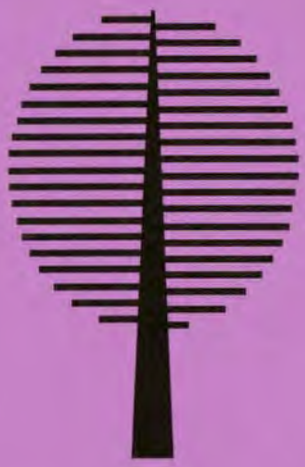
Table 1. Time taken to collect firewood

time to collect firewood	no. of households	% households
less than one hour	112	46
1 to 2 hours	64	26
more than 2 hours	67	28
total	243	100

The indicator is the percentage of the population taking more than two hours to fetch fuelwood. This table could also be presented in the form of a bar chart to be displayed at the village meeting-place. The statistic can be used to compare with earlier or later readings in the same place, to compare with other places, including using it on maps to show patterns in a larger area, or for lobbying with government or other agencies about resources.

Founded in 1948 as the International Union for Conservation of Nature and Natural Resources, the IUCN brings together States, Government agencies and a diverse range of non-governmental organisations in a unique world partnership: over 900 members in all, spread across some 136 countries. As a Union, IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. The Union builds on the strengths of its members, networks and partners to enhance their capacity and to support global alliances to safeguard natural resources at local, regional and global levels.

The Strategies for Sustainability Programme of IUCN works to strengthen strategic planning, policy and implementation skills aimed at sustainable development at global, national and local levels. Working with networks of strategy practitioners from member governments, partner institutions and NGOs, the Programme assists in the conceptual development and analysis of experience in strategies, the development of a range of strategic planning and action planning skills, and improved methods of assessing human and ecosystem wellbeing.



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IDRC CRDI
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