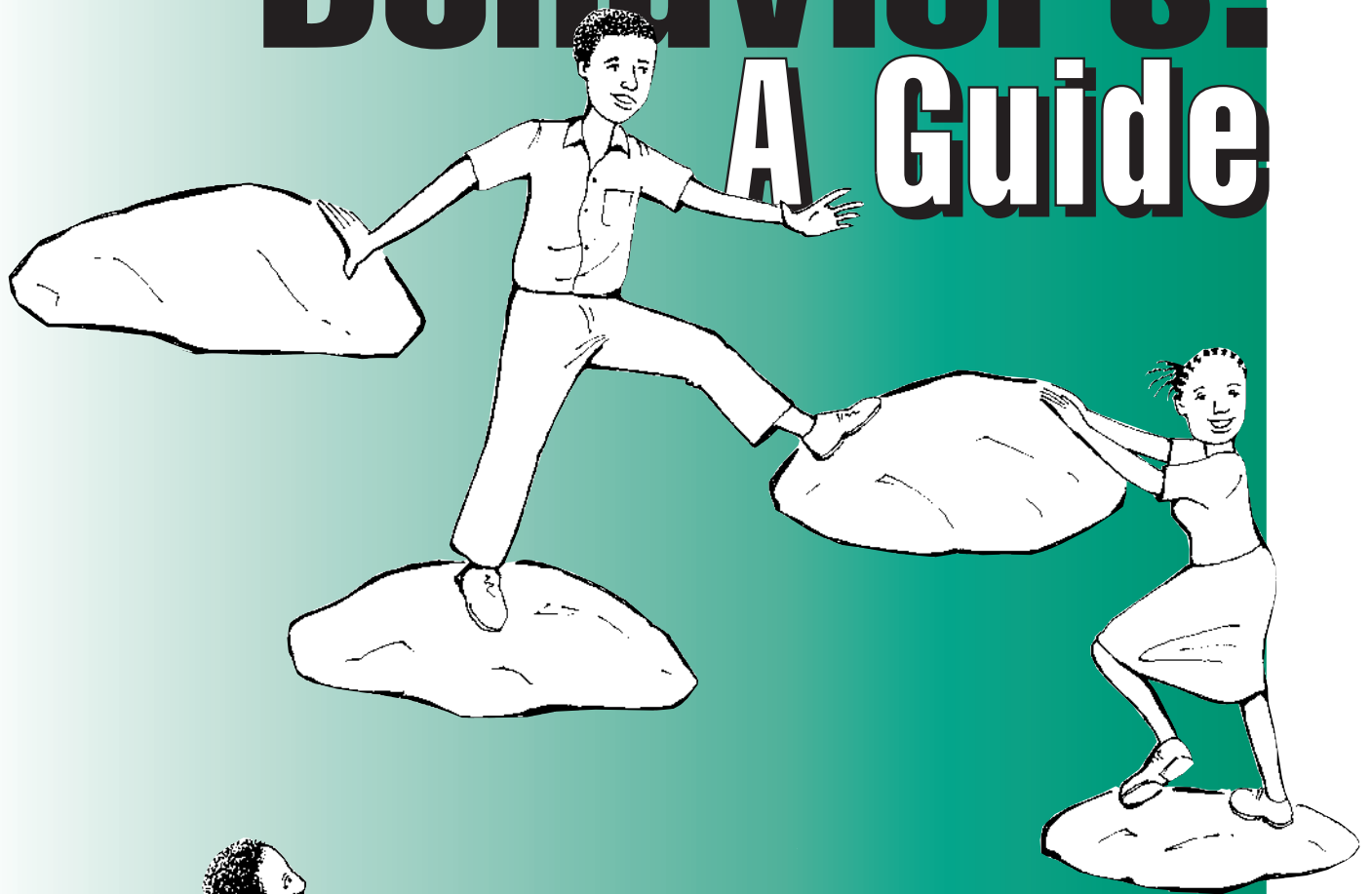


Understanding and Influencing Behaviors: A Guide



by
Bruce Byers

Biodiversity Support Program

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**Biodiversity Support Program
Washington, D.C.**

About the Biodiversity Support Program

The Biodiversity Support Program (BSP) is a consortium of World Wildlife Fund, The Nature Conservancy, and World Resources Institute, funded by the United States Agency for International Development (USAID). BSP's mission is to promote conservation of the world's biological diversity. We believe that a healthy and secure living resource base is essential to meet the needs and aspirations of present and future generations.

About BSP Publications

Our publications are designed to share what we are learning about how best to achieve conservation while doing it. To accomplish this, we try to analyze both our successes and our failures. We hope our work will serve conservation practitioners as a catalyst for further discussion, learning, and action so that more biodiversity is conserved.

Byers, Bruce. 2000. *Understanding and Influencing Behaviors: A Guide*.

Biodiversity Support Program, Washington, DC, USA.

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Many of our print publications are now also available in the BSP Electronic Library online at www.BSPonline.org.

Publication Credits:

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Editing, Design, Illustrations, and DTP:
Photographs:

Printing:
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Kirby Lithographic Company, Inc.



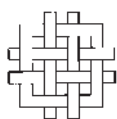
ACTION

Judy Oglethorpe

 Printed on recycled paper.

This publication was made possible by the Global Bureau of USAID under the terms of Cooperative Agreement Number DHR-5554-A-00-8044-00. Funding for the project came from USAID's Office of Sustainable Development in the Bureau for Africa. The opinions expressed herein are those of the author and do not necessarily reflect the views of USAID.

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PREFACE

Is this guide for you?

This guide was written for people working with communities to promote the sustainable management of natural resources—people such as:

- government extension or training officers,
- local community leaders or representatives,
- project managers, advisors, or technical employees of **conservation*** or rural development non-governmental organizations.

For example, this guide can help you if your work with natural resources involves:

- working with members of a community,
- planning or advising on local projects or activities,
- resolving conflicts, or
- designing, managing, or improving existing projects or activities.

This guide can help you:

- gather information about the effects of people on their environment,
- analyze and use this information to promote sustainable management of natural resources.

When this guide might help you

This guide was developed as a response to the current lack of simple advice for people who wish to learn more about what motivates **behaviors** that affect the environment. We hope it will help when you need to understand how people behave toward their environment and their reasons for doing so.

Human behavior is extremely complex. Behaviors that affect natural resources may involve many actors and actions and take place over long periods of time. This makes it difficult for either communities or outsiders to know how to begin to solve environmental problems.

Many natural resource managers focus solely on plants, animals and their habitat. But to understand what is really going on, you also need to gather and analyze information about people's behavior and know how to use this information. Although many of the ideas presented in this guide may not be new to social scientists, natural resource managers may feel apprehensive or confused when dealing with social issues since they may not have training in this area themselves. Even if they want to hire a social scientist to carry out research, funds are often lacking. As a result, managers sometimes don't receive vital social information on which to make decisions. This guide makes suggestions about how you yourself can understand, collect, and analyze information about why people behave the way they do toward the environment and suggests simple methods that don't require much prior training.

* Words that appear in **bold** are defined in the Glossary on page 61.

Many “methods” manuals only tell you how to collect information on how natural resources are used. They don’t focus on why people behave the way they do. This guide does. Other methods manuals do not say much about what to do with the information once you have it. This guide will show you how to do this as well.

We hope that this guide will help you to understand people’s behavior toward the environment and, as a result, give you the confidence to design activities that are supported and implemented by local residents and therefore have a greater chance of success.

How to use this guide

Use this guide as a source of ideas for working with people. After reading this guide, we hope that you will understand the advantages of understanding people’s behaviors and as a result increase your effectiveness in implementing activities with communities. In turn this should lead to a better way of managing resources, now and in the future.

This guide is meant to plant the seeds of ideas for understanding people’s behavior. It is not an all-encompassing guide to designing natural resource projects. If you are interested in pursuing any of the subjects in more detail, we have provided a brief list of recommended reading at the back of the guide. The guide should, however, provide you with enough information to get you started and to understand the basic issues.

Use the guide flexibly, rather than following it rigidly. Pick and choose from, and adapt and experiment with, the ideas that follow. Since every situation is different, there is no rigid formula or “blueprint” that will work everywhere.

In this guide we present a series of questions that will help you identify critical issues, understand critical behaviors, and develop a vision with strategies that work. We try to show how gathering information to answer these questions is a flexible process that must involve all stakeholders.

As you read the guide, we encourage you to ask “what kind of information do I need for my work?” and “how will I use this information to encourage changes in behavior?”

You can ask any of the questions suggested in this guide at any time. They can be asked when you are designing a new activity or project, or when you require further information that will allow you to take a corrective decision to keep your project on course. These case studies are from:

- Keur Samba Dia borassus palm forest, Senegal;
- Mbaniou, Senegal;
- Muzarabani sacred forests, Zimbabwe;
- Ranomafana National Park, Madagascar;
- Taita Hills, Kenya;
- West Caprivi, Namibia.

We use examples from a number of case studies to illustrate how the ideas we present in this guide have worked in real situations in Africa and Madagascar. Although our examples are drawn from the African region, we think they can be applied elsewhere in the world, in both less and more developed countries.

Finally a cautionary note. You will need resources not only to implement project activities, but also so that you can explore the issues and talk with the people involved right from the start. These resources include not only money, but also people's time, information and technical knowledge, equipment, transportation, and communications.

Budgets, especially when you first explore an idea, are often tight, so be creative. Look for opportunities where you can collaborate with others without much expense. Partners can include:

- university students from social science or ecology faculties interested in gaining practical experience;
- nongovernmental organisations who may be able to help with communications; transport, or field staff time;
- local teachers interested in environmental issues; and
- local or national businesses.

WHY EMPHASIZE BEHAVIOR?

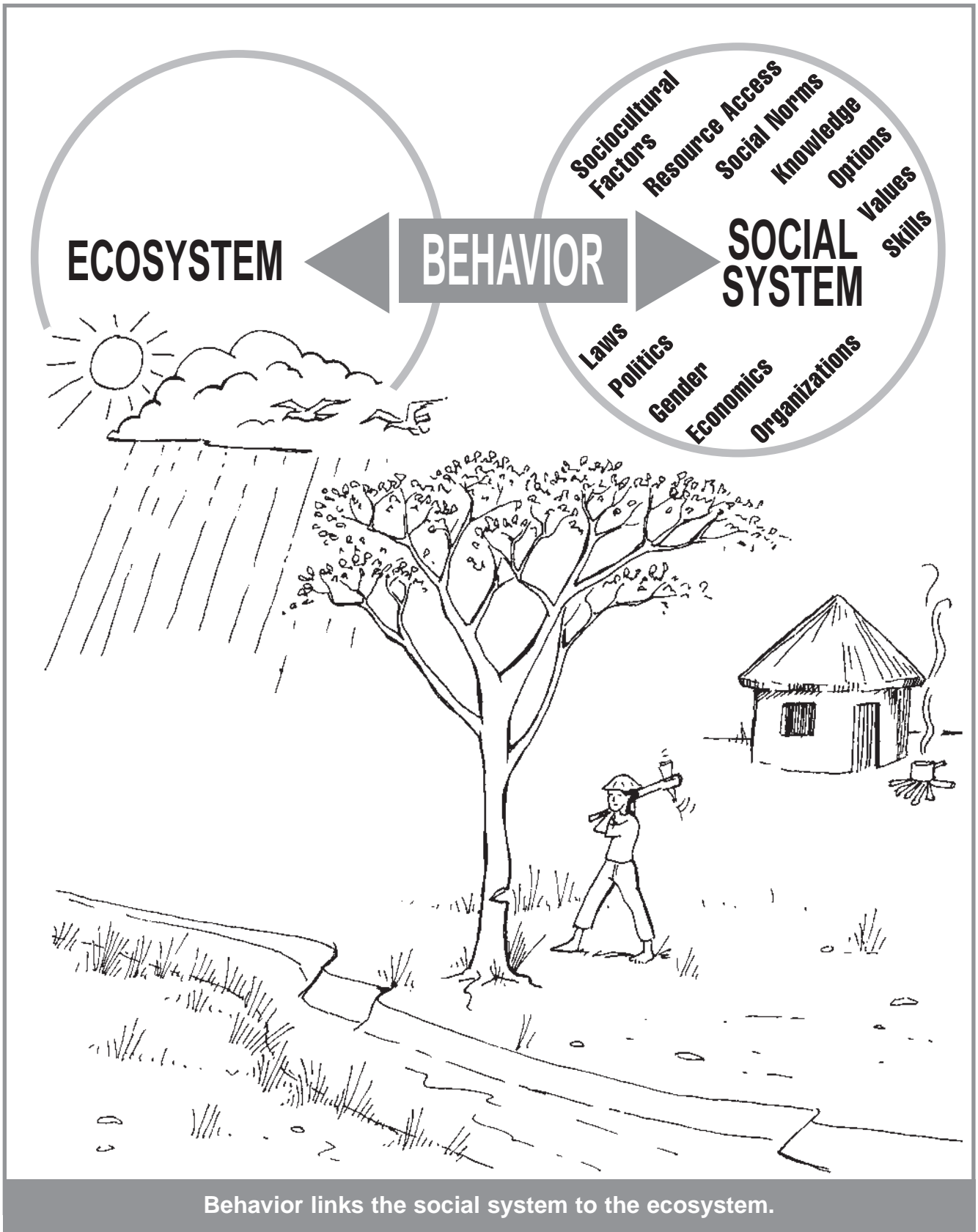
Every day each one of us does many things that affect our environment. These behaviors represent the decisions, practices, and actions we take either as individuals or as members of a group. So whether we cut a branch or plant a tree, allow cattle to graze by a roadside or fence them in a paddock, every action is a result of a decision we make based on the information we have and the influences affecting us.



Behavior is the result of decisions we make and actions we take.

By trying to understand people's behavior, we can begin to identify the different social factors that influence their actions. In turn this can help us to focus on and prioritize activities that contribute to the resolution of environmental problems and the promotion of ecologically sustainable behavior.

Behavior that affects the ecosystem can be influenced by many social factors. Ecological factors, such as the availability or abundance of plants, animals, and other natural resources, can also limit or motivate behaviors, in turn affecting the social system.

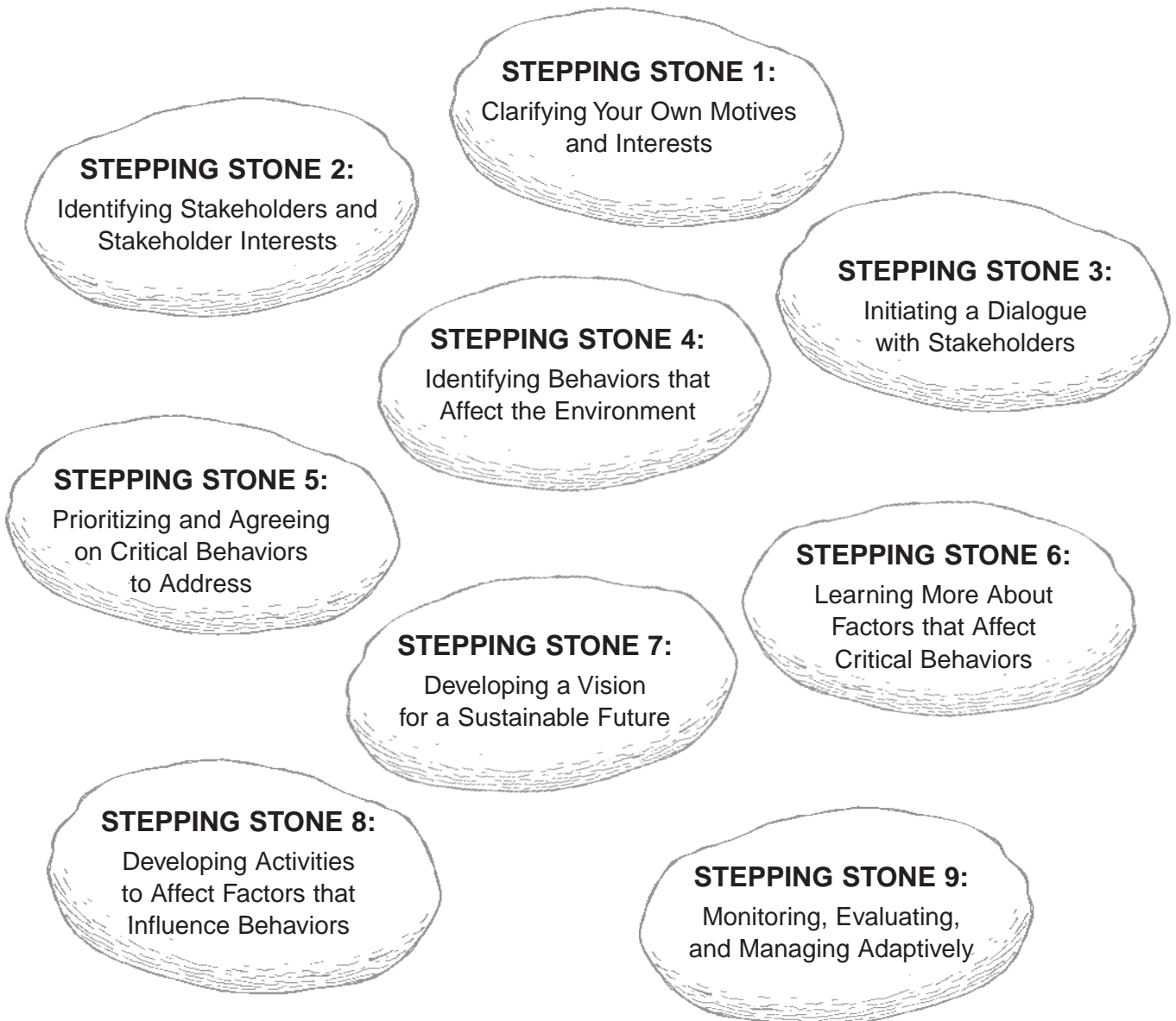


STEPPING STONES: AN OVERVIEW

A process for asking questions and gathering information

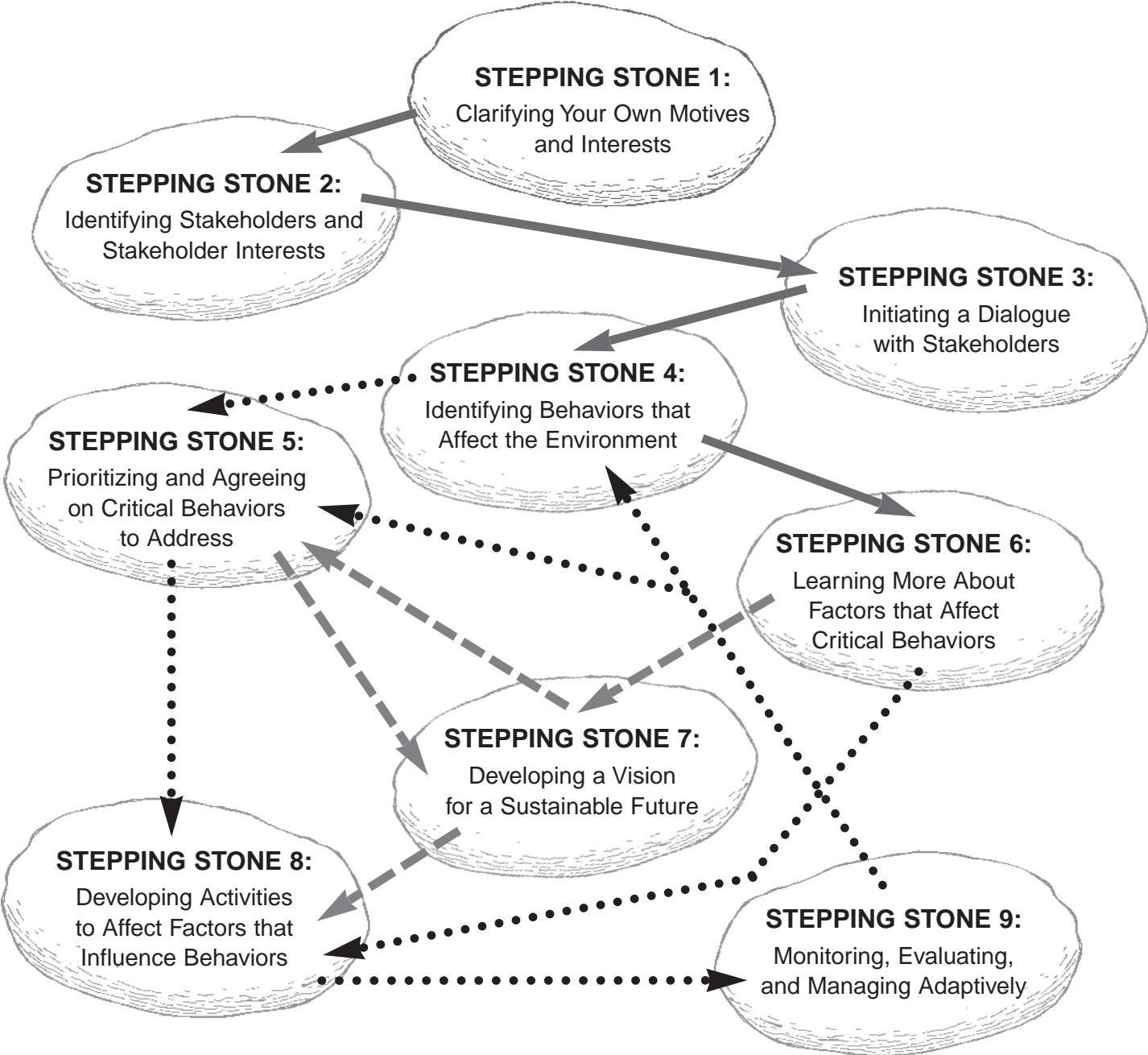
This guide presents a framework that identifies nine essential elements that field practitioners have found useful to consider in their work. Think of these elements as “stepping stones” along a path. The path begins with a natural resource or conservation problem or issue you have identified and takes steps toward a socially and ecologically sustainable solution to the problem.

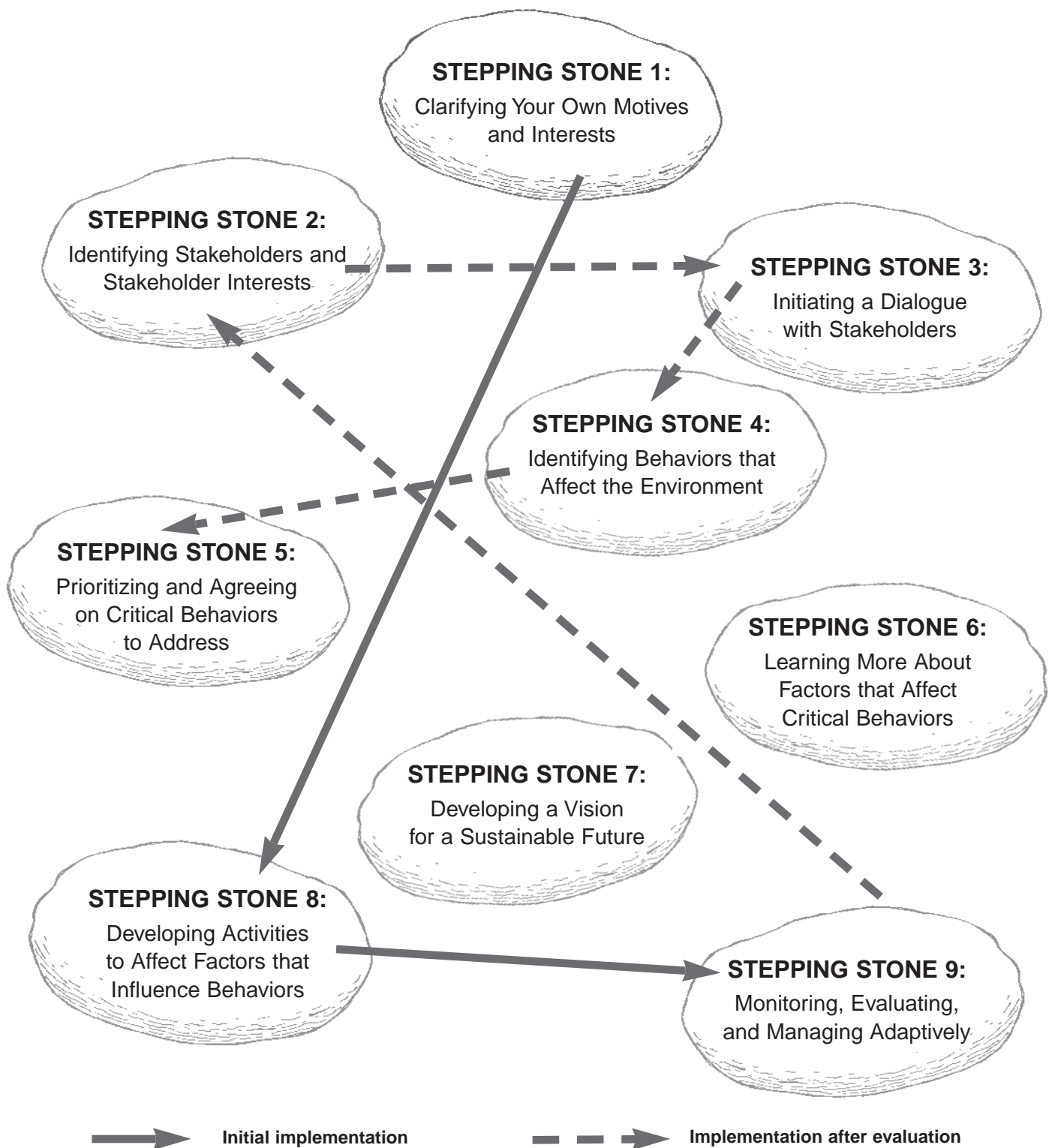
The stepping stones that will be discussed in this guide are as follows:



Every one of the stepping stones is important. While it may make sense for your project to start with one particular stepping stone, another person with a different problem and project may decide to start from another stepping stone. In fact, the questions raised by stepping stones can be asked and answered in many different orders, depending on the situation.

The case studies we describe in this guide illustrate how these stepping stones have been used in different patterns in real situations, as shown in the diagram below. Projects with a participatory approach, such as Keur Samba Dia in Senegal and Muzarabani in Zimbabwe, started with the organization promoting the project clarifying its own motives and interests first. Stakeholder attitudes and behaviors were explored before any strategies and actions that had the active support of everyone were proposed. Stakeholders in Muzarabani developed a vision for the future before prioritizing which behaviors to address. In Keur Samba Dia, stakeholders moved on immediately to develop activities that would influence the factors affecting behavior. Monitoring the changes resulting from these activities showed that they had correctly identified some critical behaviors to address.





Many “traditional” conservation projects rush into implementing activities after considering only the ecological issues of concern to the project organizers. (See diagram above.) As a result they often find that the activities they develop don’t lead to the desired result. Only then do they consider that there are many other stakeholders involved and try to discover how the attitudes and behaviors of other people may be affecting the project.

Just as the way in which you order your stepping stones is up to you, so you may choose to use the same stepping stone more than once during the life of a project. For example, you may wish to prioritize and reprioritize behaviors that need addressing on different occasions or at different seasons of the year. Accordingly, you would select the same stepping stone and answer the questions it raises on several different occasions. Also, situations often change and new behaviors may arise. It may also happen that some information you collect suggests that you go back and refine previous questions in order to gather more information before moving on to new activities. Or, your investigation may involve asking questions that relate to more than one stepping stone at the same time. For example, as you gather information to identify stakeholders and stakeholder interests in stepping stone 2, you will probably begin initiating a dialogue with stakeholders (stepping stone 3). This dialogue may involve clarifying the resources of interest to them while at the same time identifying behaviors that affect the environment (stepping stone 4). So your path may not always move forward one stone at a time. You may in fact be collecting information from several stones at the same time.



In asking a single question, information about the resource, stakeholders, and their behavior may be gathered.

You will need to decide for yourself where to start and how to proceed. To assist in this process, the following sections of this guide contain a detailed look at each of the stepping stones. Each stepping stone requires you to ask questions. The information needed to answer these questions will then help you to design activities and find solutions to environmental problems.

Each stepping stone is explored within subheadings that ask:

Why do this?

This section explains the reasoning behind each step.

How can you do this?

This section provides examples of the questions you need to ask, how you can collect the information, and what you can do with this information.

What examples are there?

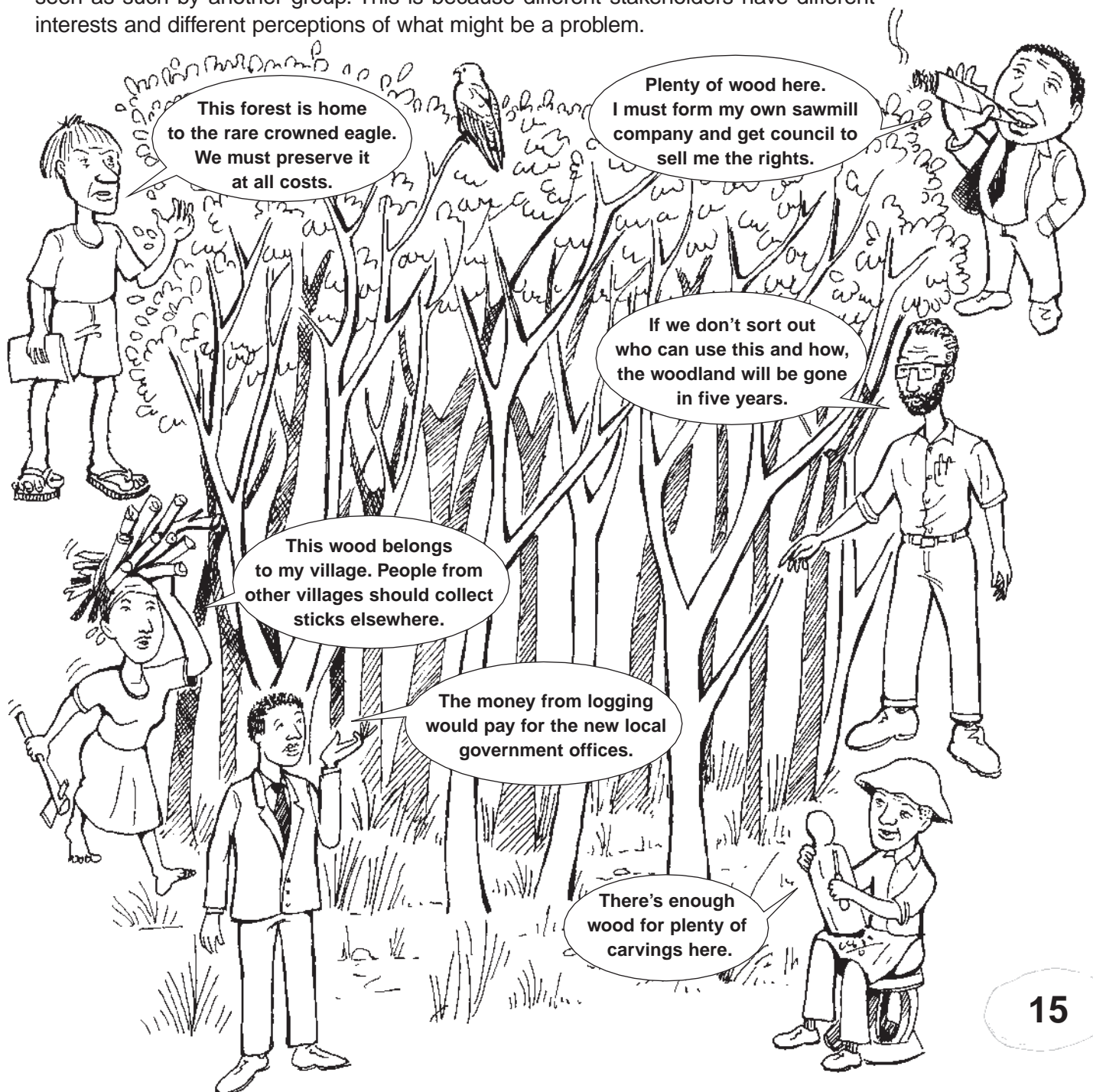
This section gives case studies showing how similar questions were asked, relevant information gathered, and how the information was used to guide decisions about the management of natural resources in real situations in Africa.

We hope that after reading this guide you will have the confidence and skill to ask similar questions. A full list of these steps and the questions they raise is provided on pages 58-59 in the Summary.

STEPPING STONE 1: Clarifying your own motives and interests

Why do this?

Very often the incentive to intervene in the way resources are managed comes from a belief that there is a problem in the way the resources are currently being used. In other cases, the motivation comes from a perceived opportunity to help maintain **sustainable uses** of natural resources and prevent a problem from developing. Perceptions of problems or opportunities can come from many different **stakeholders**, such as resource users, local communities, government agencies, nongovernmental organizations, or donors. However, what is seen as a problem by one group may not be seen as such by another group. This is because different stakeholders have different interests and different perceptions of what might be a problem.



In order for you to initiate some action, it is important that all the stakeholders begin to develop a shared perception of the problem. So as a first step, it is important for you and your organization to clarify your own motivations, explain to others why this is an important issue for you, state clearly what your objectives are, and explain what you would like to achieve.

Asking about the motives and **interests** you and your organization bring to the situation allows you to recognize yourself and those you represent as stakeholders in this situation—but as only one of many. You should try to be honest and self-critical in your assessment of your own motives as one stakeholder among many.

Even for an organization that is already in the middle of implementing a project, exploring a problem, or coordinating the use of local resources, it can be very useful, even necessary, to take time to ask and answer questions about its motivations. This information can be used to make certain that you retain realistic objectives for your activity and ensure that the activities you have chosen are consistent with the changes you wish to see made in order for the resource to be used sustainably.

How can you do this?

General information about your organization's motives may be found in annual reports and publicity brochures or pamphlets. Look for the organization's mission statement, goals, and objectives. In cases where this is not clear, you can conduct research within your organization through a survey (see page 64) or a ranking exercise (see page 65) to identify the motives and objectives for your specific intervention.

Trying to answer the following questions will help you do this:

- What problems are you most concerned about?
- What specifically do you aim to do?

This information will help you plan your initial entry into a **community**. Not only will it help you clearly state to participating communities what you hope to gain from the work, but through your example, it may encourage other stakeholders to express their own positions and interests better.

During negotiations with stakeholders, this information will help you prioritize what is important to you and your organization and what can be “dropped” in order to reach agreement with other stakeholders. You might also be able to see which approaches might create resistance and which have the best chance of success. It may even suggest whether the goals of your own organization with respect to this situation are attainable in the first place.

What examples are there?

Clarifying motives:

How it helped in the Keur Samba Dia borassus palm forest, Senegal

The Keur Samba Dia borassus palm forest in western Senegal was once a luxuriant and diverse forest, home to a great variety of plants and animals. Of particular importance to expatriate scientists was its unique stand of borassus palms. The forest, however, was situated in an area of rapid population growth, where peanut and other farming activities resulted in the gradual salinization of existing farmland and the consequent opening up of new land at the expense of the forest. In light of this encroachment, biologists and conservationists prevailed upon the colonial administration to declare it a protected area in 1936. Although this greatly limited by law the rights of local people to use the forest resources, subsequent concessions and people's actions resulted in the continuing destruction of two-thirds of the forest by the 1970s. Consequently, in 1981 the Senegalese government, in a further attempt to preserve what remained of the forest, requested UNESCO to declare it a Biosphere Reserve within the Man and Biosphere Program, a UN-driven action plan to establish an international network for scientific cooperation. The establishment of a Biosphere Reserve was supported by many international organizations for scientific and conservation reasons and enabled the government of Senegal to acquire donor funds for the Keur Samba Dia palm forest rehabilitation project, which began in 1993.

What problems are you most concerned about?

The Keur Samba Dia palm forest rehabilitation project was most concerned with

- protecting and monitoring the biological diversity of the forest, and
- maintaining minimal human activities in the forest.

What specifically do you aim to do?

Specifically, the Keur Samba Dia palm forest rehabilitation project wished to

- disseminate information about the value of the palm stands to neighboring residents of the area,
- conduct an inventory of plants existing in the palm forest,
- encourage artificial propagation and planting of borassus palm and other species, and
- monitor plant species being restored.



The heart of the Keur Samba Dia palm forest.

Clarifying motives:

An example from the Muzarabani sacred forests, Zimbabwe



The Zambezi Society, which is based in Harare, Zimbabwe, was set up in 1982 for the purpose of maintaining biodiversity and ecosystem processes within the Zambezi valley. As such, the organization promotes the improvement of knowledge about the Zambezi among policymakers, planners, and the general public. It seeks to identify areas and species important to biodiversity conservation and then put in place conservation actions to protect them. Much of the time, it sees its role as trying to curb environmentally inappropriate actions by the government. So while it supports general principles of sustainable development, it may not put people first in each and every circumstance. Because it is a member-based organization, much of its support in fact comes from people living outside the Zambezi valley whose primary wish is to protect the flora and fauna there from change.

In 1995 the Zambezi Society identified sites of special interest for botanical conservation in the communal lands of the Zambezi valley of northern Zimbabwe. In the Muzarabani Communal Lands of the

Centenary District, four small remnant patches of a unique type of dry thicket forest that is rare in Zimbabwe were identified as high priority for conservation. Forests of this type had been cleared and degraded in other places where they existed, and the Muzarabani forests appeared to be under a similar threat as a result of rapid population growth and the expansion of cotton cultivation in the area.

What problems are you most concerned about?

The Zambezi Society is concerned about the loss of rare forest patches in the Zambezi valley.

What specifically do you aim to do?

On behalf of its members, the Zambezi Society wanted to find ways to conserve these forest patches.



The sacred forests of the Muzarabani area contain associations of plants found nowhere else in Zimbabwe.

STEPPING STONE 2: Identifying stakeholders and stakeholder interests

Why do this?

Local residents, who usually depend on natural resources for their livelihoods, have a primary stake in local resources. Local residents are not the only stakeholders, however. Stakeholders include any people or organizations with an interest in the use and management of natural resources at any particular place. So stakeholders can also include national and international groups such as government departments and international conservation organizations. No matter who begins actions to conserve natural resources, local stakeholders should always be involved from the beginning. This means that you will need to gather information about the aims and objectives of many individuals and organizations as well as the various legal, cultural, political, or economic positions that they represent or are responding to.

Box 1. Stakeholders and the community

Most people working to promote the sustainable use of natural resources recognize the importance of working with the local community and addressing its needs. That can be a difficult challenge, however.

The term “community” is often applied to groups that are not really communities (see Glossary for definition). Often the so-called “community” is really a diverse mix of stakeholders with very different values, perceptions, needs, and interests—rather than a true community of people with similar views who are capable of making decisions and resolving disputes by themselves.

Promoting effective natural resource management requires that you start from an understanding of the differences between groups of stakeholders, and work with all stakeholders to decide what issues and behaviors should be priorities for action.

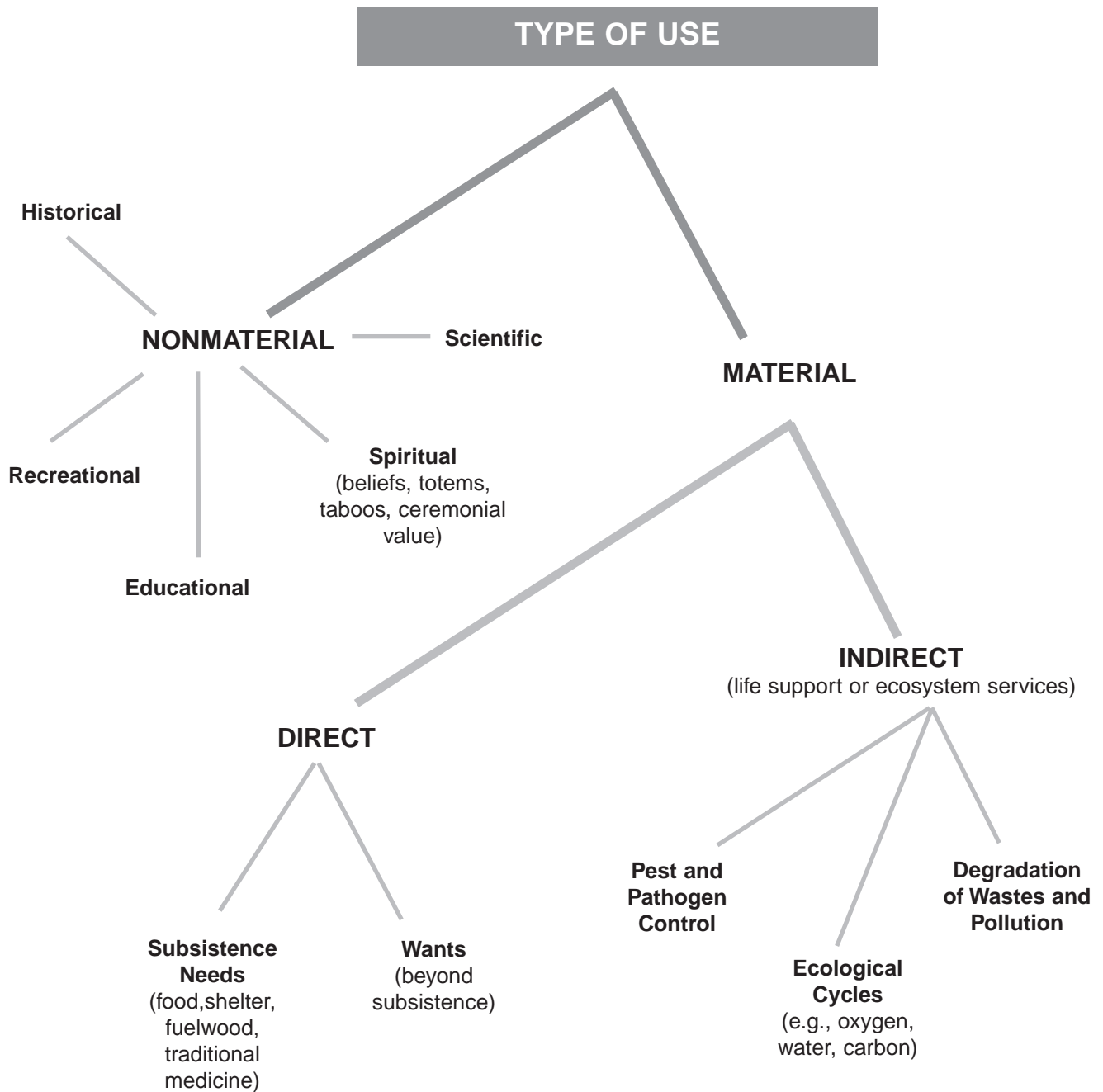
How can you do this?

How can a natural resource manager take the first step to promote environmentally sustainable behaviors? Perhaps he or she can best do this by trying to understand the diversity of values, perceptions, needs, and interests among local communities and other stakeholders.

Discovering who the stakeholders are involves asking such questions as:

- Who is using or has an interest in the natural resources here and for what uses?
- Why are they interested?

Pairing or matching “resource uses” with “resource users” is one simple kind of analysis that will help. This matching process requires information on the uses and users of natural resources. The following diagram gives examples of the types of uses, values, and **benefits** that people have for natural resources.



People use natural resources in a variety of ways. They use them not only in physical, material ways, but also in nonmaterial ways to provide psychological and emotional benefits. Working out who uses a resource, and what value or benefit they gain from it, is an important step toward identifying stakeholders and initiating a dialogue. The information you gather will help you to discover stakeholders of whom you might not have been aware. Information about this can be obtained using interviews, direct behavioral observation, surveys, or community meetings. More information about these and other information-gathering methods is described briefly in Appendix 1, starting on page 63.

What examples are there?

Identifying stakeholders and stakeholder interests:

An example from the Taita Hills, Kenya

The Taita Hills rise up to 2,000 meters above the semiarid plains of southern Kenya. Moist winds from the Indian Ocean rise over them, producing rainfall and creating a relatively cool, wet climate. In the past, the Taita Hills were capped by a rich rain forest, but because of pressure for agricultural land much of this original forest has now been cleared. About 48 isolated forest fragments remain on the tops of the hills, the largest being only 168 hectares in size.

The East African Wildlife Society (EAWLS) has been working to conserve the Taita Hills forest using what they call a “strategic monitoring approach”, part of which involves stakeholder consultation. To find out who was using or had an interest in the resources and why, EAWLS carried out a stakeholder analysis matching the stakeholders to their uses of the resources or their interest in them. In order to identify the stakeholders, EAWLS did a literature review, and a biological survey and talked to other agencies. Through this process, EAWLS discovered that stakeholders included not only local people, but government resource managers and other private conservation organizations.

They found that international conservationists and biologists were interested in seeing the forests conserved because the Taita Hills, as a result of their isolation and moist climate, were rich in species of plants and animals found nowhere else in the world. Thirteen such endemic plant species and nine animal species were known. EAWLS itself was concerned to maintain the biodiversity of the hill forests as a national and global resource.

But the forest was important to others for different reasons. Rainfall from the hills ran off into streams and rivers and was used by many people for domestic and agricultural use on and off the hills. Some of this water supported tourist facilities for wildlife viewing in the nearby Tsavo National Park, thus contributing to Kenya’s national economy. Stakeholders who were interested in the water from the hills also included residents of the town of Voi, the Ministry of Tourism, and private businesses operating as resort owners.

The forests also provided products such as construction timber and fuelwood to local residents. Timber plantations of exotic species such as pines and eucalyptus already established in the area provided revenue for the Forestry Department. So the Taita Hills forests provided important benefits at local and national levels.



The African violet is one of the rare plants of the Taita Hills.

The following table gives a summary of the answers to the questions:

- Who is using or has an interest in the natural resources here?
- Why are they interested?

Stakeholders	Why are they interested?
Local communities	Use the forests for timber, fuel wood and water
Conservationists (for example the East African Wildlife Society)	Wish to conserve the forests because they are rich in species of plants and animals found nowhere else in the world
Valley farmers	Need the water that runs off the hills to irrigate their crops
Tourist lodge operators below the hills	Use the water that runs off the hills for their tourist facilities
Town residents below the hills	Need a reliable supply of clean drinking water
Forestry Department	Harvests exotic species such as pines and eucalyptus from timber plantations where natural forests once were

Identifying stakeholders and stakeholder interests: An example from Mbaniou, Senegal

The Mbaniou area of the Tambacounda Region of northern Senegal is in the Sudano-Sahelian climate zone. Rainfall is low and variable, averaging between 350 and 500 mm each year. An increasing human and livestock population, combined with a long-term drying trend in the climate, has led to environmental degradation in the area. Woody and nonwoody vegetation is declining, areas of severe soil erosion are developing, and wells and ponds are under stress.

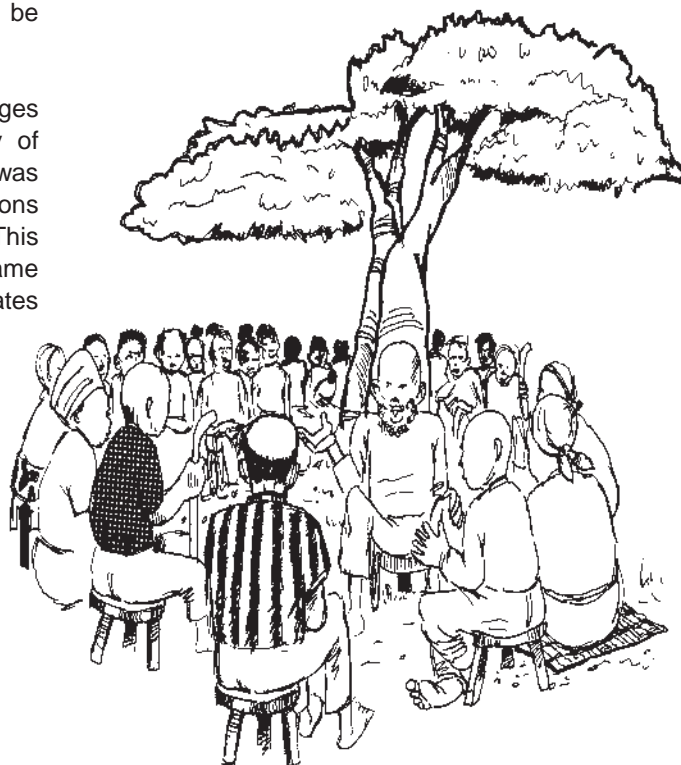
The Agro-Sylvo Pastoral Integrated Development Project was initiated by the government of Senegal as part of a program to help 150 villages become self-sufficient in food and energy. Local stakeholders included settled farmers from both Wolof and Peulh ethnic groups, as well as cattle owners and transhumant herders, all of whom had differing views about how to manage the natural resources. More about these differing stakeholder views can be found on page 33.

Of the 13 villages located within the Mbaniou zone, five villages were selected to take part. Information about the diversity of values, perceptions, needs, and interests among the villagers was gathered using a questionnaire designed by the United Nations Food and Agricultural Organization (FAO) evaluation team. This was administered when all the villagers gathered at the same mosque. The evaluation team also used discussions and debates to identify concerns of various stakeholders.

This information about the range of potential values, benefits, and uses of natural resources by village stakeholders enabled the evaluation team to find out who was using or had an interest in the natural resources and why.

The following table answers the questions:

- Who is using or has an interest in the natural resources here?
- Why are they interested?



Stakeholders	Why are they interested?
Herders (resident Peulh and transhumant)	Wish to use area for grazing cattle
Local residents (Wolof and Peulh)	Wish to cut trees for fuel and construction
Farmers (Wolof and Peulh)	Wish to cultivate the land

**Identifying stakeholders and stakeholder interests:
An example from the Muzarabani sacred forests, Zimbabwe**

As part of their initiative to conserve the small remnant forest patches in the Muzarabani Communal Lands, the Zambezi Society set out to identify stakeholders with interests in the forests. They interviewed people from local communities about the forests and how they made use of them. The survey showed that the forests provided not only for basic subsistence needs but had spiritual value to local people. They recognized also that there were stakeholders beyond the local level—foreign sport hunters and hunting safari operators, scientists, and their own members who were interested in nature conservation.

Stakeholders	Why are they interested?
Local residents	Benefit from direct material uses for building materials, fuelwood, traditional medicines
Local and downstream residents	Benefit from indirect material uses of erosion control, watercatchment protection
Local residents, especially Korekore tribe of Shona ethnic group	Benefit from nonmaterial spiritual use of the forest as a burial place and habitat for ancestral spirits
Foreign sport hunters and hunting safari operators	Benefit from recreational use of the forests as big game habitat
Zambezi Society members, scientists from Zimbabwe and abroad	Benefit from scientific and educational uses of the forests



Residents of Muzarabani use wood from forests for corrals and buildings.

STEPPING STONE 3: Initiating a dialogue with stakeholders

Why do this?

In order for resources to be managed sustainably, all stakeholders need to work together to reach agreement on the appropriate uses of the natural resources of a given place. The stakeholders may have a history of disagreement or **conflict**. They may not trust each other or communicate well with each other, if at all. So it is therefore important that a forum is provided to bring stakeholders into a process of dialogue. Sometimes promoters of sustainable natural resource management can play an important role simply by initiating this dialogue.

Initiating a dialogue among stakeholders can

- help stakeholders explain to each other how and why they are using the resource,
- help identify points of agreement and conflict among them,
- call attention to the status of the resource, and
- motivate people to take action.

How can you do this?

While you were identifying stakeholders, you may have already started to meet with them and collect information about them. You may have already started to initiate a dialogue with them. Stakeholders often belong to existing social institutions such as women's groups, traditional chieftainships, development committees, or village councils, some of which may already have responsibilities for managing natural resources. Finding out how stakeholder groups function, what their responsibilities are and whether they are active, is important information. Meetings of such groups can provide an introduction to other stakeholders for you or your organization, offer a place for you to describe your intentions and interests, and even provide a meeting site and regular schedule of meetings. If your organization is not the most suitable one to begin a dialogue because of existing roles or sensitivities, you may want to ask a more appropriate organization to play the role of facilitator.

The following questions may help you in initiating a dialogue:

- Do all the stakeholders know the other stakeholders and understand why they have an interest in the natural resources here?
- What common concerns do stakeholders share?
- What do stakeholders disagree about?

What examples are there?

Initiating a dialogue:

How it helped in the Taita Hills, Kenya

Once the East African Wildlife Society had identified forest stakeholders and their interests in the Taita Hills, they set up a number of meetings. They invited local residents living near the forests, Forestry Department officials (national government agency level), District officials from other departments, County Council officials (regional government agency level), and development and conservation NGOs operating in the area (national and international non-government level). In the meetings, stakeholders discussed how they used the resources and explored how they could balance their needs against the need for sustaining the resources. They discovered that some forest uses, such as fuelwood harvesting and agriculture, seemed to be incompatible. This was important, as many of these people had never talked to each other about the forests or their problems. These meetings allowed firsthand information from forest stakeholders to be collected and communicated.

An important misunderstanding and source of tension was identified at these stakeholder forums: local residents had assumed that money from the sale of timber from the forests went to the District Forest Officer and Forest Guards. In fact, this money went directly to the central government treasury. This misunderstanding had contributed to tension between local residents and government forestry agents. As in this example, meetings that involve all the stakeholders can bring about communication that helps resolve conflicts. They also act as an educational forum where awareness of the wide range of uses, benefits, and values of the forest—and of the correspondingly wide range of interested stakeholders—is developed.

By bringing all stakeholders together in a meeting, the EAWLS Taita Hills project created a situation where local communities and forest management bodies at the district level agreed to collaborate in an integrated approach to forest conservation and management. Access by local communities to forest areas that were previously restricted became possible as a result of changes made by government agency staff. Also, people living adjacent to the forests agreed to use the wood resources from their farms so as to minimize forest destruction.

Initiating a dialogue:

How it helped in the Muzarabani sacred forests, Zimbabwe



In 1996 a representative of the Zambezi Society met with members of the Muzarabani Rural District Council and traditional leaders from the area. He explained the interest of the Society in conserving the remnant patches of forest. The District Council proposed that the best way to conserve these forest areas was to gain the support of traditional leaders and to strengthen respect for customary rules and traditions. The traditional leaders at the meeting agreed with this strategy.

STEPPING STONE 4: Identifying behaviors that affect the environment

Why do this?

By now your investigations should have revealed who the stakeholders are and how they are making use of the resources. As part of this step, you need to recognize that a use of a resource is a type of behavior, or may be made up of many behaviors. For example, someone who says she uses her land for farming behaves by clearing the land, ploughing the soil, and planting crops. So a logical way to examine the information about uses that you have already gathered is to ask “what are people doing?”, that is, “how are people behaving and affecting the environment?”

Adapting information you have already collected will help you identify which behaviors have the most impact and which are perceived by the stakeholders as most critical, to sustaining the resource. It will also help you identify which behaviors help or harm the resource.

How can you do this?

What you need to do is change the questions in stepping stone 2 from

- Who is using or has an interest in the natural resources here, and why are they interested? That is, what are the uses?

to

- What are people doing that affects the natural resources here? That is, what behaviors affect the natural resources?
- What is the effect (both positive and negative) of these behaviors on a given resource?

These may seem like simple questions—so simple, in fact, that we often skip them, but without answering these questions, you cannot begin to think clearly about the situation in behavioral terms. To help you, there are a number of tools you can use to gather this information. These include interviews, observations, matrices, seasonal calendars, and resource maps. More information about how to use them is given in Appendix 1.

Keep in mind that asking these questions may be threatening to some stakeholders and they may refuse to cooperate in answering them. For example, some things that people are doing may be illegal, so you will have to be sensitive in seeking such information. Again, other organizations may be able to help as facilitators.

One method, which consists of simply listing, in the presence of stakeholders, behaviors that affect natural resources and the environment, can be a place to start. This list should include the behaviors of all stakeholders, including your own, and include resource damaging and resource sustaining or resource enhancing behaviors. This process of categorizing behaviors can bring out a lot of information about the causes of behaviors. Among stakeholders, it can also provide an opening for frank discussion, mutual learning, and consensus building. You may already have collected some of this information when you identified stakeholders and their interests.

When you are collecting this information, it is important to be as specific as possible about what people are doing. General categories of behaviors are not as informative as specific behaviors. For example, saying that people are “hunting wild animals” is not as informative as saying that people are “hunting duikers with wire snares for the commercial market.” Several types of hunting could be occurring, and hunting an animal occasionally for a special event might be sustainable and desirable, whereas continued commercial exploitation might not be. Using another example, it may be important to identify specific behaviors such as “cutting mopane trees for fencing material,” “cutting mopane trees for firewood,” or “cutting makalani palms for craft-making,” rather than the general behavioral category “cutting trees.”

Knowing the specific reason for the behavior and the exact resource that is being used allows us to decide if the behavior is sustainable or if specific alternative behaviors may be more sustainable.

What examples are there?

Identifying behaviors:

An example from the Keur Samba Dia borassus palm forest, Senegal

The Keur Samba Dia forest rehabilitation project sent development workers to interview members of four villages located close to the forest. In this survey, involving personal interviews, meetings, and direct observations, the development workers gathered information that allowed them to answer these questions:

- What are people doing that affects the natural resources here? That is, what behaviors affect the natural resources?
- What is the effect (both positive and negative) of these behaviors on a given resource?

This information is summarized in the table below.



Local residents planting palm seeds to help reverse forest degradation.

What are people doing?	What is the effect of this behavior?
Picking up fallen ripe fruit for human and livestock food	Seeds not harmed or digested remain viable and can be planted or will germinate after the fruit is eaten
Cutting unripe palm fruits from trees for sale in urban markets	Reduces the number of viable palm seeds needed for regeneration of palms in the local area
Digging up seedling palms for their roots, which are eaten as a vegetable	Removes individuals from the forest before they have had a chance to grow and reproduce
Cutting palm leaves for thatching roofs (by men)	If too many leaves are cut, it prevents the trees from growing or producing more leaves
Cutting palm leaves for fencing material (leaf stalk is used as post) (by men)	If too many leaves are cut, it prevents the trees from growing or producing more leaves
Cutting palm leaves for basket and mat weaving for both subsistence (home) and commercial (sale) use (by women)	If too many leaves are cut, it prevents the trees from growing or producing more leaves
Cutting and clearing palms to make crop fields	Decreases the number of palms in the area
Cutting palm trees so that the trunks can be used for constructing house frames	Decreases the number of palms in the area

Identifying Behaviors:

An example from the Muzarabani sacred forests, Zimbabwe

In the Muzarabani area, researchers working for the Zambezi Society collected information through direct observation of the behavior of members of the community and discussions held at community meetings. A number of behaviors, shown in the table below, were identified as having an impact on the loss, degradation, or conservation of the forests.

What are people doing?	What is the effect of this behavior?
Clearing the forest for cotton (cash crop)	Forest loss and fragmentation
Clearing the forest for maize (subsistence crop)	Forest loss and fragmentation
Cutting trees for house-building materials	Forest thinned; less diverse in species
Cutting trees for corral-building materials	Forest thinned; less diverse in species
Cutting trees for fuelwood	Forest thinned; less diverse in species
Hunting guinea fowl in the forest	None if not overharvested
Grazing livestock in the forest	Minimal
Building settlements on the edge of the forest	Potential for thinning from tree cutting
Burying their dead in the forest	Helps maintain natural forest
Gathering medicinal plants in the forest	None if not overharvested
Staying out of the forest because of taboos	Helps maintain natural forest
Holding religious ceremonies in the forest	Helps maintain natural forest



Land is cleared for a new homestead on the edge of the Rukonde Forest, Muzarabani.

STEPPING STONE 5: Prioritizing and agreeing on critical behaviors to address

Why do this?

With the information you have now gathered about stakeholders, their use of resources, and the way their behavior affects natural resources and the environment, you can now set out—in a dialogue with the stakeholders—what decisions, practices, and actions are ecologically and socially sustainable.

Through meetings, stakeholders should be encouraged to share information, discuss differences, make comparisons, voice their opinions, and develop a consensus, if possible, about the most critical behaviors to address. All stakeholders can support this process by providing relevant knowledge and professional assistance.

How can you do this?

In dialogue with stakeholders, try to determine:

- Which uses are ecologically sustainable and which are not?
- Which behaviors are most critical to change or maintain?

Ecological sustainability (see Box 2 on page 32) is a necessary requirement that keeps open the option of future use of a natural resource. Sustainable use of a natural resource is use at a rate less than or equal to the rate at which the resource grows or regenerates itself. This definition should be clearly stated and understood among the groups that are identifying critical behaviors.

Historical trends may help you to determine whether environmental behaviors are sustainable. One of the best ways to organize information about trends in the availability of various natural resources over time is the historical trend matrix. The example from West Caprivi, Namibia, shown on page 35, illustrates the use of such a matrix for analyzing information—that is, for finding patterns in and drawing conclusions from the information.

Ranking techniques, such as that used in the example on page 37 from Ranomafana National Park in Madagascar, are also useful in identifying the most critical behaviors to address.

Deciding which behaviors to try to maintain or reinforce, and which to try to change, obviously requires negotiation among stakeholders. Finding a consensus is not always easy since the priorities of stakeholders usually differ. Hints on how to deal with disagreements among stakeholders are shown in Box 3 on page 33.

Box 2: Assessing ecological sustainability

Keep in mind that in deciding what makes up ecological sustainability you need to be aware that “outsiders” views (including possibly your own) of what behaviors are sustainable are sometimes naive and misinformed. Local residents often have sophisticated indigenous knowledge of their natural resources and how to manage them sustainably, knowledge that when investigated “scientifically,” often proves to be quite ecologically sound. For example, many villagers in Senegal lop off the branches of live trees and use them as fodder or to dress their fields. Although this practice is illegal, local people know from long experience that it is sustainable. Lopping branches does not kill the tree, but stimulates new growth; if done properly, it conserves grass and grazing land and it protects soil from erosion, thus maintaining soil fertility. Sometimes villagers may engage in illegal behaviors that are actually more ecologically sound than the behaviors mandated by the law.

On the other hand, you must be careful not to idealize or overestimate local knowledge about sustainable resource use. The case from Keur Samba Dia, in Senegal (page 29) is a good example of where scientific knowledge brought to local residents by outside technical experts was a key to sustainable use and management of an important local natural resource. Local residents learned from a biologist at a workshop that taking too many leaves from palms for thatching, fences, or craft production prevents them from growing and producing more leaves. The biologist had done research that showed that on an adult tree, at least six leaves must be left to allow the tree to grow and produce more leaves. When local residents learned this, they began to leave at least six leaves per tree. This increased the leaf production and growth of the palms, and in turn actually increased the availability of palm leaves as a resource.

Another example where technical knowledge may help is in an area using its wildlife. Here, it might not be widely known how hunting above a certain number of buffalo in one year can reduce the number of “trophy” buffalo available for future hunting. Inviting an ecologist, zoologist, or other people with specific knowledge could therefore greatly inform such a discussion.

Box 3. Dealing with disagreements among stakeholders

Sometimes natural resource stakeholders have different views of what behaviors are critical to change—which are ecologically sustainable and resource maintaining and which are ecologically unsustainable and resource damaging. Disagreements arise because stakeholders differ widely in the economic and political power they hold and have different values and interests. Even in local communities, there may be several views.

For example, different views about which behaviors were critical to change or maintain were found among the stakeholders at Mbaniou, Senegal. The number of cattle a man owns determines his social status, and Peulh cattle owners were unwilling to reduce their herds even to increase productivity. The Peulh also rejected the idea of tending their cattle herds except during the rainy season; instead, cattle roamed at will, a practice that the Peulh believed was ecologically sound. Government natural resource managers, however, perceived this practice to be a main cause of overgrazing and degradation of the best pasture land. Both they and the settled farmers also blamed transhumant herders from Mauritania and Senegal for causing much of the environmental degradation through overgrazing, improper and uncontrolled wood cutting, and setting bush fires.

It may not be possible at this stage to get agreement among stakeholders about which behaviors are most critical—or maybe even about which behaviors are problems at all. However, it may help to view conflict as a natural, necessary, and creative part of the process. Please keep in mind that you, the user of this guide, are a stakeholder, too, and that other stakeholders may not agree with you!

Sometimes disputes occur because the stakeholders have different levels of knowledge, awareness, or information about the situation. In the Taita Hills, Kenya, case (see page 21), local people's assumption about where timber revenues went was wrong, and this misconception was the source of tension. If this is the case in your situation, learning more about the factors that influence stakeholder behavior may help. All stakeholders should be involved in carrying this out, and it should be seen as a group learning process.

In other situations, disputes may arise because stakeholders have different values or social norms regarding a resource use or behavior. If so, it may help to develop a future vision with stakeholders (see stepping stone 7) and then afterwards try again to prioritize and agree on the critical behaviors that need addressing.

Some general hints for dealing with conflict include:

- separate the people from the problem; encourage stakeholders to work to solve a common problem, not criticize each other;
- focus on interests, not positions—focusing on interests may reveal the existence of mutual or complementary interests that will make agreement possible;
- generate options for mutual gain;
- insist that agreements must be fair, transparent, and verifiable; and
- consider the alternative to reaching an agreement.

What examples are there?

Prioritizing behaviors:

An example from West Caprivi, Namibia



The Living in a Finite Environment (LIFE) project, funded by the U.S. Agency for International Development and implemented by the World Wildlife Fund (WWF-US), has been working with communities in several parts of Namibia to develop community-based conservation activities to enable local people to manage natural resources sustainably. In West Caprivi, Namibia, a historical trends matrix was constructed to answer the following questions:

- Which uses are ecologically sustainable and which are not?
- Which behaviors are most critical to change or maintain?

Down the left side of the matrix, various resources were listed; across the top, time from the past to the present, with specific important and memorable dates, was used to help the participants remember what their area looked like in the past. Local residents were asked to place stones in each box to indicate how much of the resource existed at each time. In this way they could see more easily what was happening to the resource over time, which in turn could help them answer the two questions above. Resources that have become less abundant over time are not being used at sustainable rates. Behaviors leading to the rapid decline of necessary or highly desired resources may be the most critical to change.

























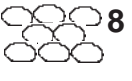



















Setting fires reduces the amount of grass available for thatching.



Local residents noted that the amount of grass available for grazing was becoming less.

Historical trends in important resources

	TIME				
	Drought 1971	Katima bomb 1979	Indepen- dence 1990	Now	Future if we do nothing
Mangetti trees (fruit)	 5	 5	 4	 2	0
Palms (baskets)	 10	 5	 4	 2	0
Grass (thatching, baskets)	 6	 8	 7	 4	 1
Grass (grazing)	 3	 6	 6	 3	 1
Water/wells	 2	 5	 5	 3	 1
Mopane poles (construction)	 10	 8	 6	 4	 1
Firewood (mopane, other)	 10	 7	 5	 3	 1
Spring hare (bushmeat)	 3	 6	 8	 10	 15
Duiker (bushmeat)	 6	 5	 3	 2	0

Prioritizing behaviors:

How it helped in Ranomafana National Park, Madagascar

Ranomafana National Park, founded in 1986, is located in south-eastern Madagascar. The 41,000-ha park varies in altitude between 500 and 1,500 m and is mostly low montane rainforest. The park is important for both biodiversity conservation and water catchment protection.

In the Ranomafana National Park area, a pairwise ranking method was used to identify the most critical behavioral threats to the natural resources of the national park. Six behaviors affecting park resources were identified: commercial logging, slash-and-burn agriculture, crayfish gathering, cutting tree ferns to make plant pots to sell, setting bush fires, and honey gathering. Each of these behaviors was then compared with each of the other behaviors by asking the question “which of these two behaviors is a more important threat to the sustainability of resources in Ranomafana National Park?” The answer to this question for each pair of behaviors is noted in the cells of a matrix, shown on page 37. The more times a behavior is listed in the body of the matrix, the higher its ranking or priority as a threat.

In this case, the group doing the ranking—only one of the stakeholder groups at Ranomafana—believed that commercial logging was a more critical behavior to address than cutting tree ferns for pots, crayfish gathering, or setting bush fires, but not as critical as slash-and-burn agriculture or honey gathering. If another group of stakeholders had done this ranking exercise, they might have come up with a completely different order of “threats.” In fact, by doing independent ranking exercises with different groups of stakeholders or local residents, you may be able to learn important things about the diverse interests and perceptions of problems among stakeholders, and about potential conflicts among stakeholders.



The results of an exercise to rank the biggest threats are displayed for everyone to see.

BEHAVIOR

Cutting tree ferns
Crayfish gathering
Honey gathering
Setting bush fires
Slash-and burn-farming
Commercial logging

Cutting tree ferns	Cutting ferns	Honey	Cutting ferns	S&B farming	Logging
Crayfish gathering		Honey	Crayfish	S&B farming	Logging
Honey gathering			Honey	S&B farming	Honey
Setting bush fires				S&B farming	Logging
Slash-and burn-farming					S&B farming
Commercial logging					

Behavior	Times ranked highest	Rank as a threat
Cutting tree ferns for pots	2	4
Crayfish gathering	1	5
Honey gathering	4	2
Setting bush fires	0	6
Slash-and-burn farming	5	1
Commercial logging	3	3

Which behaviors are most threatening?

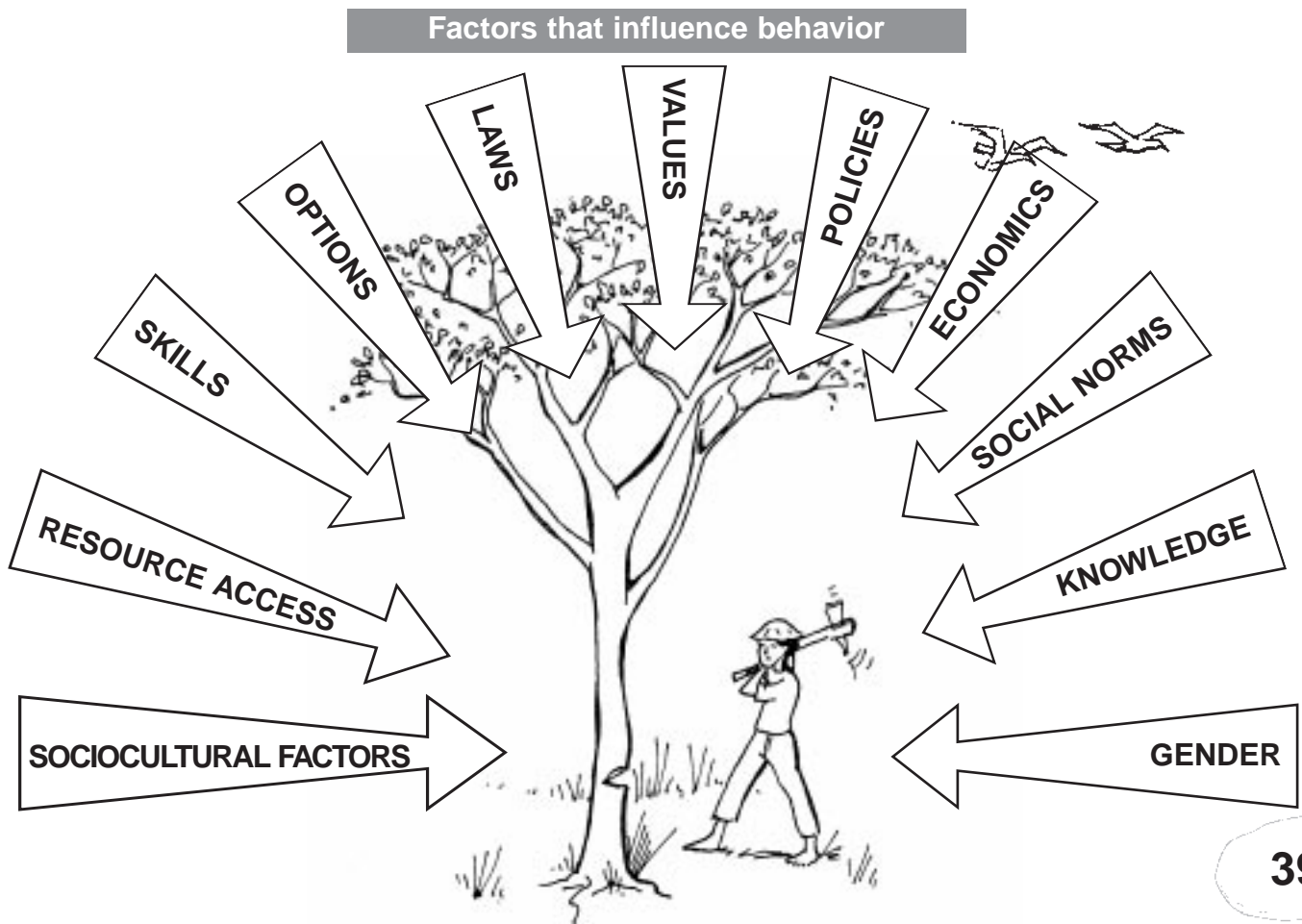
STEPPING STONE 6: Learning more about factors that affect critical behaviors

Why are you doing this?

So far, this guide has explored ways of gathering and using information about behaviors that affect natural resources and the environment. This guide begins with the assumption that people who use natural resources care about their environment and would not knowingly use their resources unsustainably if they had a choice. So an effective approach to ensure that resources are used wisely is to try and change the causes of behaviors that are ecologically unsustainable. The question you should try to answer in this step is “what factors influence, motivate, or cause critical behaviors that affect the environment?” The goal of this step is to find out why people do what they do.

If you can identify the main factors that influence, cause, or motivate the critical environmental behaviors taking place in your situation, then you can choose effective strategies and activities for influencing those factors—and thereby influence the critical behaviors.

Remember that assumptions about what motivates people to act in certain ways can be dangerous; what is really needed is information, and that information must be obtained from all of the key stakeholders.



How can you do this?

As we have discussed, there are many ways to gather information from people—through interviews, focus groups, community meetings, and direct observation. Some tools that might be appropriate include maps, ranking and quantification techniques, social mapping, and historical matrices and profiles. Any of them can help you learn more about the context in which behaviors occur. All the books listed in the Appendix 2 on page 67 contain details about how to use them.

Using a checklist of general kinds of factors that could influence behavior may help you systematically consider the possibilities as you learn more about the environmentally critical behaviors in your situation. Such a checklist may simply help you to make sure that you have considered all possible factors and not ignored any. The list on page 41 gives examples of some of the main factors that could influence, determine, or motivate environmental behaviors. The list is not exhaustive, of course—you may want to add categories of your own.

Another tool for identifying important factors is to compare people who do the behavior (“doers”) with those who don’t (“nondoers”). This may reveal differences in knowledge, skills, wealth, values, **gender**, access to resources, and other factors that influence the behavior. Understanding the consequences of the behavior to the stakeholder is also important. This kind of analysis contrasts one group with another. For example, poor people may hunt for bushmeat, while rich people don’t; landless people may make charcoal, while landowners don’t; women may harvest palm fronds for making baskets, while men don’t.

Checklist of questions you might ask:	Answers
<p>Knowledge</p> <ul style="list-style-type: none"> ● Do people doing this behavior know that it damages resources? 	
<p>Value</p> <ul style="list-style-type: none"> ● Do they care that the resource is being damaged by this behavior? 	
<p>Social norms</p> <ul style="list-style-type: none"> ● Do they care what other people in their community think of them if they do this behavior? ● Are there local influential persons or opinion leaders who are seen as role models for sustainable or unsustainable behavior? 	
<p>Sociocultural factors</p> <ul style="list-style-type: none"> ● Are there religious beliefs or taboos that influence the behavior? ● Does cross-cultural contact influence the behavior? 	
<p>Options</p> <ul style="list-style-type: none"> ● Do people have viable options or alternatives that do not damage the resource? 	
<p>Skills</p> <ul style="list-style-type: none"> ● Do people have the skill and means of taking advantage of options and alternatives that do not damage the resource? 	
<p>Economic</p> <ul style="list-style-type: none"> ● Are there overriding economic factors that motivate behavior despite knowledge, values, sociocultural factors, options, and skills? 	
<p>Laws</p> <ul style="list-style-type: none"> ● Are laws, rules, enforcement rates, and penalties adequate to deter or stop this behavior? 	
<p>Policies</p> <ul style="list-style-type: none"> ● Do policies of government agencies encourage or discourage this behavior? 	
<p>Gender</p> <ul style="list-style-type: none"> ● Does gender affect the behavior? 	
<p>Resource access or “ownership”</p> <ul style="list-style-type: none"> ● Is this behavior affected by differences among users in access to resources or ownership of them? 	

What examples are there?

Learning more about the factors that influence behaviors:

An example from Keur Samba Dia, Senegal

Researchers in Keur Samba Dia asked some of the questions on page 41 and found the following:

Questions about common factors influencing behaviors	Answers given by local residents at Keur Samba Dia
Do people doing this behavior know that it damages resources?	<p>No. Local people apparently did not recognize that cutting green (unripe) fruit to sell to buyers who came from city markets had severely reduced the number of viable palm seeds needed for regeneration of palms in the local area.</p> <p>No. Local people apparently did not recognize that digging of seedlings for their roots (eaten as vegetables) was seriously reducing palm regeneration in the area.</p> <p>No. Local people learned from a biologist at a workshop that taking too many leaves from palms for thatching, fences, or craft production prevents them from growing and producing more leaves. The biologist had done research that showed that on an adult tree, at least six leaves must be left to allow the tree to grow and produce more leaves.</p>
Do they care that the resource is being damaged by this behavior?	Yes. At initial stakeholders' meetings, people expressed concern about the degradation of the palm stand and agreed to try to change behaviors that were causing the degradation.
Do they care what other people in their community think of them if they do this behavior?	Yes. Village-level monitoring committees were formed by the forest rehabilitation project to monitor resource-damaging behaviors that had been identified at community workshops. In part the effectiveness of these monitoring committees depends upon social norms that favor palm conservation.
Are there local influential persons or opinion leaders who model sustainable or unsustainable practices?	None identified.
Are there religious beliefs or taboos that influence the behavior?	None identified.
Does cross-cultural contact influence the behavior?	None identified.
Do people have viable options or alternatives that do not damage the resource?	Yes. More people now have access to tile or asbestos sheets for roofs, so the need for palm leaves for thatching is declining.

Questions about common factors influencing behaviors	Answers given by local residents at Keur Samba Dia
Do people have the skill and means of taking advantage of options and alternatives that do not damage the resource?	Yes. More are using tile or asbestos sheet for roofing.
Are there overriding economic factors that motivate the behavior despite knowledge, values, sociocultural factors, options, and skills?	No. Apparently, people are not forced to harvest green fruit for sale, dig palm roots for vegetables, or cut palm fronds for roofing at unsustainable rates because of overriding economic factors.
Are laws, rules, enforcement rates, and penalties adequate to deter or stop this behavior?	Part of the function of the village level monitoring committees is to monitor compliance with rules agreed upon by the stakeholders, and thereby increase enforcement rates; people who violate the rules can be fined.
Do policies of government agencies encourage or discourage this behavior?.	None identified.
Does gender affect the behavior?	Maybe. Low representation of women on monitoring committees was identified as a problem, although no further information was given.
Is this behavior affected by differences among users in access to resources or "ownership" of them?	None identified.

**Learning more about factors influencing behavior:
An example from the Muzarabani sacred forests, Zimbabwe**



Rukonde sacred forest, Muzarabani. Local people believe it is protected by a huge snake.

The widespread clearing of mopane woodland in the Muzarabani area over the last 20 years, as described by local residents and confirmed on aerial photographs, is the result of behavior—thousands of individual acts of tree cutting. The much lower rate of clearing of the dry thicket forests of the area is also the result of behavior. By asking “why is there a difference?” and “why were the dry thicket forests cleared at a slower rate than the mopane woodlands?” you can find clues to the factors that influence and motivate forest clearing behavior.

Which factors were the most important? The local Korekore people, and most migrants who settled in the area decades ago, considered the dry forests to be sacred places, the homes of ancestral spirits. These forests had been conserved for generations because of traditional religious beliefs and taboos. Mopane woodland was not protected from clearing by such values, and economic factors motivated its clearing.

But even the sacred forests have been shrinking in size, so other factors must also influence behavior toward those forests. Comparing people who do respect the sacred forests with those who don’t—people who cut trees, clear fields, enter without the permission of traditional leaders, or hunt in the forest—gives further clues about key factors that influence behavior toward the forests.

Do respect	Do not respect/respect less consistently
Korekore tribe	Zezeru, Karanga tribes
Long-term residents	Recent immigrants
Believers in traditional Shona religion	Apostolic Christians

Whereas long established local residents, especially Korekore people, almost always respected the sacred dry thicket forests, recent immigrants from other parts of Zimbabwe sometimes did not. Some of the people claimed they did not know that the forest was a sacred place or did not know the rules that governed its use. Others did not consider the forests sacred. These people held different values. In some cases they came from a different ethnic group and therefore did not share the Korekore’s belief that spirit ancestors were in the forest. In other cases, they belonged to a Christian sect that rejects traditional Shona religious beliefs, including beliefs in ancestral spirits. These findings may not completely answer questions about why the forests are disappearing in this region, but they help in understanding why the forests are affected differently and offer a place to start in working with the behaviors involved. Understanding the diversity of views within a community is clearly important.

STEPPING STONE 7: Developing a vision for a sustainable future

Why are you doing this?

Developing a vision of the future is one of the most powerful tools for helping stakeholders recognize their common interests and develop mutually agreeable strategies for managing natural resources. The importance of this tool in encouraging participants to discuss a more desirable future cannot be underestimated. It can stir powerful motives, point out solutions to obstacles, and encourage consensus and cooperation. You need to be careful that you avoid setting up unrealistic expectations or engaging in unrealistic dreaming.

How can you do this?

Although historical trends in resource availability and use may be projected into the future to suggest that resource depletion will take place, the key to any vision is the fact that it is intended to portray a desirable and sustainable future. Be prepared for unanticipated visions. For example, participants may not care if grass is available for thatching in 10 years. Maybe they all want and plan to be living in houses with metal or tile roofs by then, even though there may be little likelihood that this will happen. Again, you have to be cautious here, as you don't want to encourage unrealistic visions, ones that raise expectations by encouraging people to imagine that riches will soon come to them. What you want instead is to encourage people to imagine a future with sustainable natural resource use. It may not be the future that they desire or dream of, but you shouldn't feed false hopes.

The purpose of creating a vision is to open discussion and engage stakeholders in dialogue. Therefore, the first question to ask therefore is:

- What do stakeholders want their environment to be like, and what resources do they want it to provide in the future?

After stakeholders have agreed on what they want in the future, they will be in a position to identify behaviors that will allow them to achieve what they want. Sometimes a current behavior must stop completely to bring this about; at other times, it may need to be reduced in frequency or a new behavior adopted. For example, if villagers want thatching grass to be available in 10 years, perhaps cattle and goats will have to be kept out of a certain area and fires restricted. The next question to ask is:

- What behaviors will lead to the desired future state of the natural resources here?

To answer this question, stakeholders will have to estimate whether the existing level of resource use meets their needs now, and will continue to do so in the future if current trends continue.

What examples are there?

Developing a vision for the future:

How it was used in the Muzarabani sacred forests, Zimbabwe

At meetings with stakeholders in Muzarabani there was general agreement that the desired resource condition with respect to the dry forests was that they should remain intact and be respected.

Desired behaviors that would sustain the resources within the sacred forests included

- stop clearing forest for cotton or other crops;
- abandon fields already cleared within sacred boundaries and revegetate with forest species;
- move any settlements away from forest edges, outside of boundaries of sacred areas;
- stop wood cutting in dry forests—get fuelwood and construction poles from mopane woodlands instead;
- hunting in forest acceptable with chief's permission;
- continue burying dead in forests;
- continue holding ceremonies in forests;
- continue harvesting medicinal plants from forests; and
- livestock may continue to pass through forests to get to the river to drink.



Local and national stakeholders meet in Muzarabani to discuss ways of sustaining sacred forests.

Developing a vision for the future: How it proved useful in West Caprivi, Namibia

As seen on page 35, a historical matrix was used in West Caprivi, Namibia, to reflect on the change in abundance of certain resources over time. This matrix was then used again to explore visions of the future.

The matrix was extended by creating a column that showed the desired future condition of various natural resources (see page 48). By comparing the “desired future” and “future if we do nothing” columns of this matrix, stakeholders were able to see that behaviors affecting certain resources had a higher priority than others. Conserving the makalani palms used for making baskets was a more urgent issue than managing spring hares, for example, because palms were highly desired but threatened with complete elimination if present trends continued.










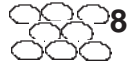

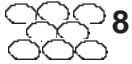

























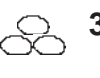













Discussion of this matrix resulted in the following list of desired behaviors:

- stop cutting mangetti trees;
- plant more mangetti trees;
- reduce harvest rate of makalani palm fronds;
- plant palms to provide more fronds for basketry;
- reduce harvest of grass for thatching, basketry;
- protect thatching grass from fire, grazing;
- reduce grazing pressure;
- reduce cutting rate of mopane poles for construction;
- reduce cutting of mopane and other trees for fuelwood;
- maintain or slightly increase hunting of spring hares for meat; and
- stop duiker hunting until population recovers.



Local residents desired a future with more grass for thatching and making baskets.

Historical trends in important resources

	TIME					
	Drought 1971	Katima bomb 1979	Indepen- dence 1990	Now	Future if we do nothing	Desired future
Mangetti trees (fruit)	 5	 5	 4	 2	0	 5
Palms (baskets)	 10	 5	 4	 2	0	 8
Grass (thatching, baskets)	 6	 8	 7	 4	 1	 5
Grass (grazing)	 3	 6	 6	 3	 1	 6
Water/wells	 2	 5	 5	 3	 1	 6
Mopane poles (construction)	 10	 8	 6	 4	 1	 8
Firewood (mopane, other)	 10	 7	 5	 3	 1	 10
Spring hare (bushmeat)	 3	 6	 8	 10	 15	 10
Duiker (bushmeat)	 6	 5	 3	 2	0	 5

STEPPING STONE 8: Developing activities to affect factors that influence behaviors

Why are you doing this?

Developing activities that will enable stakeholders to influence behaviors and lead to a more sustainable use of natural resources has been your main aim from the beginning. Now that stakeholders have learned something about the factors influencing their behaviors, what can they do? How can they put this knowledge to work? How can they develop activities that will cause a desired change in these factors?

How can you do this?

To carry out any activity, you need resources such as time, technical knowledge, and money. This may involve you in developing a plan that lists your objectives, activities, responsibilities, timing, and how you will measure progress and success.

Since different stakeholders may be able to provide resources that you or others lack, it is very important to plan your work with partners or groups who share your goals so that all the resources available can be mobilized.

With a clear idea of the available resources and what activities they will support, you should be able to develop interventions that will modify behaviors.

It will be useful to ask:

- How can we strengthen the factors that have influenced those people already practicing the desired behavior?
- How can we weaken those factors that have influenced those engaged in unsustainable uses?
- How can we best carry out the activities needed with the resources available to us?

This will involve you in analyzing those motivating factors that have already been identified, looking for ways in which you can, for example, increase knowledge, provide additional skills or appropriate technology, increase incentives, or lobby to change policy and laws. It may be that several factors influence a given behavior—so several different activities, interventions, and actions may be needed to target different factors, all of which influence the same critical behavior.

It is also important to identify appropriate actors who have the power to influence the key factors that affect critical behaviors. Generally these actors are also stakeholders. However the people who actually do the behavior may not always be the appropriate actors to target—that depends on which key factors influence the critical behavior.

For example, if laws or policies are key factors influencing a behavior, rather than trying to directly influence local people actually doing the behavior, it may be more appropriate to direct an activity at members of the national parliament or a national resource agency (e.g., forestry or wildlife department). On the other hand, if knowledge or **values** are key factors that influence critical behaviors, those doing the behavior may be the appropriate actors to target with activities or interventions.

The table on page 51 provides a general framework that will help you develop relevant interventions.

If people doing the behavior...

DON'T KNOW that it damages resources,

PROVIDE this information using education and communication activities.

DON'T CARE that the resource is being damaged,

TRY TO CHANGE values and attitudes through dialogue, education, and dispute resolution.

DO CARE that the resource is being damaged,

STRENGTHEN their resolve through education and dialogue.

DO CARE what others in the community think of them if they damage the resource,

STRENGTHEN social norms through awareness raising and community monitoring.

LACK viable options and alternatives that do not damage the resource,

CREATE and **DISCOVER** such options and alternatives.

LACK the skills or means to take advantage of options,

PROVIDE skills training.

ARE MOTIVATED by overriding economic factors to use the resources unsustainably,

INCREASE incentives or benefits for desired behavior or
INCREASE costs for resource-damaging behavior.

ARE NOT DETERRED by laws, enforcement rates, or penalties when damaging the resource,

MAKE new laws or
INCREASE enforcement rates or penalties.

LACK SECURE RIGHTS to use and manage resources and so are not motivated to conserve them,

ADVOCATE and **LOBBY** for resource access or ownership of the resource by those using it.

ARE NOT MOTIVATED because of gender inequality and disempowerment,

ADDRESS gender issues through dialogue, education, and training.

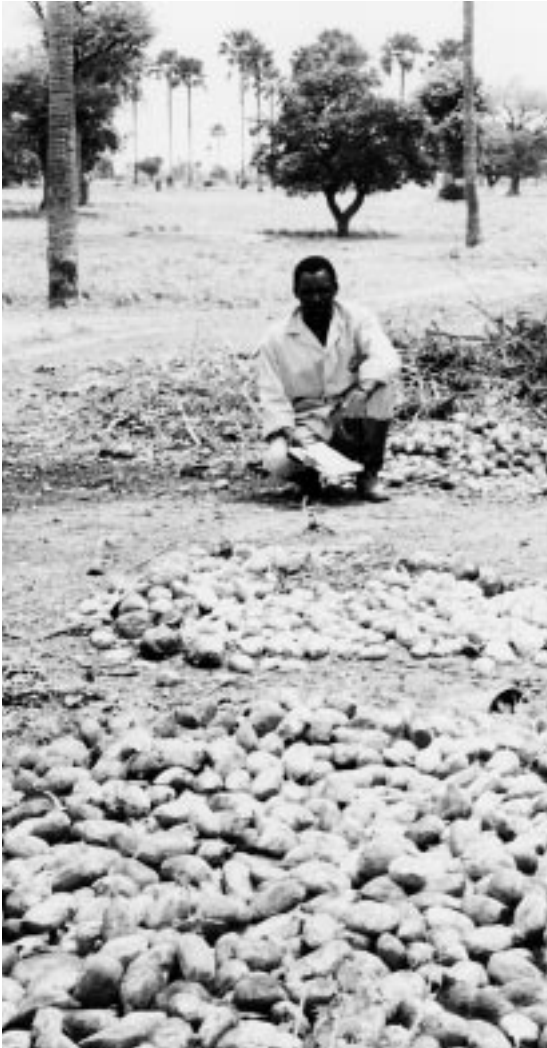
LACK effective organization to manage the resource and promote desirable behavior,

PROMOTE institutional development, reform, and capacity building.

What examples are there?

Developing activities that affect the factors influencing behaviors:

An example from the Keur Samba Dia borassus palm forest, Senegal



As a result of activities, many more palm nuts were available for replanting.

Using a process like that just described, stakeholders at Keur Samba Dia identified factors that needed to be addressed. They then developed activities that offered the best chance for the successful rehabilitation of the forest. Key activities included

- **Increasing knowledge:** Local people were not aware that harvesting unripe palm fruits for sale in city markets, cutting too many palm fronds from a given plant for roof thatching, or digging palm roots to eat as vegetables was unsustainable. Providing such knowledge was the obvious strategy.
- **Supporting social norms that conserve palms:** Local resource users did care that the palm stand was being degraded. Supporting and strengthening these social norms was therefore required. Village-level monitoring committees were set up, involving prominent people in order to support and strengthen these social norms.
- **Establishing clear rules and stronger enforcement and penalties:** In this case, the social norms within the local community were apparently not strong enough to prevent degradation of the palm stand. Making clear rules and enforcing them was required. As a result, rules were created against outsiders gathering palm fruit for sale in distant urban markets, and a ban was put on digging roots for food. Village-level monitoring committees could enforce these rules through fines.

Developing activities that affect the factors influencing behaviors:

An example from the Muzarabani sacred forests, Zimbabwe

In this case, information gathered by the Zambezi Society through interviews, a survey, and community meetings showed that knowledge, values, beliefs and taboos, social norms, and economic factors were the key factors that influenced how people interacted with the dry thicket forests of Muzarabani.

The main motivation for protection of dry thicket forests has so far been nonmaterial, spiritual values and benefits, not direct economic benefits. However, Muzarabani participates in Zimbabwe's Communal Areas Program for Indigenous Resources (CAMPFIRE), and benefits from local wildlife use and management. The people of Muzarabani earn money from safari hunting, for example, and the sacred forests provide important refuges for elephants and other wildlife hunted in the area. The forests thus contribute indirectly to economic benefits realized by local people through the CAMPFIRE program. This economic benefit of the forests is now being recognized by more and more people and motivating conservation behaviors.

Knowing this, the Zambezi Society and local government leaders identified a number of activities designed to promote forest conservation.

- **Activities to increase knowledge and awareness:** community meetings and tours by traditional Korekore political and religious leaders—chiefs, headmen, village heads—to inform new immigrants of the existence and boundaries of sacred areas.
- **Activities to strengthen traditional values, beliefs and taboos, and social norms:** traditional ceremonies; community meetings, as above; meetings to increase communication between traditional political and religious leaders and modern political leaders.
- **Activities to increase economic benefits and decrease economic costs:** share CAMPFIRE benefits more with local villages near forests, electric fencing to reduce crop damage by elephants near forests.



After attending a meeting in Muzarabani, these local residents called themselves the “Keepers of the Sacred Forests.”

Adaptive management means changing your actions based on results.



A seedling is planted...



an animal eats it...



another seedling is planted and protected.

STEPPING STONE 9: Monitoring, evaluating, and managing adaptively

Why are you doing this?

Collecting information about resources and behaviors before and after you have carried out activities allows you to determine if those activities have had the intended effect. It will allow you to identify unsuccessful interventions and adapt your plans accordingly. Alternatively, if your initial intervention is successful, you may wish to move on and implement activities aimed at changing other behaviors.

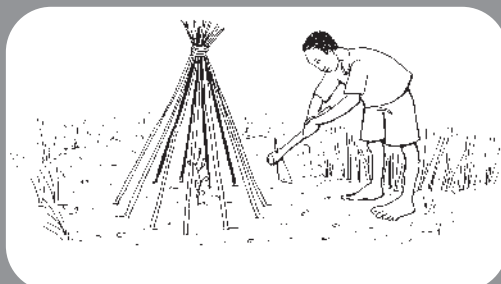
In implementing activities, you should never assume you know enough to get it right the first time! **Monitoring** refers to the periodic collection and analysis of data relevant to your original objectives. In other words, you should follow the progress of your activities and observe any changes in behavior that occur as a result, and also observe the impact on the natural resources themselves. Monitoring and evaluating can help show whether you have identified critical behaviors that affect natural resources and developed appropriate activities to successfully influence their causes.

Depending on the results of your evaluation, you may need to make changes in the way that you are implementing activities. **Adaptive management** means modifying your activities based on the results of your monitoring.

How can you do this?

To evaluate how successful your activity has been, you should be asking three questions:

- Has there been any change in the identified behaviors?
- Has there been any change in resource status?
- Is it the result of our activities?



Fire destroys the seedling... another protected seedling is planted with a firebreak...

success.

Answering these questions requires you to make two basic comparisons:

- Compare the current situation with what was happening before you intervened.
- Compare the situation with what is happening elsewhere, where you have not intervened.

You need to decide what types of information you are going to use to show whether there is any difference before and after you intervened. Such information is called an **indicator**, because it gives you an indication of your success.

Indicators should be measurable. For example, in the case study on page 57, measuring the number of leaves being left on trees was a good indicator of the success of the project. Leaves are something that can be counted and if more than six leaves are being left on trees, this allows the trees to continue growing.

A good indicator should measure what you intend to measure and not something else as well. For example, in the case study on page 57, measuring the number of people in the forest is not a good indicator of the success of the project because people could be in the forest for numerous reasons, not just to cut down trees. The number of recently cut stumps would be a better indicator.

A good indicator should be consistent, meaning that you are always measuring the same thing over time. A good indicator also needs to be sensitive in order to be able to reflect changes in behavior that result from your activities. For example, if you were measuring the number of hectares covered by forest, it would take a long time to show any difference as a result of your activities. However, the number of trees being cut down each week might reflect changes faster, and be a more sensitive indicator.

To learn more about monitoring, evaluation, and adaptive management, and the various stages of the project cycle, please refer to *Measures of Success: Designing, Managing and Monitoring Conservation and Development Projects* (full reference in Appendix 2).

What examples are there?

Monitoring, evaluating, and adaptively managing:

An example from the Keur Samba Dia borassus palm forest, Senegal

Monitoring of the palm stands was initially the result of a volunteer effort by local people who were determined to take over the responsibility of resource conservation on their lands. Monitoring committees involved a wide range of the community, including village chiefs, elders, men, women, and youth.

Direct observations of vegetation, wildlife, and the use of palms along transects in the area were carried out before and after the community changed some critical behaviors that affected the palm forest.

This monitoring showed that

- digging up seedling palms to eat the roots had stopped,
- cutting down green fruits for market sale had stopped,
- more leaves were being left on trees—at least six—to allow the trees to continue growing; and
- fewer trees were being cut to provide leaves for thatching house roofs.

Ecological monitoring showed that behavior change had led to resource recovery and restoration. Transect surveys showed that in the core of the forest

- herbaceous cover had increased,
- the number of plant species increased from 40 to 56, and
- the number of small animals, including hedgehogs, rabbits, squirrels, and monkeys, had increased.

This greater productivity, recovery, and restoration of the palm forest has, in turn, influenced other behaviors, providing an example of positive feedback in environmental behavior. Earlier, when palms were struggling to survive, people needed to cut leaves from about eight palm trees in order to get enough leaves to thatch a roof. Now, each palm plant produces more leaves because people leave at least six leaves, so a roof can be thatched with leaves from only three plants. Now, young seedlings resulting from natural regeneration are able to provide almost all of the palm leaves needed for thatching roofs.



Monitoring showed that the number of palm leaves available for thatching increased.

SUMMARY: Nine stepping stones for best practice

Stepping stones and questions to ask

The aim of this guide has been to help you understand what motivates people to behave in certain ways. It has presented a series of nine “stepping stones” as part of a process of enquiry where, through the participation of all stakeholders, you are able to gather the type of information you need.

The stepping stones and related questions discussed in this guide are as follows:

STEPPING STONE 2: Identifying Stakeholders and Stakeholder Interests

- Who is using or has an interest in the natural resources here and for what uses?
- Why are they interested?

STEPPING STONE 1: Clarifying Your Own Motives and Interests

- What problems are we most concerned about?
- What specifically do we aim to do?

STEPPING STONE 3: Initiating a Dialogue with Stakeholders

- Do all the stakeholders know the other stakeholders and understand why they have an interest in the natural resources here?
- What common concerns do stakeholders share?
- What do stakeholders disagree about?

STEPPING STONE 4: Identifying Behaviors that Affect the Environment

- What are people doing that affects the natural resources here?
- What is the effect of their behaviors (both positive and negative) on a given resource?

STEPPING STONE 5:

Prioritizing and Agreeing on Critical Behaviors to Address

- Which uses are ecologically sustainable and which are not?
- Which behaviors are most critical to change or maintain?

STEPPING STONE 7:

Developing a Vision for a Sustainable Future

- What do stakeholders want their environment to be like, and what resources do they want it to provide in the future?
- What behaviors will lead to the desired future state of the natural resources here?

STEPPING STONE 8:

Developing Activities to Affect the Factors Influencing Behaviors

- How can we strengthen the factors that have influenced those people already practicing the desired behavior?
- How can we weaken those factors that have influenced those engaged in unsustainable uses ?
- How can we best carry out the activities needed with the resources available to us?

STEPPING STONE 6:

Learning More About Factors that Affect Critical Behaviors

- Do people carrying out this behavior know that it damages resources?
- Do they care that the resource is being damaged by this behavior?
- Do they care what other people in their community think of them if they do this behavior?
- Do people have viable options that do not damage the resource and skills to take advantage of these options?
- Are there overriding economic factors that motivate behavior despite knowledge, values, sociocultural factors, options, and skills?
- Do laws and policies encourage or discourage this behavior?

STEPPING STONE 9:

Monitoring, Evaluating, and Managing Adaptively

- Has there been any change in the identified behaviors?
- Has there been any change in resource status?
- Is it the result of our activities?

GLOSSARY

Here are some key terms and their meanings as used in this guide. Each time the word first appears in the guide, it has been bolded.

Adaptive management	Managing activities and projects flexibly and modifying them as needed, based on the results of periodic monitoring.
Behavior	Decisions, practices, and actions taken by individuals or groups.
Benefits	Positive, valued consequences that result from using natural resources.
Community	A relatively small group of people living in the same area, generally having similar values and interests and capable of making decisions and resolving disputes without outside intervention.
Conflict	Disagreement or dispute between individuals or groups—sometimes, but not necessarily, physical or violent.
Conservation	The management of human uses of the biosphere so that it may sustainably provide benefits of all kinds to both present and future generations. These uses and benefits could be direct material uses, indirect material uses such as ecological services, or nonmaterial uses such as scientific, spiritual, and aesthetic uses.
Ecosystem	The system of interaction between living plants, animals, and other organisms and their nonliving physical environment.
Gender	Socially constructed roles and responsibilities of women and men in a given culture or location. Gender attitudes and behaviors are learned and can change.
Indicator	Information about the ecosystem or social system that can tell you whether your activities are leading toward the desired results.
Interests	The reasons why individuals or groups have a concern about a natural resource or area, usually because they use, value, or benefit from that resource or area.
Monitoring	Periodic information gathering to keep track of trends or changes in the ecosystem or social system so that decisions can be made.
Social norms	Values or behaviors that are considered normal, correct, or acceptable by a given social group or community.
Social system	The system of interaction between individuals, groups, and organizations including cultural, economic, and political factors and institutions.
Stakeholder	Any person or group with interests in the use and management of natural resources of a place.
Sustainable use	Use of a renewable natural resource at a rate less than or equal to the rate at which the resource grows or regenerates.
Values	Anything considered to have value, use, or benefit for material or nonmaterial (psychological and emotional) reasons.

APPENDIX 1

Some information-gathering methods

Many of the steps presented in this guide require information and knowledge about the ecological and social situation. What do you do if you don't have enough information to carry out a step? You and other stakeholders may need to gather information using methods such as interviews, surveys, community meetings, or direct behavioral observations. It is important to keep in mind that ultimately all stakeholders need adequate information about the situation, and about each other's views and interests. This information-gathering process is best if it is a cooperative venture among everyone concerned. The reality of the need for resources, discussed earlier, may mean that one stakeholder group may facilitate or pay for some parts of the information-gathering process needed to carry out the steps, while other stakeholders contribute in other ways. Ultimately all stakeholders must share information in order to carry out steps that require everyone's participation.

It is not the intention of this guide to give a comprehensive description of the methods that can be used. Other books such as *The Community's Toolbox*, which are listed in Appendix 2, already provide this information. Rather, the following section highlights some methods that were used during the research, planning, and implementation of the projects used as case studies in this guide. Each method has its strengths, and weaknesses so sometimes using more than one method to gather information helps guard against biases and improves the quality and accuracy of the information. With a little practice, you can learn to use them yourself.

Interviews

Interviews are one-on-one conversations or question-and-answer sessions. You can learn the most by listening to key actors.

Before an interview, think through the information you want and develop some questions to ask. You could prepare a written list of questions, or you could just think through what topics you want to ask about without preparing specific questions. You can make up questions as you talk if you keep the main topics you want to know about in mind. This makes the interview feel more like a conversation, less formal and more open.

Asking indirectly about an issue sometimes works better than asking direct questions. For example, instead of asking, "why don't you stop using pesticides on that crop?" you could instead ask, "I wonder if there is any way to reduce pesticide use and still grow cotton here?" Or instead of asking "do you think hunting should be prohibited here?" you could say, "I heard they banned hunting in the neighboring district. Is that a good idea? What would happen if they did that here?"

Focus groups

A focus group brings together a small number of people, usually in the presence of a facilitator, to discuss a particular topic. The facilitator introduces a series of questions, allowing the group time to respond to each question without interference. The facilitator does not shape the discussion, but may refocus it if it strays too far from the topic in question. This tool works well when you need very specific information or when you want to fill in information gaps left by other data collection methods. Almost any issue or set of factors can be the topic of a focus group.

Surveys

Surveys are nothing more complicated than asking the same questions of a number of individuals and compiling the results. Surveys can be administered in writing or orally. With written questionnaires, the respondent can remain anonymous, and when questionnaires probe sensitive issues, respondents may then be more willing to give more honest answers. An example would be a questionnaire that asks people whether they have ever engaged in illegal behaviors, such as hunting out of season. With oral administration, on the other hand, the interviewer knows who the respondent is. In such cases, the level of trust between interviewers and respondents is a key consideration in assessing the accuracy of survey results.

Survey questions—whether asked during interviews or in writing—can range from highly structured ones, with acceptable answers restricted to a few choices such as “agree” or “disagree”, to open-ended questions in which possible answers are not suggested, such as “what is your opinion of...?”

Comparing the results of an initial survey with the same survey administered later can be a useful tool for monitoring and evaluating progress.

Community meetings

Community meetings bring stakeholders together to discuss issues and problems. These meetings may bring out important information about why people do what they do—about the motivations of behaviors, in other words—that methods aimed at individuals, such as interviews, sometimes miss. Community meetings often reveal “opinion leaders”. Opinion leaders are people who are respected and listened to by many community members, and they can play key leadership roles in maintaining or changing behaviors. Public meetings can also provide a good forum for letting “outsiders”—the staff of government agencies or foreign donor organizations, for example—hear the views of local people.

Because communities are diverse and not homogeneous, it is important to know something about that diversity before calling a meeting. Separate meetings with each of a community’s many subgroups may be useful, at least at first. Men and women often use natural resources differently, so a meeting with more men than women, or vice versa, may give a skewed picture of community knowledge, values, interests, and concerns. Meeting format and protocol—how the seating is arranged, who speaks first and for how long, etc.—can influence the quality of participation.

Although local public meetings involving all stakeholders have many benefits as an information-gathering and -sharing method, they have some drawbacks, too. Before organizing large, open, public meetings to discuss issues about which there are disagreements and conflicts among stakeholders, it is important to think and plan carefully. Large public meetings about contentious issues can sometimes increase tensions and strengthen divisions in communities rather than build agreement if they are held too soon or are poorly planned or facilitated.

The role of the facilitator or moderator at community meetings is not to teach or preach, but to help the group explore and communicate about the diversity of views among its members and to make decisions. Choosing an appropriate person for this role also requires careful thought.

Direct behavioral observation

Direct behavioral observation provides direct information about the steps that make up a behavior, the context of the behavior, and its consequences. This information can give clues to the factors that motivate the behavior.

Direct behavioral observation involves observing and recording how people do something, how often they do it, how long it takes, and what happens when they have finished—what is the outcome or result of the behavior. This usually means accompanying people as they do an activity, or doing it with them. Actually doing something often leads to a better understanding of its benefits and costs than watching others do it. While involved in such participatory direct observation, you can conduct an informal interview, asking questions as they arise during the course of the activity.

Matrices

A matrix is a diagram that allows data to be categorized and arranged in rows and columns. It can also be used to illustrate historical data, essentially making it a calendar. By looking at long-term historical trends and projecting them into the future, it is possible to begin to build up a vision of what the future might be. Matrices can be used to collect and rank or otherwise group information about any number of factors, such as which resources are used and how often, what specific problems are facing the community and which are most serious, and the possible solutions to various community problems and which ones will have the greatest impact overall. Here are some helpful tips:

- Choose the factors about which you will collect information carefully, making sure they are clear and can be easily measured.
- Don't expect the matrix to give you precise statistics. Instead, use it as a tool for describing relationships, preferences, and trends.

Calendars

Calendars are diagrams that describe events that occur over time. They can cover any period, represent any sort of event or activity, and describe either what, or how much is happening. Simple calendars describe only one activity or type of event, such as when food sources are most or least secure. Composite calendars may combine information about several different activities, such as when crops are planted, when forest products are harvested, and when income is earned from various labors.

The case study from Mbaniou (page 23) illustrates how a calendar was very useful in showing how seasonal pastoralists came into conflict with settled residents through competition for resources at certain times of the year.

Ranking

Ranking is another way of collecting data that allows comparisons or relationships among groups or categories to be described. In Ranomafana, a pairwise ranking method was used to select the most critical behaviors to address. Ranking exercises encourage stakeholder dialogue and the identification of common priorities and actions.

Maps and transects

Involving community members in creating informal maps or pictures of an immediate area, either on paper or on the ground, provides information about perceived relationships between communities, families, and villages or about perceived responsibilities for resources. In Muzarabani, information about the loss of forest cover was produced through the participation of local informants and then enriched through the use of aerial photographs.

Transects are a kind of linear map and have been used successfully for sampling the resources, land uses, soil types, crops, topography, or other features of an area. Further information about all these methods is in the readings recommended in Appendix 2.

APPENDIX 2

Recommended reading for more information

There are many excellent guides that provide simple information about the different methods that can be used to encourage community participation in the management of natural resources. The books listed below are merely a starting point for anyone interested in learning more about the tools of participatory rural appraisal (PRA) and their application to the understanding and influencing of behaviors.

Byers, Bruce A. 1996. *Understanding and Influencing Behaviors in Conservation and Natural Resources Management*. African Biodiversity Series, No. 4. Biodiversity Support Program, Washington DC.

Food and Agriculture Organization of the United Nations (FAO). 1990. *The Community's Toolbox: The Idea, Methods and Tools for Participatory Assessment, Monitoring and Evaluation in Community Forestry*. Community Forestry Field Manual 2. Bangkok: FAO Regional Wood Energy Development Program. Available from FAO, Viale delle terme di Caracalla, 00100 Rome, Italy. Tel: 39-6-57051; fax: 39-6-57053152; email: postmaster@fao.org

Gosling, Louisa, and Michael Edwards. 1995. *Development Manual 5: an SCF Toolkit*. London: Save the Children Fund. Available from Save the Children Fund (SCF), 17 Grove Lane, London SE5 8RD, UK. Tel: 44-171-703-5400; fax: 44-171-703-2278; email: publications@scfuk.org.uk £6.95 (add 20% for postage and packing for overseas orders).

Gueye, Bara, and Karen Schoonmaker Freudenberger. 1991. *Introduction à la méthode accélérée de recherche participative (MARP): Quelques notes pour appuyer une formation pratique*. London: International Institute for Environment and Development (IIED). Available from IIED, Sustainable Agriculture Program, 3 Endsleigh Street, London, WC1H 0DD, UK. Tel: 44-171-338-2117; fax: 44-171-388-2826; email: iieduk@gn.apc.org

Margoluis, Richard, and Nick Salafsky. 1998. *Measures of Success: Designing, Managing and Monitoring Conservation and Development Projects*. Washington, DC: Island Press. Available from Island Press, 1718 Connecticut Avenue, N.W. Suite 300, Washington DC. 20009, USA. fax: (202) 234-1328; email: www.islandpress.com

National Environment Secretariat, Government of Kenya, Clark University, Egerton University, and the Center for International Development and Environment of the World Resources Institute. December 1994. *PRA Handbook*. Worcester, MA: Clark University. Available from Clark University, International Development Program, 950 Main Street, Worcester, MA 01610, USA. Tel: 508-793-7527; fax: 508-793-8820; email: id@vax.calrku.edu English: \$8.00 plus shipping. French (xerox working copy): \$5.00.

POSTSCRIPT: How this guide came about

This guide is the result of a six-year project of the Biodiversity Support Program (BSP) to identify and communicate the best available methods for understanding and influencing human behaviors in conservation and natural resources management. BSP began this work in late 1992 with funding from the Agency for International Development (USAID)'s Bureau for Africa, Office of Sustainable Development.

The first phase of the analysis involved consultations with practitioners in Kenya, Madagascar, Malawi, Namibia, Tanzania, Uganda, and Zimbabwe; interviews with experts; and a review of the pertinent literature. It led to the publication, in late 1996, of a 140-page report, *Understanding and Influencing Behaviors in Conservation and Natural Resources Management*, which synthesized what had been learned at that point in the process.

A second phase of the analysis began with a small workshop in Nairobi, Kenya, in May 1996, that brought together an advisory group from Africa. The advisors were:

Edmund Barrow, World Conservation Union, Nairobi, Kenya.

Yvonne Dladla, Natal Parks Board, Pretoria, South Africa.

Deo-Gratius Gamassa, College of African Wildlife Management, Mweka, Tanzania.

Henri M. Lo, Institut des Sciences de l'Environnement, Faculté de Sciences et Techniques, Université C.A.D. de Dakar, Senegal.

James Murombedzi, Ford Foundation, Johannesburg, South Africa.

Steve Murray, Action, Harare, Zimbabwe.

These advisors helped to design and implement a small grants program to

- document and evaluate the effectiveness of behavior-centered, participatory social assessment for understanding and influencing environmental behaviors in selected cases; and
- generate practical, "how-to" recommendations based on the field experience and lessons of these cases.

Beginning in January 1997, BSP awarded grants to six organizations working in diverse situations in Senegal, the Central African Republic (CAR), Uganda, and Kenya. The grantees and their projects were:

African Wildlife Foundation: Mark Infield

Examining the influence of a community conservation program on the attitudes and behaviors of farming and pastoralist communities living around Lake Mburo National Park, Uganda.

East African Wildlife Society: Hadley Becha

Strategic conservation monitoring and intervention in the Taita Hills, Kenya.

Keur Samba Dia Biosphere Reserve: Youssoupha Cissé

An assessment of the behavior of local people living near the Keur Samba Dia borassus palm forest, Senegal, two years after the implementation of a project to restore this forest.

Senegal Department of National Parks: Paul Ndiaye

Establishing a natural community area. From voluntary mobilization to sustainable action around the Popenguine Natural Reserve, Senegal.

Senegal Ministry of the Environment and the Protection of Nature, Directorate of the Environment: Fatima Dia Touré:

Assessment of conservation actions conducted by the agro-sylvo-pastoral project including seven pilot villages and a livestock area in the Mbaniou zone, Senegal.

Université de Bangui and WWF-CAR: Zéphérin Mogba

A case study based on WWF activities in the region of Dzhangha Sangha Reserve, Central African Republic.

In addition to case study material provided by the grantees listed above, examples in this guide are also drawn from:

West Caprivi, Namibia

The work of the Living in a Finite Environment (LIFE) project, implemented by the World Wildlife Fund with funding from USAID. Barbara Wyckoff-Baird and Patricia Skyer provided the information discussed here.

Muzarabani, Zimbabwe

Information was provided by Rob Cunliffe of the Zambezi Society and Bruce Byers, who worked with support from the Centre for Applied Social Sciences, University of Zimbabwe, and the U.S. Fulbright Scholarship Program.

Ranomafana National Park, Madagascar

Information was provided by Richard Swanson and is described in *Understanding and Influencing Behaviors in Conservation and Natural Resources Management*.

In November 1997, grantees were brought together with the advisors, BSP staff, and a facilitator at a summary workshop in Harare, Zimbabwe. The small-grant recipients shared what they had learned in the process of documenting and evaluating their use of behavior-centered social assessment for conservation. Workshop participants then distilled and began to synthesize the information generated by the small grants and other project activities into practical, "how-to" recommendations for field-level practitioners. They also made suggestions about how to communicate those practical recommendations.

This guide is the result of the insights and efforts of many people, which BSP gratefully acknowledges. It was written by Bruce Byers and edited, illustrated, and designed by **Action**. Drafts benefited from the comments and insights of a number of reviewers: Sheila Donoghue, Chris Feral, Rebecca Ham, and Judy Oglethorpe of BSP; members of the advisory group, Mark Freudenberger of WWF; and Karen Schoonmaker-Freudenberger and Barbara Wyckoff-Baird. BSP staff who provided administrative and programmatic support for this project are Kate Newman, John Magistro, Chris Feral, Rebecca Ham, Judy Oglethorpe, Julia Karki, Rose-Marie Gay, Julia Ellis, and Stephanie Hando. We also thank Zvidzai Chidhakwa, Manasa Sibanda, Tracie Sam, and Phosiso Sola of SAFIRE; Norman Rugava of WWF-Zimbabwe; and Samuel Kudhlande of the Zimbabwe Trust for reviewing this guide and giving us advice about how to make it more useful for field-level promoters of conservation and natural resources management. We hope you will find it useful in promoting more sustainable use and conservation of natural resources and biodiversity in Africa and elsewhere in the world.

The views expressed in this guide are those of the author, and may not always reflect the views of the project's collaborators.

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