

# **Indigenous Knowledge**

A Resource Kit for Sustainable Development Researchers in Dryland  
Africa

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# The Indigenous Knowledge Resource Kit

**Background:** Over the last few decades, despite international efforts at alleviation, land degradation in dryland regions of Africa continues to intensify, prompting a search for more effective ways of dealing with the situation. The Convention to Combat Desertification (CCD), an international agreement which came into force late in 1996, represents a resolve on the part of many countries to support a new, integrated approach to the problem of desertification. It emphasizes the sustainable management of resources at the community level. Central to this approach is the mobilization and utilization of indigenous peoples' knowledge about the environment, the efficacy of which has only recently been recognized by the international community. Under Article 18 (2), the Convention calls for the collection, protection, improvement and dissemination of relevant indigenous knowledge and technologies, so that such knowledge can be utilized in the on-going fight against desertification.

The recent international interest in indigenous knowledge (IK) as an important contributor to plans for sustainable development and environmental conservation means that a great deal of field research is being done in indigenous communities. Many ethical as well as methodological questions have arisen as a result of these activities, and both indigenous people and researchers alike have been trying to come to terms with a number of important issues.

**What is the Indigenous Knowledge Resource Kit?** This kit is a reference tool for researchers and development specialists working on issues of land degradation in dryland regions of Africa. It will assist them in planning ethical and effective approaches to indigenous knowledge research.

**Why has the Resource Kit Been Prepared?** The People, Land and Water (PLAW) Program Initiative at IDRC is committed to funding research which builds on and improves indigenous coping and adaptive strategies for sustainable production and conservation. It is also committed to promoting approaches to research that focus on capacity-building and reflect the attitudes, desires, knowledge and behaviour of the intended beneficiaries of the research. This resource kit provides researchers and development specialists with an introduction to the ethical and methodological issues surrounding indigenous knowledge research, and gives them some suggestions on how to deal with these issues in a practical sense when working in local communities. It is expected that researchers will choose for themselves an interpretation of the material presented which is sensible in the context of their own research project.

**How was the Resource Kit Prepared?** While the Resource Kit relies on the international literature on IK and consultations with various academics and practitioners, it is also based on the concrete experiences that I and several colleagues from the Kenyan Agricultural

Research Institute (KARI) had during preliminary field work for the Desert Margins Program in Kenya. The DMP is an international research program developed by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and partially funded under IDRC's People, Land and Water (PLAW) Program Initiative. A central component of the program is to collect, document, assess and improve indigenous knowledge and technologies associated with environmental conservation in sub-Saharan Africa. Our experiences associated with the DMP in Kenya provided a good indication of some of the major issues surrounding IK research in dryland Africa, and how they might be tackled in a methodological sense.

***What is in the Resource Kit?*** The kit has six sections:

*Section one* offers a brief overview of the topic of indigenous knowledge, and gives some of its key characteristics as related to sustainable development.

*Section two* describes three important issues in IK research—participation of local people, gender sensitivity, and protecting rights to knowledge—and provides general guidelines for dealing with these issues in a field setting.

*Section three* deals with field methods for collecting indigenous knowledge. It includes descriptions of eight participatory tools that can be used when working in local communities.

*Section four* describes how IK can be used for sustainable development, and how it can be evaluated and then combined, if necessary, with scientific knowledge. The section also describes ways of distributing IK and how IK research can be of overall benefit to indigenous people.

*Section five* contains eight photocopied readings on indigenous knowledge excerpted from external sources in order to give readers a more in-depth understanding of some of the issues discussed earlier in the resource kit.

*Section six* is a short, annotated list of selected resources available on the Internet and from libraries which readers can consult for further reference.

This resource kit is not meant as a step-by-step guide for doing IK research. Rather, it highlights major issues that need to be considered and provides researchers and development specialists with a selection of possible tools for approaching these issues. The material stimulates questions and further inquiry and should be seen as only a starting point for researchers looking for information on a specific topic. The research tools provided in Sections three and five are intended as catalysts for adaptation and innovation of new site-specific tools and methods. The readings and bibliographical references will assist researchers to pursue more targeted information beyond what is provided here.

Readers should also note that the views expressed in the readings are those of the author(s) and do not necessarily represent those of IDRC.

# 1. What is Indigenous Knowledge?

*This section gives a broad overview of the topic of indigenous knowledge (IK), defining key concepts, describing the types of IK that are of interest to researchers, and discussing the importance as well as the limitations of IK for sustainable development.*

## 1.1 Defining Indigenous Knowledge

Indigenous knowledge (IK) is, broadly speaking, the knowledge used by local people to make a living in a particular environment (Warren, 1991). Terms used in the field of sustainable development to designate this concept include indigenous technical knowledge, traditional environmental knowledge, rural knowledge, local knowledge and farmer's or pastoralist's knowledge. Indigenous knowledge can be defined as "A body of knowledge built up by a group of people through generations of living in close contact with nature" (Johnson, 1992). Generally speaking, such knowledge evolves in the local environment, so that it is specifically adapted to the requirements of local people and conditions. It is also creative and experimental, constantly incorporating outside influences and inside innovations to meet new conditions. It is usually a mistake to think of indigenous knowledge as 'old-fashioned,' 'backwards,' 'static' or 'unchanging.'

### **A working definition of indigenous knowledge in the African context:**

- 1) Indigenous systems are localized African systems developed over long periods and whose patterns are based upon local knowledge systems and expressed in local languages.
- 2) Indigenous systems would generally be viewed to be in balance with the local environment or would have sought such balance.
- 3) The systems would have been influenced by innovations emerging from within themselves, from other indigenous systems and from national and international systems. Nonetheless, they are essentially African in origin even though they may display foreign attributes.
- 4) Indigenous peoples would be those regarded as indigenous on account of their descent from the populations inhabiting the countries at the time of conquest, colonization or establishment of present state boundaries. They retain some or all of their own social, economic, cultural and political institutions. Such a definition is therefore not confined to the minority groups in the region but encompasses major groupings as well. A major criterion of "indigenous" would reflect African origination.

(Source: Matowanyika, 1994)

## 1.2 Indigenous versus Local Knowledge

Indigenous people are the original inhabitants of a particular geographic location, who have a culture and belief system distinct from the international system of knowledge (e.g., the Tribal, Native, First, or Aboriginal people of an area). Some feel that such a definition is too narrow, in that it excludes peoples who may have lived in an area for a long period of time but are not the original inhabitants. This has led to widespread use of the term **local knowledge**, a broader concept which refers to the knowledge possessed by *any* group living off the land in a particular area for a long period of time. Under this approach, it is not necessary to know if the people in question are the original inhabitants of an area, the important thing is to learn how people—aboriginal or non-aboriginal—in a particular area view and interact with their environment, in order that their knowledge can be mobilized for the design of appropriate interventions. To add confusion, the term ‘indigenous knowledge’ may also be used in this latter sense, to refer to ‘local knowledge,’ with ‘indigenous’ referring to the *in situ* nature of the knowledge, rather than to the ‘origins’ of the group in question. To simplify things, the two terms are used interchangeably in this Resource Kit.

### United Nations definition of "indigenous populations"

- 1) they are descendants of groups which were in the territory of the country at the time when other groups of different cultures or ethnic origins arrived there;
- 2) precisely because of their isolation from other segments of the country's population, they have preserved almost intact the customs and traditions of their ancestors which are similar to those characterized as indigenous;
- 3) they are, even if only formally, placed under a state structure which incorporates national, social and cultural characteristics alien to theirs.

(Source: UNESCO, 1982)

## 1.3 Types of Indigenous Knowledge

While IK research originally emphasized indigenous *technical* knowledge of the environment, it is now accepted that the concept of IK goes beyond this narrow interpretation. IK is now considered to be *cultural* knowledge in its broadest sense, including all of the social, political, economic and spiritual aspects of a local way of life. Sustainable development researchers, however, have found the following categories of IK to be of particular interest: *resource management knowledge* and the tools, techniques, practices and rules related to pastoralism, agriculture, agroforestry, water management and the gathering of wild food; *classification systems* for plants, animals, soils, water and weather; *empirical knowledge* about flora, fauna and inanimate resources and their practical uses; and the *worldview* or way the local group perceives its relationship to the natural world (Emery, 1996).



While research may focus on a particular category or type of IK, any IK under investigation must be viewed in terms of the overall cultural context. IK is embedded in a dynamic system in which spirituality, kinship, local politics and other factors are tied together and influence one another. Researchers should be prepared to examine any other aspects of a culture that may play an important role in shaping the IK in question. For example, religion is an integral part of IK and cannot necessarily be separated from technical forms of knowledge. Spiritual beliefs about nature may influence how resources are managed and how willing people are to adopt new resource management strategies (IIRR, 1996a).

### **More Examples of Topics Covered in IK Research**

*local organization, controls, and enforcement* — institutions for resource management; common property management practices; decision-making processes; conflict management practices; traditional laws, rights, taboos and rituals; and community controls on harvesting.

*social networks* — kinship ties and their effect on power relations, economic strategies and allocation of resources.

*local classification and quantification* — a community's definitions and classification systems for plants, animals, soils, water, air, and weather; and indigenous methods of counting and quantifying.

*learning systems* — indigenous methods of imparting knowledge; indigenous approaches to innovation and experimentation; and indigenous specialists.

*pastoral systems* — herd movement; range evaluation and monitoring; animal breeding and production; traditional fodder and forage species and their specific uses; animal diseases and traditional ethnoveterinary medicine.

*agriculture* — farming and crop systems; indigenous indicators to determine favorable times to prepare, plant, and harvest gardens; land preparation practices; ways to propagate plants; seed storage and processing; crop planting, harvesting and storage practices; food processing and marketing; and pest management systems and plant protection methods.

*agroforestry* — the management of forest plots and trees; the knowledge and use of forest plants and animals; and the interrelationships between trees, crops, herds and soil fertility.

*water* — traditional water-management and water conservation systems; traditional techniques for irrigation; and use of specific species for water conservation.

*soil* — soil conservation practices; the use of specific species for soil conservation; and soil fertility enhancement practices.

*plants* — as a source of wild food, building material, household tools, personal uses (dyes, perfumes, soaps), fuel wood and charcoal, medicinal purposes.

*wildlife* — animal behavior, habitats, uses.

*worldview* — views of the universe and humanity's place within it, relationship between humans and nature, myths, beliefs, customs.

(Source: adapted from Grenier, 1998; and Matowanyika, 1994)

## 1.4 Importance of Indigenous Knowledge

There are two basic reasons why it is important for researchers to consider IK when carrying out research projects. First and foremost, incorporating IK into research projects can contribute to local empowerment and development, increasing self-sufficiency and strengthening self-determination (Thrupp, 1989). Utilizing IK in research projects and management plans gives it legitimacy and credibility in the eyes of both local people and outside scientists, increasing cultural pride and thus motivation to solve local problems with local ingenuity and resources (ibid.). Local capacity-building is a crucial aspect of sustainable development, and researchers and development specialists should design approaches which support and strengthen appropriate indigenous knowledge and institutions.

Second, indigenous people can provide valuable input about the local environment and how to effectively manage its natural resources. Outside interest in indigenous knowledge systems has been fueled by the recent worldwide ecological crisis and the realization that its causes lie partly in the overexploitation of natural resources based on inappropriate attitudes and technologies. Scientists now recognize that indigenous people have managed the environments in which they have lived for generations, often without significantly damaging local ecologies (Emery, 1996). Many feel that indigenous knowledge can thus provide a powerful basis from which alternative ways of managing resources can be developed. IK technologies and know-how have an advantage over introduced forms in that they rely on locally available skills and materials and are thus often more cost-effective than introducing exotic technologies from outside sources (IIRR, 1996a). As well, local people are familiar with them and so do not need any specialized training (ibid.).

The following are some of the features of IK which have relevance to conservation and sustainable development:

- *locally appropriate*: IK represents a way of life that has evolved with the local environment, so it is specifically adapted to the requirements of local conditions.
- *restraint in resource exploitation*: production is for subsistence needs only; only what is needed for immediate survival is taken from the environment.
- *diversified production systems*: there is no overexploitation of a single resource; risk is often spread out by utilizing a number of subsistence strategies.
-

*respect for nature*: a 'conservation ethic' often exists. The land is considered sacred, humans are dependent on nature for survival, all species are interconnected.

- *flexible*: IK is able to adapt to new conditions and incorporate outside knowledge.

- *social responsibility*: there are strong family and community ties, and with them feelings of obligation and responsibility to preserve the land for future generations.

(Source: Dewalt, 1994)

## **1.5 Limitations of Indigenous Knowledge**

As with scientific knowledge, however, IK has its limitations, and these must be recognized. IK is sometimes accepted uncritically because of naive notions that whatever indigenous people do is naturally in harmony with the environment. There is historical and contemporary evidence that indigenous peoples have also committed environmental 'sins' through over-grazing, over-hunting, or over-cultivation of the land. It is misleading to think of IK as always being 'good,' 'right' or 'sustainable'.

For example, a critical assumption of indigenous knowledge approaches is that local people have a good understanding of the natural resource base because they have lived in the same, or similar, environment for many generations, and have accumulated and passed on knowledge of the natural conditions, soils, vegetation, food and medicinal plants etc. However, under conditions where the local people are in fact recent migrants from a quite different ecological zone, they may not have much experience yet with their new environment. In these circumstances, some indigenous knowledge of the people may be helpful, or it may cause problems (e.g., use of agricultural systems adapted to other ecological zones). Therefore it is important, especially when dealing with recent migrants, to evaluate the relevance of different kinds of indigenous knowledge to local conditions.

Indigenous knowledge can also be eroded by wider economic and social forces. Pressure on indigenous peoples to integrate with larger societies is often great, and as they become more integrated, the social structures which generate indigenous knowledge and practices can break down. The growth of national and international markets, the imposition of educational and religious systems and the impact of various development processes are leading more and more to the 'homogenization' of the world's cultures (Grenier, 1998). Consequently, indigenous beliefs, values, customs, know-how and practices may be altered and the resulting knowledge base incomplete.

Sometimes IK that was once well-adapted and effective for securing a livelihood in a particular environment becomes inappropriate under conditions of environmental degradation (Thrupp, 1989). Although IK systems have a certain amount of flexibility in adapting to ecological change, when change is particularly rapid or drastic, the knowledge associated with them may be rendered unsuitable and possibly damaging in the altered conditions (Grenier, 1998).

Finally, an often overlooked feature of IK which needs to be taken into account is that, like scientific knowledge, sometimes the knowledge which local people rely on is wrong or even harmful (Thrupp, 1989). Practices based on, for example, mistaken beliefs, faulty experimentation, or inaccurate information can be dangerous and may even be a barrier to improving the well-being of indigenous people. However, researchers need to be careful when making such judgements. (See Section 4.2 of this Resource Kit for further discussion of this issue).

## **1.6 The Loss of Indigenous Knowledge**

With the rapid environmental, social, economic and political changes occurring in many areas inhabited by indigenous people comes the danger that the IK they possess will be overwhelmed and lost forever. Younger generations are acquiring different values and lifestyles as a result of exposure to global and national influences, and traditional communication networks are breaking down, meaning that Elders are dying without passing their knowledge on to children. In some cases, the actual existence of indigenous people themselves is threatened. Researchers can assist in preserving IK through the following:

- *record and use IK*: document IK so that both the scientific and local community have access to it and can utilize it in the formulation of sustainable development plans.
- *raise awareness in the community about the value of IK*: record and share IK success stories in songs, plays, story-telling, videos and other traditional or modern means of communication. Encourage people to take pride in their knowledge.
- *help communities record and document their local practices*: Get local people involved in recording their IK by training them as researchers and providing means of documentation. (computers, video equipment, etc.)
- *make IK available*: disseminate IK back to the community through newsletters, videos, books and other media.
- *observe intellectual property rights*: have agreements so that IK is not misused and benefits return to the community from which it originates.

(Source: IIRR, 1996a)

## **1.7 Summary**

Indigenous knowledge (IK) is the knowledge used by local people to make a living in a particular environment. It evolves *in situ* and is dynamic and creative, constantly growing and adapting to meet new conditions. The term 'indigenous knowledge' sometimes refers to the knowledge possessed by the original inhabitants of an area, while the term 'local knowledge' is a broader term which refers to the knowledge of *any* people who have lived in an area for a long period of time. IK is considered to be cultural knowledge in its broadest sense. It is embedded in a dynamic system in which spirituality, kinship, local politics and other factors are tied together and influence one another, and researchers must take this into account when examining a particular part of the IK system. IK has many positive aspects, and incorporating IK into projects can contribute to local empowerment and can provide valuable input for alternative natural resource management strategies. However, IK also has its limitations, and researchers should not make the mistake of romanticizing it and believing that whatever indigenous people do is right or sustainable. IK researchers should also play a part in stemming the loss of IK, by helping local people record and use their knowledge.

## 2. What are the Issues in IK Research?

*Indigenous knowledge research is a complex undertaking, with many ethical and methodological issues to consider when planning a fair, effective approach to working in local communities. This section provides a brief description of three crucial issues identified by both local people and development specialists as important to the future of IK research. It also includes general guidelines for dealing with each issue in the field.*

### 2.1 Participation of Local People

Development projects in the past have often not encouraged the active participation of local people. The conventional approach to research has been characterized by control by outside scientists and development specialists who have set project agendas and carried out information gathering activities without any input from local community members (Chambers, 1994). Not only have local people not played a part in the planning or implementation of such projects, but their knowledge of local ecology and the structure of their social, economic and political systems has been ignored as well. Many believe that this 'top-down' approach has contributed to the failure of many development projects. The argument is that the lack of community involvement and knowledge can lead to inappropriate project goals, community apathy and a lack of understanding of local social and ecological systems.

#### **Why have pastoral projects failed?**

Pastoral development has been a difficult chapter in the history of technical cooperation between Europe and Africa. Considerable investment has been made in pastoral projects in sub-Saharan Africa, but with relatively little success measured against the stated aims. To a large extent, this shortfall has been due to development planners' poor understanding of: pastoralists' objectives, the ecosystems in which they live, the functioning of pastoral systems, their productivity relative to the environment, and the economics of extensive animal husbandry.

(Source: Waters-Bayer and Bayer, 1994)

#### **2.1.1 Involving Indigenous People**

Participatory research (PR) represents a family of methodological approaches increasingly accepted and utilized by sustainable development researchers and specialists working with indigenous knowledge. PR seeks to involve indigenous people in every step of the research process, as "active creators of information and knowledge" (Narayan, 1996). It is characterized by a cyclical, ongoing process of research, reflection and action in which local people participate in planning the project, gathering the information, analysing data

and taking action. The end objective of participatory research is always practical: to solve local problems (ibid.).

An important assumption of PR is that utilizing indigenous knowledge and encouraging participation leads to local empowerment and capacity-building, where indigenous people learn to solve local problems with their own ingenuity and resources (Waters-Bayer and Bayer, 1994). Supporters of PR claim that participatory approaches have other benefits as well, including, for example, a greater likelihood that project objectives will reflect community needs and goals; an increase in community motivation, pride and commitment to a project; and more effective interventions based on local knowledge of culture and ecology (ibid.).

Because IDRC emphasizes an orientation towards community control over and responsibility for resource management, engaging members of the community to participate in the research process is vital. There are a variety of ways in which local people can 'participate' in projects, depending on the particular context of the research and the capacities of those involved. Participation can range from consultation or information sharing—where local people are kept informed of research activities but do not influence the research process, to self mobilization—where the researcher acts only in a guidance capacity and local people take the initiative in project design and implementation.

### **2.1.2 Participatory Rural Appraisal (PRA)**

Participatory Rural Appraisal (PRA) represents a body of qualitative methods which emphasize the use of indigenous or local knowledge and which can be adapted to virtually any research situation. PRA is carried out by a multidisciplinary 'team' consisting of a leader and a few core members, who act as 'facilitators' to assist local people to elicit and record their own knowledge using techniques which involve a minimum of outsider interference or involvement. In a number of cases, local people themselves have been trained as facilitators, a situation considered by supporters of PRA to be optimal. This supposedly not only contributes to capacity-building, but solves many of the problems associated with outsiders collecting information such as translation, cultural bias, and lack of rapport. People who are literate, speak the local as well as a national language and have good standing in the community are said to make very effective field workers. However, PRA supporters stress the importance of choosing the 'right' individuals, and this is best done by consulting with local village leaders to get their suggestions for suitable choices.

The following is a summary of some of the important principles upon which PRA is based:

- *a reversal of learning*: local people become the teachers, outside professionals the students.

- *they do it*: facilitating investigation and analysis by local people so that they learn and ‘own’ the outcomes of research.

- *self-critical awareness*: facilitators critically examine their own behavior in order to correct any negative influences they may be having on the research.

- *sharing*: information is shared between local people, between them and outside facilitators, and between different facilitators.

(Source: Chambers, 1994)

### 2.1.3 General Guidelines for Participatory Research

There is, of course, no right or wrong form of local participation. Project approaches will vary based on the particular context of the research. However, researchers should, at the very least, consider the following principles in order to ensure that indigenous people are treated as equal partners in a project or program.

- **consultation**: There should be full consultation with all affected communities, to plan the research, set the agenda, hear concerns of local people and incorporate suggestions into the research.

- **full disclosure**: communities should be told the purpose of the research, sponsors of the research, potential benefits and possible problems associated with the research for both people and the environment, research methodology, and the expected amount of local participation.

- **informed consent**: consent must be given by the rural community, after the particulars have been fully disclosed in a manner which is easily understood by community members (e.g., translation in local language).

- **on-going consultation**: the community should be kept informed of the research, and have the power to stop the research at any time if it is found to be unacceptable for any reason.



**participation of community members:** an effort must be made to train or employ indigenous people as researchers. Communities should participate in the drafting of reports and have the final decision before publication of any material.

(Source: ISE, 1995)

## **2.2 Gender Sensitivity**

It is important to realize that IK is not evenly or homogeneously distributed among the various members of a local community. There is a differentiation of knowledge among individuals based on a number of factors which need to be taken into consideration when possible sources of relevant IK are being identified (Simpson, 1994). Gender accounts for a large part of the differences in knowledge among individuals.

### **2.2.1 Gender and Indigenous Knowledge**

Gender refers to the culturally-specific set of characteristics that identifies how women and men behave and how they relate to each other. It refers to the social differences, rather than the biological ones, between women and men that have been learned, are changeable over time, and vary widely both within and between cultures (Adamo et al, 1998).

Because women and men do different work and have differing responsibilities in indigenous communities, they possess differing sets of knowledge. For example, women play a crucial role in family and community survival. Their activities are typically related to gathering, growing and preparing food for subsistence, providing traditional medicine and treatment, collecting fuel, fodder and water, and child-bearing and rearing. This means that women often have the greatest vested interest in ecological sustainability (Quiroz, 1994). Furthermore, their role in rearing and socializing children also means that they are the primary guardians and perpetuators of traditional culture and knowledge in most local communities (ibid.).

Tapping the knowledge that both women and men possess is crucial in ensuring the success of development projects. Conventional development research has shown a male-bias in which researchers, usually male, focus almost exclusively on men's labor and knowledge, with little consideration for the fact that women also possess important and relevant knowledge (ibid.). A lack of understanding of women's roles, and the often low social status of women in their own culture, have also contributed to the exclusion of women's input from development projects (ibid.). There is a need for research that pays particular attention to 'whose knowledge' is being considered, research that is sensitive to the differentiation of community knowledge along gender lines (Simpson, 1994).

### 2.2.2 Other Factors Accounting for the Differentiation of Knowledge

Researchers should also consider other factors—such as age, education, occupation, environment, socio-economic status, experience, religion—that may influence knowledge differentiation in a community (Grenier, 1998). For example, Elders are often considered to be excellent sources of IK, but younger generations also possess knowledge relevant to their age group, which may need to be recognized. Individuals engaged in similar pursuits, such as farmers, hunters, or herders, will have differing levels of skill and knowledge based on such things as experience, imagination, outside influences and personal aptitude (Emery, 1996). There may be local ‘experts’ whose knowledge in a particular area exceeds that of other community members, or there may be highly innovative or ‘progressive’ individuals who are constantly experimenting and developing new ideas and techniques (IIRR, 1996a). It is helpful to think of IK as having different ‘levels’ of distribution, based on the degree to which it is shared amongst the individuals of a community:

- *common knowledge*: held by most members of a community.
- *shared knowledge*: held by many but not all (e.g., knowledge of herders).
- *specialized knowledge*: held by a few ‘experts’ (e.g., healers).

(source: IIRR, 1996a)

### 2.2.3 General Questions for Gender Analysis in IK Research

Basically gender analysis is focused on a number of practical questions.

The first set of questions relates to efficiency. When we are doing research on development-related topics, it is obvious that we want to ensure that we are putting relevant information into our analysis. For a long time researchers assumed that women's perceptions and experiences of development processes were identical to those of men. Even worse, it was sometimes assumed that women did not have any views or perceptions. We know now that this is not the case. Women do have experiences which are often very different from those of men, and we also know that when their views are ignored, they sometimes sabotage initiatives by refusing to take on extra workloads or by cooperating at only the most token level. This is hardly surprising, but it suggests that development projects have to be designed realistically to reflect the experiences and perceptions of both women and men.

The second set of questions has to do with equity. Most people would agree that both women and men in all countries have the right to benefit from development processes. To deny women access to schooling or to modern health care or to economic opportunities

simply on the basis of sex is not only grossly unfair but also creates a societal drag. If women are not given the opportunity to look after themselves, this will place a greater burden on men or on the state, or more likely both.

So what are the questions we need to ask when we do gender analysis?

### ***Division of labour***

- Who does what in the household? On the farm? In the small enterprise?
- Is some work done exclusively by one sex? If so, does this have implications for the capacity of that sex to participate in or benefit from new development strategies?

### ***Decision-making***

- Who has access to financial means?
- To what extent are women involved in making decisions at the household level? At the community level? At the national or regional levels?
- Is women's perspective likely to differ from that of men?

### ***Access to resources***

- Do women have the same access to resources such as credit, property ownership, training opportunities, education, etc., as men? If not, is this likely to affect the outcome of a development initiative that is dependent on women's participation?
- Do women have access to information?

These are just a few of the questions that can — indeed must — be asked.

(Source: adapted from Rathgeber, 1997)

## **2.3 Protecting Rights to Knowledge**

Recent international recognition of the significance of IK in the context of scientific research, conservation and the development of alternative economic options has led to a dramatic increase in its collection and utilization by outside researchers and companies (Posey, 1996). These activities have raised concerns among indigenous people that resources and knowledge are being stolen and used without their awareness and without recognition or a share in any economic benefits that may result from the development of related commercial products. Indigenous communities are coming to realize themselves that their biodiversity and knowledge are a potential source of wealth, and they want controls placed on corporations and researchers, as well as a share in any economic

benefits arising from their knowledge. Consideration must therefore be given to a plan for protecting the indigenous knowledge that results from research projects, so that indigenous people retain control over their knowledge and resources and are properly compensated for sharing them.

### 2.3.1 Indigenous Knowledge and the Potential for Exploitation

Generally speaking, indigenous groups have found it difficult to control access to and use of their knowledge. Companies in the agricultural and pharmaceutical sectors have used indigenous knowledge about plants and animals to manufacture new drugs, crop species and other commercial products, resulting in huge profits (RAFI, 1994). Academics and scientists who record indigenous knowledge have built their academic careers by doing IK research, improving both their reputations and their salaries (Posey, 1996).

#### Major Commercial Uses of Indigenous Knowledge

- **agricultural species:**  
indigenous folk varieties of crops provide wild germplasm for the production of new crop varieties by the agricultural industry with increased productivity and disease resistance.
- **medicinal plants:**  
indigenous medicinal knowledge is used by the pharmaceutical industry to develop new drugs and treatments.
- **food and personal care products:** industries manufacture foods and food additives, personal care and hygiene products, and industrial oils based on indigenous knowledge and local resources.

(Source: Posey, 1996)

For the most part, there has been little to no compensation offered to the indigenous communities whose resources and knowledge are being utilized. Companies are, in the majority of cases, primarily concerned with their own profits, and compensation and equity are of little concern. Academic researchers publish their research findings under their own names or the names of their organizations, with little credit given to their indigenous sources.

### 2.3.2 Approaches to Protecting IK

Perhaps the most commonly cited source concerning the protection of indigenous knowledge is the Convention on Biological Diversity (CBD). While the CBD makes general normative statements that national governments should respect indigenous knowledge and encourage the sharing of any benefits arising from its use, it does not create any specific obligations on governments concerning the mechanisms they should use to implement these norms. There is therefore a wide-open field in terms of what policy makers can do to protect IK (Halewood, 1999).

## The Convention on Biological Diversity (CBD)

The CBD is an international agreement which entered into force in 1993, with three goals being to promote “the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilization of genetic resources.” The CBD recognizes the important relationship between indigenous knowledge and biodiversity, and lays a groundwork that will hopefully lead to the preservation of IK:

**Article 8 (J)** of the convention states that: *Each contracting party shall...subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biodiversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.*

(Source: CSC, 1996)

Intellectual property rights (IPR) laws are used in the North to grant legal monopoly protection to those who create knowledge or ideas. Generally speaking, though, these laws are not useful for protecting indigenous knowledge. IPR laws “have relatively rigid criteria for protection...[and] tend to favour high-tech innovations which require expensive, long-term institutional investment in research and development” (ibid.). Because IK is generally thought of as communal, inter-generational and developed gradually over time, and because it blends spirituality, cultural beliefs and technical expertise, it is considered to be too amorphous to qualify for protection under existing intellectual property laws (Halewood, personal communication, 1999<sup>1</sup>). There has been some effort by governments and organizations to develop separate or ‘sui generis’ intellectual property laws for protecting indigenous knowledge, but such efforts have not yet reached the point of practical application. An issue complicating the creation of such laws is that many indigenous groups reject the IPR approach outright, based on beliefs that local knowledge and resources are common property shared by all community members, and not commodities to be owned or sold by an individual (Grenier, 1998).

Other approaches to protecting IK and compensating local people have been developed in various contexts. For example, the Philippine government has enacted access laws which state that anyone wishing to collect biological resources or related knowledge in local communities must obtain prior permission from both the government and community in question (Halewood, personal communication, 1999<sup>2</sup>). The Dene, an aboriginal group living in northern Canada, have developed protocols which outside researchers must follow when working in their communities (Grenier, 1998). Along with establishing the minimum terms under which Dene knowledge can be accessed, collected, stored and used, these protocols also stipulate that local people should be paid an hourly wage for sharing their knowledge, and that an effort be made to train and hire local people as researchers (ibid.).

Researchers need to realize that protection and compensation are complex issues—there are as yet no universally-applicable laws or solutions, and approaches will be dependent

upon the local and national context. For now, the details of such arrangements will have to be negotiated with indigenous people on a case-by-case basis.

### **2.3.3 Implications for Research**

At the community level, researchers and development specialists cannot ignore these issues. Appropriate arrangements need to be made for collecting, storing, applying and distributing indigenous knowledge within and between local, national and international communities. Although sustainable development researchers may not be interested in commercially exploiting indigenous knowledge, they must be aware of the possibility that they may unwittingly pass information on (e.g., through publication) to people who are (Posey, 1996). While solutions for protecting IK will vary from context to context, there are some general issues that all researchers should consider prior to a project. Along with the principles outlined earlier in Section 2.1.3 *General Guidelines for Participatory Research*, agreements for the following should be made to protect local rights to indigenous knowledge:

- *compensation*: Equitable sharing of any economic benefits that may result from IK; compensation for indigenous people or communities participating in the research, with attention paid to quantity, form and fair distribution within the community.
- *acknowledgement*: how indigenous people will be given credit for their knowledge (e.g., as researchers, co-authors, etc.). How IK will be published, and possible uses the knowledge will be put to.
- *distribution*: how information will be disseminated to the community and to wider audiences.
- *limited access*: how secret/sacred/confidential knowledge will be respected.

(Source: ISE, 1995)

### **2.3.4 Suggested Checklist for Protecting Intellectual Property Rights at the Community Level**

#### ***The preliminary preparations***

- The funding application is prepared in collaboration with any indigenous people living in the area
- Researchers agree in writing to respect the intellectual property rights of local people

- The community management structures are fully involved in developing the research program
- Community representatives help establish guidelines and policies
- The researchers, the community, and each informant sign an agreement before the start of any research activity

### ***The agreement***

The agreement between the researcher and the community outlines the following:

- Who “owns” the indigenous knowledge, and who can use it
- Restrictions on the publication of certain types of information (for example, secret rituals)
- How and by whom the information will be collected
- The location of the research activity, including a list of any sacred sites
- Responsibilities of each party
- Adequate compensation for local experts who provide information
- Expected benefits for and impacts on the community and the researchers
- Reporting requirements during the research activity
- The community’s role in the review of all final reports of the research
- How the information will be made available to the community, how it will be released to others, and the number of report copies, including photographs and other research products (for example, plant collections), that the community will receive at the conclusion of the activity
- The sponsor’s rights over the final report
- Copyright arrangements, including any arrangements for co-authorship of publications

If any information (for example, plant variety or local technology) is commercialized (or has potential to be commercialized), the agreement indicates

- A requirement to negotiate with the original holders of the knowledge any arrangements for how to proceed

### ***Policies***

If the research involves the use of cultural artifacts (for example, indigenous songs or cultural symbols or the removal of biological samples (for example, livestock, fungus, folk varieties), policies should be developed to regulate the following:

- The use of folk variety names and other cultural symbols in connection with the marketing of seeds or food products
- The collection, use, and distribution of biological materials by outsiders
- Restrictions on any commercialization of the collected species

(Source: Grenier, 1998)

## **2.4 Summary**

There are three basic issues identified in this section that need to be considered when doing IK research. First, the participation of local people is crucial. Conventional research has tended to be controlled by outsiders with little involvement of local people in decision-making and little utilization of indigenous knowledge. An approach known as 'participatory research' (PR) is increasingly accepted as a way to address the problems associated with this 'top-down' development. PR seeks to involve local people in every step of the research process, with supporters claiming that this can have important benefits, including capacity-building and empowerment for local people, more appropriate project design and better use of IK. Participatory Rural Appraisal (PRA) represents a set of qualitative methods which are commonly used in participatory approaches to allow local people to document their knowledge with a minimum of outsider involvement.

Second, sensitivity to the differentiation of knowledge among community members based on gender and other factors is important. Women and men have different sets of knowledge related to their differing roles in community life. Conventional research has tended to ignore the IK of women, without recognizing that they too possess important knowledge related to sustainable development. Knowledge is also differentiated according to other factors such as the age, occupation, socio-economic status and religion of an individual. Researchers need to ask themselves 'whose knowledge' is being considered and design approaches which take these factors into account.

Third, protecting local rights to knowledge is an important consideration. Indigenous people want control over their knowledge and resources, and want to be properly compensated for sharing it. While there has been an effort to create new 'sui generis' intellectual property laws to protect IK, these efforts are still in a preliminary stage. Other examples of attempts to protect IK include the enacting of access laws and the development of community protocols for researchers. Until national and international bodies enact laws to deal with these issues, it is up to researchers and development specialists to ensure that, in the context of their particular research projects, appropriate arrangements are made with local people to provide protection and compensation for IK.



### 3. What are the Methods for Collecting IK?

*There are a number of tools used by IK researchers to enable local people to share their knowledge in a meaningful manner. This section lists the stages of participatory research, discusses some problems associated with using a PRA approach, and describes eight PRA tools that can be used by researchers to collect IK in the field.*

#### 3.1 Stages in Participatory Research

The following stages in the planning process have been identified for researchers and local people planning PRA fieldwork in local communities. Participation by local people is important in almost every stage of planning. Researchers should note that the different stages should not be understood as strictly sequential.

- *background research*: identify area/people to plan with, review of secondary sources of information;
- *develop rapport* with local people: build a positive relationship based on trust;
- *jointly identifying problems and opportunities*, and agreeing on what will be done;
- *develop draft project proposal*: set goal, objectives, methodology;
- *meet with local leaders and people* to fully disclose plans of proposed research and obtain permission to carry out the project. A village meeting is a good approach;
- *reformulate proposal* based on feedback from community;
- *select methods* and prepare for each thoroughly;
- *field data collection and analysis* with these local people: it is suggested that local people be trained as facilitators to carry out the field research;
- *jointly evaluating* and replanning activities.

(Source: Waters-Bayer and Bayer, 1994)

#### **The Baraza: A village meeting with the Maasai of Kenya**

In 1991, the Kenyan Agricultural Research Institute (KARI) approached local Maasai people in the village of Simba, Kenya about the possibility of doing a joint PRA evaluation of environmental problems in the area and possible solutions. The exercise was also to serve as a PRA training course for KARI staff. PRA team leaders from KARI first met privately with local Maasai Elders to introduce themselves and discuss the proposed research. The proposal interested the Maasai Elders, and they agreed to arrange a *Baraza* or general village meeting where all community members could be informed about the project and have a chance to make comments and provide input.

The *Baraza* was held the next day in the village, in a large open space under an acacia tree. Chairs were provided for Maasai Chiefs and sub-Chiefs, as well as for PRA team leaders from KARI. When about sixty local people had gathered (all of which were men), the Chief began the meeting with a traditional Maasai group prayer. He then went on to briefly describe the proposed project, introduce the PRA team leaders and welcome them into the community. The Chief spoke in the Maasai language, with a Maasai interpreter translating into Kiswahili for the

benefit of the PRA team. The sub-Chiefs then stood in turn to give their formal welcome. Next, the Chief invited the PRA team leader from KARI to speak. He introduced himself and gave a detailed description of the proposed project and its expected outcomes in Kiswahili, which the interpreter translated into Maasai for those locals who did not speak Kiswahili. Two other PRA team leaders followed in a similar fashion, and then each of the remaining team members briefly introduced themselves by giving their name and place of residence. The floor was then opened for questions from the local men present, who were somewhat suspicious of the team's intentions at first. After the PRA team leaders had responded to their queries and concerns and the locals seemed satisfied, the Chief and sub-Chiefs addressed the meeting once more, each giving his formal approval for the project. The Chief then closed the meeting, which had lasted for about an hour and a half, with a group prayer.

(Source: written by author)

### 3.2 Cautions When Using PRA

While participatory methods are an excellent way of getting a large amount of IK information in a short period of time, they have their limitations as well. The use of PRA should not be seen as precluding the use of other, more conventional data collection techniques such as surveys and questionnaires (Narayan, 1996). Furthermore, the products of a PRA exercise (maps, charts or diagrams) should not be seen as ends in themselves, but as catalysts to get people relaxed and talking about a particular subject. They are starting points from which more detailed, in-depth knowledge can be elicited. The following are some of the problems to look out for when using a participatory approach:

- *need for communication skills:* PRA requires that practitioners be good listeners and ask relevant questions, preferably in the local language. They must be open to the knowledge that local people possess and must be willing to recognize their own biases and limitations. (Waters-Bayer and Bayer, 1994)
- *power issues:* practitioners must be aware that communities are made up of a number of different social groups based on, for example, gender, age and wealth, and that certain groups may try to control or take advantage of the research or its results for their own benefit. Protecting against these potential inequities can begin by gaining a thorough understanding of the social structure of a community through such techniques as key informant interviews. (ibid.)
- *confined views of location and time:* PRA tends to focus on one or two villages at a particular time or season of the year, to the exclusion of non-village dwellers or people who are not present at certain times of the year, such as herders and migrant workers. Practitioners must realize that people do different things at different times of the year, so that certain groups may not be available during certain seasons. As well, resources and resource use can change dramatically from one season to another. (ibid.)

- *superficial, uncertain quality of data:* In situations where PRA is done quickly, there may not be time to develop the kind of close relationship and trust with local people that is necessary to elicit deeper knowledge and meanings. Consequently, the data from such studies can be 'shallow' or superficial. Practitioners should be very explicit in any final reports about how the data was compiled and by whom. Too often methods are simply described as 'PRA' without any further details given, making it difficult for others to judge the quality of the data presented. (ibid.)
- *imposition of foreign concepts:* communication methods used during PRA (maps, charts and diagrams) may be confusing for people who are used to verbalizing and orally transmitting their knowledge. Practitioners of PRA must be flexible enough to modify methods if this is a problem. As well, matching scientific terms and concepts with the indigenous equivalents may be difficult. Indigenous people often have different ways of classifying natural phenomena which differ markedly from scientific schemes, and many concepts may not be translatable. (IIRR, 1996a)

#### **Specific aspects of pastoral societies which need to be taken into account by researcher**

- natural resources are highly variable in space and time (seasons, years).
- main assets (livestock) are mobile rather than stationary.
- land-use is extensive and without defined boundaries.
- tenure tends toward common property regimes.
- much simultaneous use of resources by pastoralists and other groups.
- pastoralists must therefore negotiate with other groups to gain access to resources.
- basic operational unit is household or informal group of households, to allow for flexibility and mobility. Arrangements for access to land are informal.

(Source: Waters-Bayer and Bayer, 1994)

### **3.3 A Selection of PRA Tools for IK Research**

PRA offers a number of methodological tools for gathering information. While the eight tools described in this section are among the most commonly used for indigenous knowledge research, they represent only a portion of the tools available for fieldwork. Researchers should consult other resources on PRA, such as those listed in Sections five and six of this document, to find descriptions of other tools that can be employed in their projects. The tools that appear here have been adapted from IIRR's *Recording and Using Indigenous Knowledge: A Manual*.

The PRA techniques chosen for a particular project will depend upon a number of factors, including, for example, objectives of the research, type of knowledge needed, appropriateness of technique to cultural setting, and relationship between PRA practitioners and community members. The main thing to keep in mind is flexibility: techniques can be altered, or new ones created to fit the requirements of a particular situation. Researchers should also note that careful sequencing of PRA tools is important

to ensure good quality results. Some tools, such as mapping, are particularly effective at the beginning of a PRA activity to provide the PRA team with an orientation to the community and to encourage an atmosphere of participation and learning. Other tools, such as in-depth interviews and group discussions, work better at a later stage of the fieldwork, once the researchers have gained a degree of rapport with the local people (World Bank, 1997).

### **Building Rapport in a Rendille Community in Northern Kenya**

Developing a positive rapport with local people is an extremely important part of any participatory development project. If there is no relationship and trust between outside researchers and local people, there will be no chance of gaining meaningful, in-depth insight into the IK held by a community.

During a recent field trip to the Rendille village of Kargi in Northern Kenya, members of our research team from the Kenyan Agricultural Research Institute (KARI) were very much aware of this necessity, and were eager to build a good relationship with the local Rendille. Besides living in the village itself, which afforded us the chance to interact with villagers on an informal level, we also made our vehicle available for locals to collect fuel wood and building material, to make deliveries and to provide transport to individuals travelling to nearby villages. We also attended, by invitation, a traditional dance performed by the *moran* (young men) of the village. Taking photos was also a good rapport-building strategy, once consent was given and a promise made to send copies. Such activities allowed us to meet and interact with people, and to begin building the trust that will be essential to the success of the Desert Margins Program.

(Source: Langill and Ndathi, 1998)

## **TOOL no. 1 Interviewing**

The word 'interview' implies an interaction between two or more people. Interviews vary in style and format. We can broadly differentiate:

- Informal interviews without structure or control. Interviewers record details of conversations or discussions they have in the community or elsewhere. Such encounters can yield very useful information.
- Unstructured interviews based on a clear plan or a list of topics that the interviewer follows.
- Semi-structured interviews based on written lists of questions or topics that need to be covered in a particular order. These lists are called interview guides.
- Structured interviews based on a questionnaire or interview schedule which is closely followed during the interview. The course of the interview is mostly predetermined and little leeway is left for follow-up questions.

The less an interview is structured, the more it allows for an exchange between interviewer and interviewee, leading to mutual understanding. Most forms of interviews entail a meeting between interviewers and interviewees. Interviews with some informants, such as researchers, can also be conducted by telephone. Individual interviews usually involve one interviewer and one interviewee. But sometimes several interviewers or interviewees can take part. In the case of group interviews (e.g., interviews with several interviewees) it is useful to have several interviewers, each assigned a specific role, such as interviewer, recorder, or observer.

### **In-depth interviews**

*Description:* A form of interview in which questions and topics are built upon the responses to previous questions. It is probing and flexible. The purpose is to uncover details about the 'who,' 'what,' 'where,' 'when,' 'how,' and 'why' of practices, technologies, beliefs, or tools. In-depth interviews help draw out the perceptions and experiences of individuals, expressed in their own words. This is useful for gathering in-depth information on specific aspects of indigenous knowledge.

*Materials:* notebook, pens, initial list of topics for discussion and list of interviewees (if respondents are identified through random sampling), tape recorder (if available).

*Possible approach:*

1. Compile a list of topics. Be clear on the flow of questions and the relationship of each question to the rest.
2. Decide on a method to identify a sample of respondents. It can be based on random sampling or merely a group of people available and willing to participate at a given time. While the latter might be easier, it will give you biased results, because certain types of people might not be available at a given time. For example, farmers might not be available for interviews at mid-morning, or women might have time only during the evening.
3. If random sampling is used, prepare the list of respondents. Make appointments with identified respondents.
4. Before each interview, explain the objectives—how the information will be used and the expected length of the discussion. About one hour is recommended. Don't forget that your interviewee's time is valuable.

5. Ask for permission in advance if you want to use a tape recorder. Also, keep written notes of the essential points of the discussion. If neither are possible, keep mental notes and record them immediately after the interview.
6. Ask questions and allow the interview to flow. But make sure you do cover the list of topics you drew up.
7. Stick to the agreed time.
8. Validate written notes with the interviewee and conduct any needed follow-up interviews.

(Source: adapted from IIRR, 1996a)

## **TOOL no. 2 Group discussions**

*Description:* Discussions with groups of six to 15 knowledgeable community members covering one or several topics. The purpose is to generate information, to build consensus, to validate information gathered by other means, or to clarify information in documents lacking detail. Group discussions can provide IK data on farming and other livelihood practices, leadership structures and decision-making patterns, health practices and delivery systems, traditional medicines, labour sharing arrangements, local indicators of poverty and socio-economic standing, indigenous taxonomic schemes, and other information. Group discussions can also help the facilitator learn local terms and concepts that might have no direct equivalent in the outsider's language. When used in combination with other data-gathering techniques, the information obtained can be of very good quality. The method is inexpensive and relatively easy. Group discussions foster participation and partnership in information gathering and analysis and generate information beyond what can be gleaned from interviews. When faced with conflicting information, several people can present bits of data until the group has enough information to reach consensus.

*Materials:* paper, marking pens, masking tape, chalkboard, chalk and eraser.

*Possible approach:*

1. Review available information on the community. Determine what data are needed.
2. Consult community leaders. Explain the purpose of the data collection and discuss the information you want to collect.

3. Determine, in consultation with community leaders, the criteria for group selection. Ideally, group members come from various walks of life and socioeconomic categories, representing formal and informal community organizations. The composition of the group will depend on the topic.
4. Let community leaders identify people in the community who fit the criteria. Be on the lookout for biases; make sure that people from the most remote hamlet or the poorest group in the community are represented. Otherwise the views and perceptions of the poor are not incorporated.
5. Prepare for the meeting:
  - Set the date, time, and venue.
  - Prepare guide questions which will serve to steer discussions.
  - Assign someone, possibly a group member, to record the proceedings.
6. Personally visit the group members to seek their agreement to participate in the discussion. Explain the purpose and objectives of the meeting.
7. At the start of the meeting, introduce yourself and all group members. Carefully explain again the purpose and objectives of the discussion and how the information will be used. Mention the benefits that the community might derive from the meeting.
8. During the meeting:
  - Ask the first guide question. Solicit participation from all group members. Make sure discussions are not dominated by a few people.
  - When consensus is reached, or when an issue cannot be resolved, introduce a new guide question.
  - Record major points and the results of consensus.
9. At the close of the meeting, summarize major findings and consensus.
10. Inform other members of the community about the results.

*Dos and Don'ts:*

- Do build rapport with group members.
- Do maintain a sense of humour while facilitating.
- Don't let one or a few members of the group monopolize the discussion.
- Don't create the impression that you are an expert on the topic (even if you are an expert).

(Source: adapted from IIRR, 1996a)

### **TOOL no. 3 Mapping**

*Description:* A method for collecting information on where certain resources or features are located. The purpose is to help identify and analyze the distribution of and the relationships between specific resources or features. The maps can show topography, soils, water, forest products, property regimes, land use (including where food is gathered), ecosystems, socio-economic data such as location of indigenous health practitioners, location of medicinal plants, common diseases, ritual sites, location of traditional birth attendants, and more.

Participatory mapping helps outsiders and community members identify, locate, and classify resources and features, revealing their importance and usefulness from the local people's point of view. Mapping reveals patterns of spatial organization as well as constraints and opportunities. It can be used to collect baseline data and to monitor change in resources and patterns of use. It can also be used to improve resource management strategies or to design new systems.

*Materials:* paper, pencil, chalkboard, chalk. Any surface can be used. The map can be drawn with chalk on a concrete floor, or drawn on the ground with a stick. Some villagers have made detailed three-dimensional models using sand, earth, and stones.

*Possible approach:*

1. Define purpose and scope of the mapping exercise.
2. Select key informants.
3. Together, define scale and boundaries of the map. The scale of the map will depend on the objectives of the exercise and the drawing surfaces available.
4. Determine resources or features to be mapped.
5. Prepare a base map if none exists. To do so, ask people to identify and draw key landmarks or reference points and reference lines—for instance, hills, roads, and rivers.
6. Ask participants to locate selected resources and features on the map. Symbols and colours can be used to represent quantity and quality of the different categories.
7. Revise the map.
8. Copy the final map on paper or take a photograph.



## 9. Leave a copy of the map with the community.

### *Dos and don'ts:*

- Do encourage participation during all steps (e.g., from selection of key informants and materials, to analysis), especially if the method is to be used for project management.
- If possible, draw the map in a place which has a good view of the surrounding area.
- Do consider indigenous materials and methods for drawing or creating resource maps.
- Do remember to include a legend to explain symbols or patterns.
- Do encourage participants to design their own symbols.
- Do limit the number of resources or features per map in order to avoid crowding and to facilitate analysis (pick two to three related types of features or resources).
- Do include the compass symbol or indicate direction of sunrise and sunset (indicate season or month).
- Don't worry about drawing to scale but do try to keep relationships accurate.
- Don't let one person dominate map-making.
- Don't compare, side by side, maps made by two groups or individuals. This can cause embarrassment<sup>3</sup>.

(Source: adapted from IIRR, 1996a)

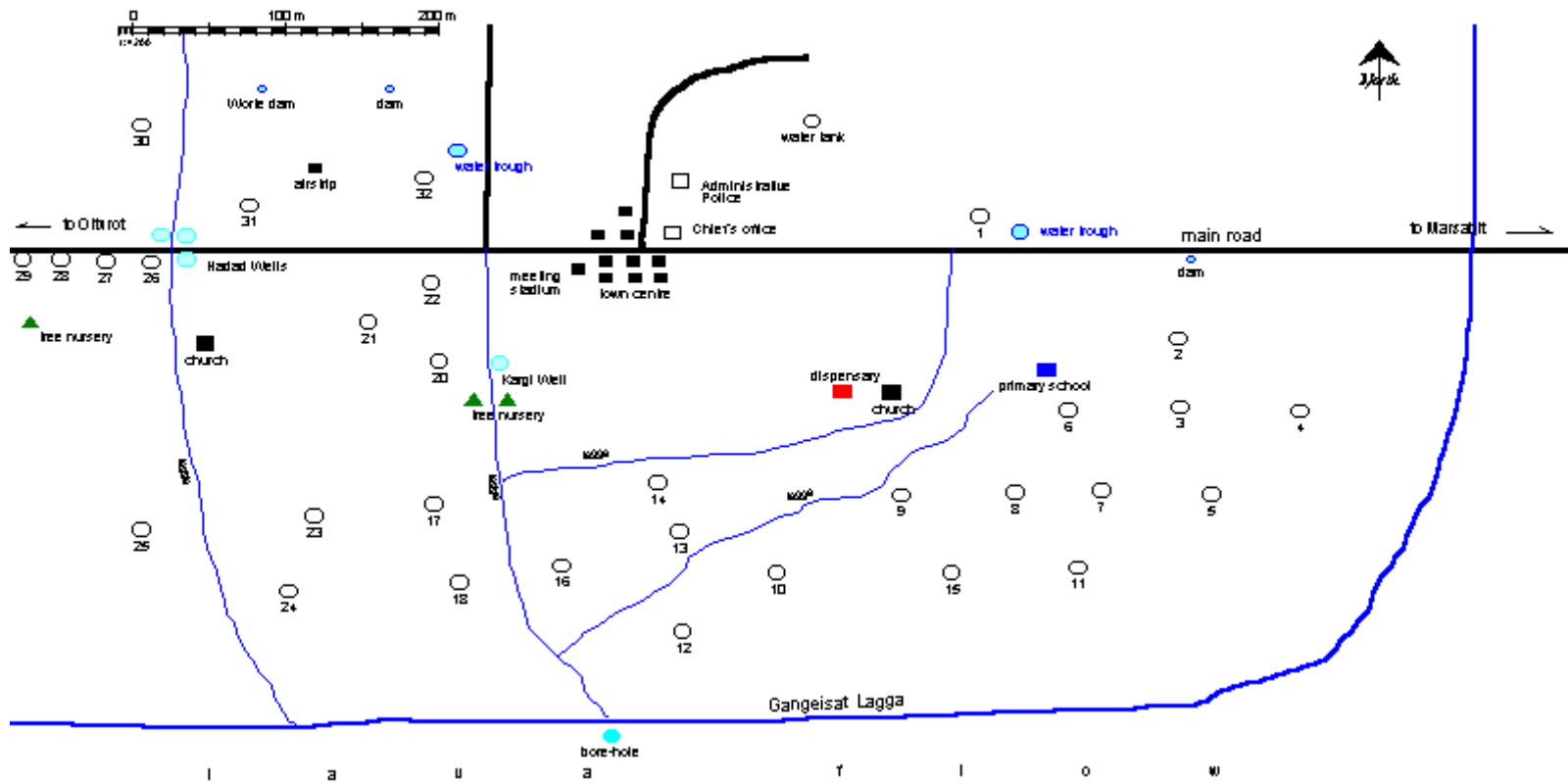
### **Example: Village Mapping Exercise Done with Local Rendille Men in Kenya**

Village mapping is a straight-forward exercise in which local people are asked to draw a map of the settlement area on the ground, including all landmarks which they consider to be important. Our PRA team began facilitation of the village mapping exercise by choosing, with the advice of local men, an appropriate meeting place with a sufficient amount of shade and enough open space and material to construct a map on the ground. When the group had gathered (about 30 men, no women were present), an assistant chief whom we had met with earlier in the day addressed the group in the local Rendille language, explaining to those gathered who we were and what we wanted to do. After his short speech, we introduced ourselves to the group and described, through an interpreter, the village mapping exercise to them. We then began the exercise itself, by clearing a large area on the ground and first placing a stone to represent a central landmark in the settlement (the participants chose the church), and then allowing the men to fill in the map from there. The exercise went very well, and in about an hour and a quarter the group had constructed a detailed map of the settlement, showing roads, seasonal rivers, water sources, buildings and all 32 *gob* or main camps with the clan, sub-clan and head-man designation for each (see Figure 1, next page). One of the Elders, an ex-school teacher, labelled each landmark in Rendille and English with a small piece of paper. This system proved valuable later, when we transferred our rough copy of the map onto a larger sheet, as it provided us with a complete record of all place names which could be used to ensure the accuracy and completeness of the final version of the map.

**Figure 1: Village Map of Kargi, Marsabit District, Kenya 1997**

Source: Langill and Ndathi, 1998

**Map 2: Community Sketch Map of Kargi, Marsabit District**



### Main Camps of Kargi

| map no. | Clan<br><i>gob</i> | Sub-Clan<br><i>khod</i> | Head-man's Family Name<br><i>eti gob iwen</i> |
|---------|--------------------|-------------------------|---|
| 1       | Sale               | Gabanayo                | Esimdurolo                                    |
| 2       | Sale               | Gabanayo                | Ilimo   |
| 3       | Sale               | Urowen                  | Ogom  |
| 4       | Sale               | Urowen                  | Jalle   |
| 5       | Sale               | Urowen                  | Dokhe   |
| 6       | Sale               | Gabanayo                | Lito  |
| 7       | Galdeilan          | Keleyo                  | Kele  |
| 8       | Galdeilan          | Elemoyo                 | Elemo   |
| 9       | Galdeilan          | Amamelsa                | Esimgalboran                                  |
| 10      | Tupcha             | Galdeidayan             | Galale  |
| 11      | Galdeilan          | Amamelsa                | Esimfecha                                     |
| 12      | Sale               | Nebei                   | Ilwas   |
| 13      | Odola              | Odola                   | Mahabale                                      |
| 14      | Sale               | Gabanayo                | Bullo   |
| 15      | Galdeilan          | Mathacheyo              | Matacho                                       |
| 16      | Sale               | Gobanai                 | Kimogol                                       |
| 17      | Sale               | Elegela                 | Obeile  |
| 18      | Rengumo            | Arbelle                 | Addi  |
| 19      | Rengumo            | Ongom                   | Gargule                                       |
| 20      | Rengumo            | Arbele                  | Arbale  |
| 21      | Sale               | Gabore                  | Choya   |
|         | Nahagan            | Galgorowle              | Galgorowle                                    |

| map no. | Clan              | Sub-Clan           | Head-man's Family Name     |
|---------|-------------------|--------------------|----------------------------|
|         | <u><i>gob</i></u> | <u><i>khod</i></u> | <u><i>eti gob iwen</i></u> |
| 22      | Dubsahai          | Gudere             | Nolaso                     |
| 23      | Uyam              | Alyaro             | Alyaro                     |
| 24      | Dubsahai          | Bulyare            | Bulyare                    |
| 25      | Rengumo           | Arbelle            | Banne                      |
| 26      | Nahagan           | Durolo             | Durolo                     |

| map no. | Clan              | Sub-Clan                              | Head-man's Family Name     |
|---------|-------------------|---------------------------------------|----------------------------|
|         | <u><i>gob</i></u> | <u><i>khod</i></u>                    | <u><i>eti gob iwen</i></u> |
| 27      | Rengumo           | Galigacho                             | Esimafigalboho             |
| 28      | Rengumo           | Arbelle                               | Hambule                    |
| 29      | Rengumo           | Arbelle                               | Sahado                     |
| 30      | Sale              | Galoro                                | Guthuru                    |
| 31      | Matarbah          | Fecha                                 | Meite                      |
| 32      | Dubsahai          | Kulali Orat,<br>Gudere,<br>Mirgichani | Galahai                    |

## TOOL no. 4 Historical comparison

*Description:* Describes conditions, techniques, and practices in different time periods. The purpose is to determine changes. Can be useful if no baseline data are available. Historical comparison raises awareness of changes, helps reveal IK from previous times, helps explain changes in practices, and in the process, highlights advantages and disadvantages of specific practices.

*Materials:* manila paper (if working with a group), notebook (if working with individuals)  
Can also be drawn on the ground with a stick.

*Possible approach:*

1. Determine content outline and identify time period(s) to be covered.
2. Find village Elders who know about the subject (3-5 people, both sexes).
3. Explain the purpose of the exercise to respondents. Discuss with them about important events or dates which fall within the period being covered (e.g., special festivals or birth/death anniversaries of family members, wars, disasters, dates according to the local calendar, etc.). These events or dates will serve as time markers.
4. Determine the facts about the subject you wish to investigate. For example, if you explore changes in agro-forestry, the historical comparison could describe species used, planting practices, soil conservation practices, etc.
5. Collect the information for each aspect or fact for all periods to be covered by your historical comparison. Ask: "How did you do this before the great festival, when your mother was still alive?", "What was the situation in 1953?", etc. You can either start with the present situation and work backwards, period by period, or start with the period that lies furthest back and end with the present situation. It's important to collect comparable information on aspects of the subject under investigation for each period.

6. Record information or ask people to draw or write down practices, techniques for the different periods. The information can be presented in a matrix, a series of drawings, or in some other way convenient to your respondents.
7. Discuss and compare outputs of different periods with the respondents.
8. Present the results and discuss them with the villagers. Leave a copy of the output.

(Source: adapted from IIRR, 1996a)

### **Example: Historical Time-line Done with Local Rendille Elders in Kargi, Kenya**

For a general understanding of important past events in Kargi, our PRA team facilitated an exercise known as a historical time-line. This involved gathering together a group of Elders and asking them to record in chronological order (on a line drawn in the sand) all historical events that they consider to have been important, for as far back as they could remember (see Table 1 below). Initially, we had explained that they should begin with the most recent events and move backwards in time from there, but the group decided that it would be easier to begin at a seminal event in the past (the 'bombing' of Marsabit town in 1941) and move forward. While the men had some problem with putting years to some of the events, particularly before about 1960 or so, they nevertheless constructed a very detailed list of events—droughts, disease outbreaks, circumcision ceremonies, and raids and counter-raids—that took over two hours to complete. The recording of such information not only gave everyone a general understanding of past social and ecological problems, it would also allow us later in the research to more accurately discuss with other community members occurrences such as disease outbreaks, which are often not remembered as occurring in a specific year, but in relation to other, defining events.

**Table 1: Historical Time-line for Kargi, Marsabit District, Kenya, 1997**

|      |   |
|------|---|
| 1996 | Large raid on Rendille while at Baragoi, a Samburu grazing area. Many animals are taken.  |
| 1993 | Circumcision of <i>Ilmowoli</i> age-set.  |
| 1992 | Raid on Rendille. Camels taken from <i>Galtheiran</i> clan.   |
| 1991 | Severe drought: many animals die, people receive relief food from government.   |
| 1990 | Marriage of <i>Ilkiroro</i> (Debgutho) age-set.   |
| 1987 | Disease outbreak: <i>ilkibei</i> or pleuropneumonia appears for the first time in area.   |
| 1984 | Severe drought: many animals die, yellow maize is given out for famine relief.  |
| 1979 | Circumcision of <i>Ilkiroro</i> (Debgutho) age-set.   |
| 1976 | Marriage of <i>Ilkichili</i> (Terya) age-set.   |
| 1975 | Circumcision of <i>Sabade</i> girls for marriage to <i>Ilkichili</i> (Terya) age-set.   |
| 1974 | Large raid on Rendille at Baragoi--many camels are taken.   |
| 1973 | Eclipse of the sun, <i>sapthii hii orahalakhapte</i> . Rendille believe that the government "has gotten hold of the sun".   |
| 1971 | Disease outbreak in wild animals: antelope, dik-dik ``go blind`` and are easily taken by Rendille for meat.   |
| 1970 | Severe drought: government brings relief food (fish and rice). Unable to sell animals as there is nobody to buy them.   |
| 1969 | Prominent Rendille Elder Barger is killed by raiders. Rendille retaliate and kill 56.   |
| 1968 | Disease outbreak: many camel calves die of unknown disease.   |
| 1967 | Leader of raiding party is killed by Rendille as he is camped out waiting to raid Kargi. The raid is aborted.   |
| 1966 | Rendille Elder Turuga is killed at Karare. Rendille retaliate and kill 55.<br>Rendille retaliate but are unsuccessful, losing many men.<br>Raid on Rendille at Kargi. Over 50 killed. |

- 1965 Circumcision of *Ilkichili* (*Teriya*) age-set.
- 1964 Raid on Rendille at Bagasi wells. A number are killed.
- 1963 Rendille girl is killed by raiders while herding.
- 1961 Raid on Rendille, camels taken from *Gabore* sub-clan.
- 1960 Violent conflict between Rendille and raiders. Men are killed on both sides.
- 1957 Disease outbreak: worm infestation in sheep and goats which causes the throat to swell. Kills many animals. When meat is butchered it is a greenish-yellow colour.
- ? Disease outbreak: *afturo* or camel pox.
- ? Rendille kill thieves attempting to steal goats near Mount Nyiro.
- ? Second Rendille man, Ah Gelle, settles family in Kargi.
- ? Heavy rains trap giraffe in mud, and they are taken by Rendille for meat.
- ? Rendille kill raiders near Kurkum.
- 1953 *Galgulime* ritual, held one year after circumcision, for *Ilkimaniki* (*Irbandif*) age-set.
- 1952 Circumcision of *Ilkimaniki* age-set.
- 1949 Severe drought: many animals die, particularly sheep and goats.  
Turuga is first Rendille to settle in Kargi.
- 1948 Marriage of *Ilmauri* age-set.
- 1947 Camels from *Gabanayo* sub-clan are ``arrested`` by colonial police for crossing grazing boundary.
- 1946 *Galgulime* ritual for *Ilmauri* age-set, postponed because of drought.
- 1945 Rendille chief Chudukle is arrested for not following orders of colonial authorities.
- 1943 Raid on Rendille, *Ogom* family is most affected.
- 1942 Neighboring tribes involved in violent conflict, colonial government recruits and trains Rendille to assist one side.
- 1941 Marsabit is bombed.
- 1937 Circumcision of *Ilmauri* age-set.
- 1910 Severe drought: Rendille travel to Barseloi in search of food, seek help from Samburu and receive loan of cattle.
- 1890 Severe drought: Rendille exchange children for dried meat from Gabra.

(Source: Langill and Ndathi, 1998)

## TOOL no. 5 Matrix

**Description:** A method for listing items and recording their characteristics. Items such as livestock species or crop types are listed in rows and their characteristics, such as fodder requirements or yield and uses, are recorded in columns. The purpose is to help reveal the characteristics and qualities of listed items, and in the process, reveal the preferences of local people. This can enable communities and program managers to make informed decisions. Matrices help identify preferences, priorities, trends, or specific categories from the respondents' point of view. They can show the availability of resources, their advantages and disadvantages, and people's opinions regarding usefulness.

**Materials:** stick and bare ground, chalk and chalkboard, or marking pen and Manila paper, stones, seeds, leaves, paper and pen.

**Possible approach:**

1. Identify interested and knowledgeable men and women.
2. Find a large, clear area to draw matrix—etched in the ground with a stick, drawn with chalk on a large board, or drawn with a marking pen on a very large sheet of paper.
3. Ask participants to define items (e.g., to list tree species).
4. Draw a row for each species. Write the name of the species at the left side of its row, or use a leaf or fruit from the species to mark its row.
5. Ask participants to identify criteria that are important to them. Examples might be the tree's growth rate, uses, regrowth rate after pruning, drought tolerance, etc.
6. List the criteria at the head of the columns.
7. Ask participants to rate each criterion (e.g., for the case of growth rate: high, medium, low, lowest).
8. Participants can place sticks or stones in the body of the matrix to represent level: for instance, one stone could represent lowest growth rate, five stones could represent highest growth rate.
9. Record the outcome on paper. Share and discuss the matrix with participants and leave them a copy.

*Modifications:*

- **Matrix ranking:** Respondents are asked to rank the items listed in the column. Or the number of stones or sticks in each row can be added together to arrive at an overall score for each item. Then the items are ordered according to their scores.
- **Historical matrices** list items or activities in the rows and dates or events in the columns. Historical matrices reveal changes in the use of items or activities between different periods. They can show how people have dealt with problems over time.

(Source: adapted from IIRR, 1996a)

**Example: Historical Matrix Exercise Done with Rendille Elders in Kenya**

In order to identify coping strategies during droughts, our PRA team facilitated a historical matrix exercise. This exercise gave an idea of what local people have done in the past during droughts, and

what directions might be pursued in the search for alternative strategies. We first asked three Elders to brainstorm about strategies that could be used to survive in times of drought, and to record each on a small piece of paper. Similarly, we asked them to name and record all of the periods of severe drought that they could remember. We then arranged these labels in a matrix configuration on a large table, with coping strategies in a vertical column and drought years arranged horizontally across the top. Next, we gave the men a number of small stones, and asked them to score each coping strategy according to its frequency of use for each drought. They used up to four stones for the scoring, with four representing the highest frequency of use for a strategy (see Table 2, below). The exercise stimulated much animated conversation among the three men.

**Table 2: Coping Strategies in Times of Drought, Kargi, Marsabit District, Kenya, 1997**

| drought year                      |      |      |      |      |      |
|-----------------------------------|------|------|------|------|------|
| 1991                              | 1984 | 1970 | 1949 | 1910 |      |
| coping strategy                   |      |      |      |      |      |
| drink blood mixed with animal fat |      |      | OO   | OOOO |      |
| eat wild tubers                   |      |      |      | OOO  |      |
| eat wild fruit                    | O    | O    | OO   | OO   |      |
| famine relief                     | OOOO | OOOO | OOO  |      |      |
| eat own camels                    | OO   | OOOO | OOO  | OOOO | OOOO |
| borrow camels for milk            | O    | OO   | OO   | OOO  | OOOO |
| eat own cattle                    | O    | O    | O    |      |      |
| trade for cattle to eat           |      |      |      |      | OOO  |

**Key for frequency of strategy use:**

OOOO very high, OOO high, OO moderate, O low, blank: not used

(Source: Langill and Ndathi, 1998)

## **TOOL no. 6 Seasonal pattern chart**

*Description:* A pictorial representation of village life throughout the year. The purpose is to highlight the interrelationships of variables and the timing of activities. It can help a community identify annual events, or combinations of events, which pose challenges and those which hold opportunity. It allows a community to identify not only the interventions necessary to address problems, but also helps with scheduling—from planning and implementation to assessment. Preparation of a seasonal pattern chart can help discern

the week- to-week, month-to-month, season-to-season activities of a community—its annual cycle—which in turn can reveal much about a people's perception of time. Important events can be recorded and lean and plentiful periods identified. The choice and description of discrete events (especially in the case of disease) draw out local perceptions of causation.

*Materials:* Seasonal calendar matrix. This has twelve columns (one for each month) and key variables as row headings. Each cell in the matrix should be the same size as the blank cards used. Blank cards (10cm x 10cm), marking pens, coloured pens, masking tape.

*Possible approach:*

1. Identify the type of indigenous knowledge you want to document, such as weather, common diseases, social and economic activities, household cash flow, agricultural activities, and food availability.
2. Have a local artist illustrate these variables (e.g., rain and sun for weather) on 10cm x 10cm cards. (Other cards can be drawn by participants during the actual community charting exercise.)
3. Identify a key informant panel. Brief the panel on how to conduct the exercise using pictures to represent events of the past year relating to the variables. For each time period the panel should discuss and select by consensus the picture that best represents the event which was "most frequently or commonly observed with the most people affected." It is very important to allow the panel to use local terms.
4. Work on one variable at a time, placing the illustrated cards on the matrix. If necessary, more than one card can be put in each cell.
5. When all variables of the chart are completed, ask the panel to analyze the interrelationships through time and discuss the results with a view to identifying implications and possible actions.
6. Leave the chart with the community. Keep a copy for future reference.
7. Such charts can also be used for monitoring and evaluating interventions.

*Dos and don'ts:*

- Use pictures that closely resemble the community.
- Use local terms.
- Don't use scientific terms.



*Modification:*

Ask respondents to prepare their own calendar matrix rather than providing one 'ready-made'. Local people often have their own calendars and may classify seasons differently from the western calendar year.

(Source: adapted from IIRR, 1996a)

**Example: Rank and Seasonal Calendar Matrix of Most Important Cattle Diseases, Ngurunit, Marsabit District, Kenya**

Our PRA team facilitated a Seasonal Calendar Matrix exercise in the town of Ngurunit, Kenya in which we asked a group of four Ariaal pastoralists to first rank livestock diseases according to their importance, and then indicate during which seasons of the year each was most likely to occur. We first asked the group to name the most important (e.g., dangerous) diseases for cattle, and then rank them in order of importance. Next, we asked them to name the local seasons, which they did in both Samburu and English. They then chose objects to represent each season (e.g., sticks for the dry seasons and leaves for the rainy seasons), as well as the first cattle disease on the ranked list, and arranged them in a matrix configuration on the ground. We gave the men a number of small stones, and asked them to place three stones under a season if the disease had a high occurrence in that season, two stones if occurrence was moderate, one stone if occurrence was rare, and to leave the space blank if there was no occurrence at all. The group repeated this exercise for each disease in turn.

**Table 3: Seasonal Incidence of Cattle Diseases in Ngurunit, Marsabit District, Kenya, 1997**

|   | Disease Name                      |                 |     | Season          |                     |                   |
|---|-----------------------------------|-----------------|-----|-----------------|---------------------|-------------------|
|   |                                   |                 |     | Oct. to Dec.    | Jan. to March<br>mm | March to June     |
|   |                                   |                 |     | short rains     | short dry           | long rains        |
|   |                                   |                 |     | <i>Itumiren</i> | <i>lami dorop</i>   | <i>ngerngerwa</i> |
|   | contagious bovine pleuropneumonia | <i>Ikibei</i>   |     | oo              |                     | oo                |
|   | anthrax                           | <i>lokochum</i> | ooo |                 | oo                  |                   |
| 3 | rinderpest                        | <i>lodwa</i>    | ooo |                 |                     |                   |
| 4 | enterotoxemia                     | <i>nolgosu</i>  |     |                 | ooo                 |                   |
| 5 | foot and mouth disease            | <i>Igulub</i>   | ooo |                 |                     |                   |
| 6 | black leg                         | <i>nengeju</i>  |     |                 |                     | ooo               |

|   |                |             |   |   |   |   |
|---|----------------|-------------|---|---|---|---|
| 7 | trypanosomosis | <i>saar</i> | o | o | o | o |
|---|----------------|-------------|---|---|---|---|

**Key for Disease Frequency:**

ooo: high , oo: moderate, o: low, blank: never

\*local Samburu names in italics

(Source: Langill and Ndathi, 1998)

## TOOL no. 7 Transect

*Description:* Method of collecting information about major land-use zones within a community. Involves walking or driving along a carefully selected path that cuts across the main geographic features of a community or territory to compare main features, resources, uses, problems, and opportunities of different zones. The purpose is to provide a picture of how natural resources are managed and used by a community, and to help identify the problems and opportunities inherent to each zone (see Figure 2 below).

A transect walk is a useful tool for tapping local people's knowledge about land use, natural resources, soil types, problems, and possible solutions. It can yield a wealth of information on IK which might be overlooked by other data-gathering methods, especially if the informants classify and record the information.

*Materials:* community map, flip chart (large sheets of paper attached to an easel), coloured marking pens, notebooks, pens.

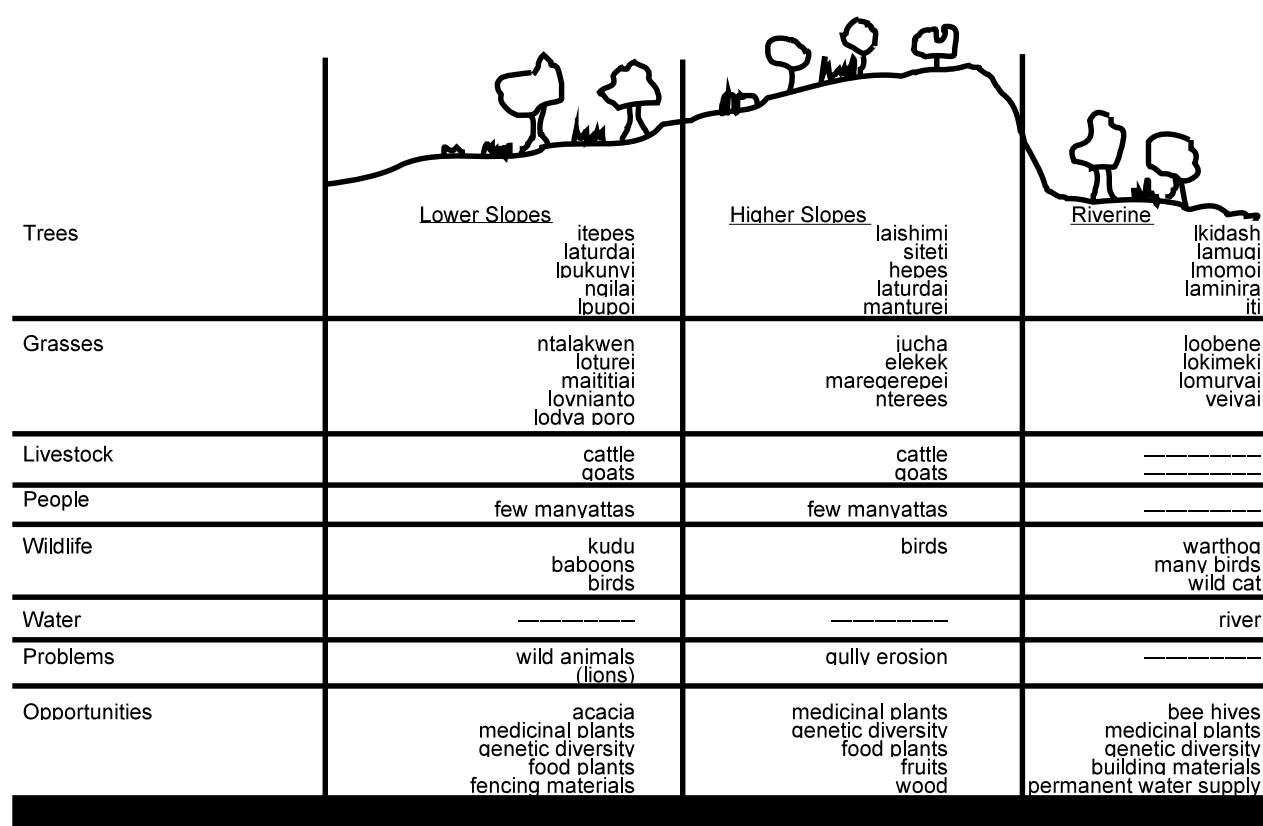
*Possible approach:*

1. Find key informants who are knowledgeable and willing to participate. Discuss the different information the project team would like to gather from the transect (crops, land use, trees, soil, water, problems, opportunities, etc.).
2. Identify on the community map the route to be taken for the transect. The route should cover all major ecological and production zones. A large and highly variable community might require more than one transect.
3. Walk or drive with the informants along the transect route. Let the key informants give information relating to the categories selected. Ask questions on additional factors that might come up during the walk or drive. Or become an observer while informants do the recording.
4. Transfer field data to a clean sheet and add illustrations.

5. Validate data with key informants.

(Source: adapted from IIRR, 1996a)

**Figure 2: Transect Walk, Sererit, Kenya, 1994.**



|               |   |  |  |
|---------------|---|--|--|
|               | <u>Lower Slopes</u>   | <u>Higher Slopes</u>   | <u>Riverine</u>  |
| Trees         | itepes<br>laturdai<br>lounvui<br>nqilai<br>lpupoi                                   | laishimi<br>siteti<br>hepes<br>laturdai<br>manturei                    | lkidash<br>lamuqi<br>lmomoi<br>laminira<br>iti   |
| Grasses       | ntalakwen<br>loturei<br>maititai<br>lovnianto<br>lodva poro                         | jucha<br>elekek<br>mareqerepei<br>nterees                              | loobene<br>lokimeki<br>lomurvai<br>veivai  |
| Livestock     | cattle<br>goats   | cattle<br>goats  | -----  |
| People        | few manyattas   | few manyattas  | -----  |
| Wildlife      | kudu<br>baboons<br>birds  | birds  | wartho<br>many birds<br>wild cat   |
| Water         | -----   | -----  | river  |
| Problems      | wild animals<br>(lions)   | gully erosion  | -----  |
| Opportunities | acacia<br>medicinal plants<br>genetic diversity<br>food plants<br>fencing materials | medicinal plants<br>genetic diversity<br>food plants<br>fruits<br>wood | bee hives<br>medicinal plants<br>genetic diversity<br>building materials<br>permanent water supply |

(Source: Adapted from Birch, I. 1994. "The Whole Big World is Here": PRA Training Workshop in Baragoi, 2-10 February. Oxfam: Nairobi. Reprinted with permission from Oxfam GB. Some data have been edited from original.)

## **TOOL no. 8 Institutional Mapping (Venn diagrams)**

*Description:* A participatory method that uses small circles of paper to identify community institutions (both traditional and external) and the nature of their relationships with each other. It is sometimes called 'chapati diagramming' because the circles of paper look like chapatis (round, flat bread). The purpose is to identify and establish relationships between a community and its environment (both internal and external). These relationships are presented in such a way as to highlight the relative importance of particular relationships.

Institutional mapping is a powerful tool that can be used to identify local or indigenous, formal or informal institutions, such as communal work groups, village councils, etc. It can also be used to discover the relationships between these groups. More importantly, this exercise can highlight local perceptions regarding the relative importance and influence of local institutions as compared to external institutions. It might show that there is no need to create new organizations in a community if ones already exist. The completed diagram can serve to focus discussions analyzing the strengths and weaknesses of the various institutions and their contributions (or constraints) to the development of the community.

*Materials:* 20-30 pieces of coloured paper cut into circles of different sizes (ranging in diameter from 5 cm to 25 cm), plus a large circle of paper about 40 cm in diameter. Marking pens, large sheet of paper, glue, paste or tape.

*Possible approach:*

1. Assemble a small group of people (both men and women) representing a cross-section of the community. Explain the exercise to the participants.
2. Lay out a large sheet of paper on the floor or a table. Group the participants in a circle around the sheet. Paste the large circle in the middle of the paper. Write the name of the community in the circle. This circle represents the community.
3. Ask participants to identify institutions, groups, organizations (formal and informal), and individuals (both from within and outside the community). Encourage participants to think in broad terms to include non-formal institutions such as the family, etc.
4. Ask the participants to select a paper circle to represent each entity. They should choose larger circles for entities that they think are more 'important'; small circles should represent less 'important' entities. For example, if a traditional healer provides more timely and cost-effective health service to the community than the government health worker, a larger circle should be used to represent the healer.
5. Write the name of each entity on the corresponding circle.
6. Ask the participants to discuss the institutions represented by the various circles and place them on the large sheet of paper. Much discussion will ensue about the appropriate size of the circles (importance) and the distance from the village (amount of influence).
7. Entities within the community should be placed inside the village circle.

8. Entities based outside but with a presence in the community (such as the extension service) should overlap the edge of the village circle.
9. Outside entities with no presence in the community (such as a hospital in a nearby town) should be placed at a distance from the village circle. The distance should depend on the strength of the links the entity has with the community; an entity with few or no links should be placed far from the village circle.
10. Entities that influence each other or have members in common can be placed so their edges touch or overlap; the degree of overlap represents the amount of influence or number of common members.
11. After the participants have thoroughly discussed the matter and reached a consensus about the various sizes of each entity and their placement on the paper, the circles should be pasted to the base sheet to make a permanent diagram.
12. A variation can be used by drawing lines between the village circle and the other circles, with the thickness of the line representing the strength of the relationship.
13. This exercise can be completed in about 45-60 minutes. However, a more in-depth discussion can continue for some time.

*Dos and don'ts:*

- Do include and encourage active participation of people from across the community (both men and women).
- Don't attempt to undertake this exercise if a single, very influential community member is in the group (e.g., district commissioner, large landowner), as the participants might be reluctant to discuss sensitive community relationships in this person's presence.
- Do try to include as many different institutions as possible (both local or indigenous and external) in order to ensure that the exercise is comprehensive.

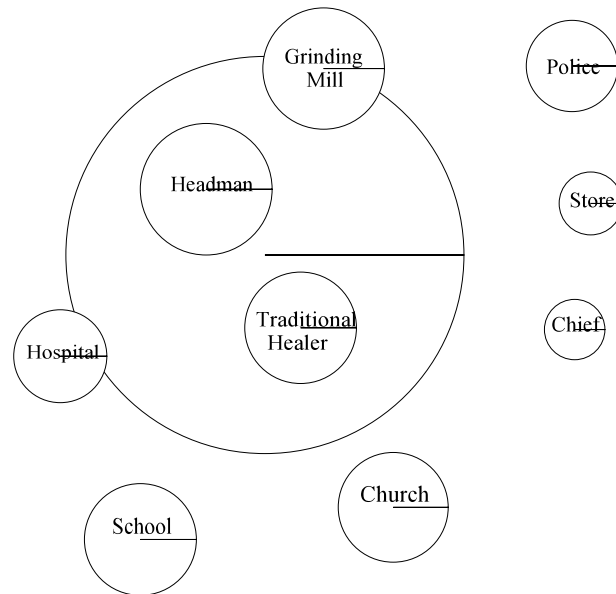
(Source: adapted from IIRR, 1996a)

### **Example: Institutional Mapping in a Zambian Village**

A focus group of 17 women created an institutional map of their village, drawing on the ground with chalk (see Figure 3 below). The women explained their Venn diagram, saying, for example:

- the headman is seen as very important—he helped bring the grinding mill to the village; he settles social conflicts and mobilizes the community to help the needy.

- The traditional healer is seen as more accessible (drawn inside the community) than the hospital (drawn outside).
- The chief is drawn outside the community since he does not visit.
- The church is placed outside the community as it “doesn’t seem to be helping much anymore” though its spiritual function is still seen as important.



The women then went on to produce a Venn diagram showing the ‘ideal’ situation. This vision included, for example, the church back in the community (i.e. ‘belonging’ to the community again) and the traditional healer less important than the hospital.

**Figure 3: Institutional Map of Mpewa Village, Eastern Province, Zambia, 1993**

(Source: Zambia Poverty Assessment, in World Bank, 1997)

### 3.4 Summary

Participatory IK research in local communities commonly follows a set of steps which ensure that local people give their permission, are properly informed, are encouraged to participate and have some control over the research process. While participatory methods can be a good way of gaining a large amount of information quickly, researchers should also be aware of the limitations associated with them. The results of PRA exercises should not necessarily be seen as ends in themselves, but as starting points from which more detailed information can be elicited. As well, the use of PRA tools does not mean that other, more conventional data collection techniques cannot also be used in a project as well. The choice of specific PRA tools will depend upon the context of the research, and researchers should be ready to adapt and modify techniques to fit the local situation. Researchers should also keep in mind that the sequencing of PRA exercises is important. Rapport-building exercises such as mapping are usually carried out before exercises which require relatively more trust between facilitators and community members, such as in-depth interviews and group discussions.



## 4. How Will IK Be Used For Sustainable Development?

*Once IK has been collected and documented, outside researchers and local people face the task of determining how the IK will be used to fulfill project objectives. This section deals with evaluating the product of IK research and making improvements, if necessary, through experimentation. It also outlines ways of promoting IK and making it available to both local communities and the larger international audience, and points out how the recording of IK can be of overall benefit to indigenous people.*

### 4.1 Evaluating the Effectiveness and Sustainability of IK

During the collection phase, interesting IK technologies and practices will be observed. The next step is to assess or screen them against criteria for sustainability, productivity and value. Assessment can be defined as “identifying potentially useful IK and evaluating its effectiveness” (IIRR, 1996a).

When evaluating IK, researchers must be very careful about the frame of reference or ‘measuring stick’ that is used. Although there is no standard means for gauging whether a particular technology or practice is ‘sustainable’ or ‘effective’, any criteria of assessment should incorporate not only a scientific perspective, but an indigenous one as well.

#### **What should researchers know about local people’s view of an IK technology?**

- what people value most in a specific IK
- why they chose it
- what they see as its strengths and weaknesses
- what they think would happen if the IK were not available
- who would be most affected if the IK were not available
- what features people look for when they test a technology

(Source: IIRR, 1996a)

While scientists may base assessments of sustainability on narrow notions of ‘ecological soundness’ and ‘productivity’, local people usually have a more holistic way of looking at the effectiveness of a particular technology or practice. Their criteria often include social, economic and spiritual concerns in addition to ecological ones. For example, Puffer argues that local people tend to value a technology or practice that: reduces economic risk, generates income, provides acceptable economic returns, is affordable, is readily available, saves labor, increases yields, is easy to understand, produces visible results in a reasonable amount of time, fits into current practices and beliefs, is attested by evidence

from trusted sources, and/or takes into consideration local preferences such as taste and nutritional beliefs (Puffer, 1995). Researchers need to understand such indigenous assessment methods since, ultimately, it is through their own criteria that indigenous people will decide whether to adopt or reject a technology.

The following criteria could be used as a general guideline for evaluating IK. The relative importance of any one criterion will, of course, vary with each location and technology:

- *efficacy*: Does it work? Is it effective? Under what conditions?
- *safety*: Is it a risk to human health?
- *environmental soundness*: How does it affect the environment?
- *cost-effectiveness*: Is it cost-effective? Affordable to poor people?
- *availability*: Are its 'ingredients' available in this location? In sufficient amounts? In decreasing amounts?
- *understandability*: Is it easy to understand? Easy to handle?
- *cultural appropriateness*: Is it culturally appropriate? Will it be accepted by local people?
- *effect on different groups in community*: How will it affect the different user and non-user groups in the community? Who would benefit?
- *constraints*: what are potential constraints to its use or application? Can they be overcome?

(Source: adapted from IIRR, 1996a)

## **4.2 IK That Seems 'Wrong' or 'Harmful'**

During the evaluation phase, researchers may also come across indigenous knowledge and practices which they interpret as being 'wrong', 'unsustainable' or even 'harmful' to local people and/or their environment. IK is not flawless, and, as discussed earlier in Section 1.5, can be inappropriate in new or degraded environments, eroded by wider social and economic influences, or based on mistaken or inaccurate information. Researchers need to approach IK with the same healthy scepticism that they would apply to scientific knowledge. However, at the same time, care must be taken when making value judgments about the 'harmfulness' of local practices or beliefs. Researchers must be sure that the belief or practice in question is actually damaging to local people on their own terms and not the biased judgement of an outside observer. What may appear to be an ineffective practice from an outsider's viewpoint may have important advantages from a local viewpoint, even if these are indirect and not immediately obvious (Myer, personal communication, 1999<sup>4</sup>). Researchers should also remember that scientific knowledge itself is constantly changing and evolving, so that it is not as reliable a benchmark for assessing the efficacy of IK as is sometimes assumed.

If researchers are convinced that a local belief or practice is 'harmful', they need to proceed carefully and consider the ethical and practical implications of any course of action. Do outsiders have a right to discourage indigenous beliefs and practices and impose their own ideas of 'sustainability' on indigenous communities? Do researchers have an obligation or responsibility to promote what they consider to be the 'truth' about harmful beliefs and practices? How do you discourage indigenous people from following a belief or practice that may have significant cultural meaning and may have been followed for a very long period of time? These are very difficult questions, and there is little discussion in the IK literature of how such issues should be addressed. Perhaps the primary role of a development initiative can only be to provide local communities with information so that they can make an informed choice for themselves (Myer, personal communication, 1999<sup>5</sup>). Such information can be made more palatable if it is couched in terms of local values and customs. For example, plays and storytelling can be powerful tools for getting a message across in a culturally-meaningful manner. As well, if local people have been involved in the collection and evaluation of the IK from the beginning, it will be much easier for them to accept the possibility that a traditional belief or practice is harmful, because the realization will arise out of their own involvement and input.

#### **4.3 Testing Whether IK Can Be Improved**

Once an IK practice or technology has been assessed for sustainability, it can either be used on its own, or modified by blending it with scientific knowledge or IK from other areas to increase its effectiveness. Improvements can be made in the following ways:

- *participatory on-station research*: scientists at the research station or in the laboratory can conduct research that is based on the needs identified by locals, and with their participation. (Warren, 1993)
- *on-site research*: scientists present options developed during on-station research to select local people, who choose an option based on their specific needs. The option is then tested by the local person in his or her own setting. (Warren, 1993)
- *participatory technology development (PTD)*: scientists and local people pool their knowledge and work together to find and develop technological options to locally-defined environmental problems. PTD is a method of systematic analysis which outsiders and local residents, working together, can use to learn the detailed workings of a given technology: its nature of operation, the type of implement or implements used, its source of power, the social interaction the technology requires or encourages, the space it covers and the time it fills. The overall purpose of PTD is to give an understanding of different elements of a technology or technique, their uses and the local people's reasons for using them. This can lead to adaptation and improvement of the technique. (IIRR, 1996a)

## **Ethnoveterinary Medicine in Kenya: Participatory blending of IK and science**

This manual on indigenous knowledge of animal diseases and traditional remedies was compiled through a participatory process in which staff from international and national organizations in Kenya and local people from various areas contributed their knowledge.

Organizers first held a one-day preparatory meeting involving staff from the various participating organizations to determine the scope of the manual and the topics to be included. Participants decided on the types of animals, diseases and problems that were to be covered by the manual, and drew up a list of prospective contributors, both scientific and local.

Organizers then held an intensive, two-week participatory workshop in Machakos, Kenya, in July 1996, in which about 40 veterinary and medical professionals, development workers and traditional animal healers contributed their expertise to the preparation of the manual. The workshop followed a three-step approach in which participants first presented and critiqued manuscripts for the first draft of the manual, then revised the draft a second time and again presented and critiqued it, and then made final revisions for a third draft. Participants discussed and analyzed indigenous disease descriptions and treatments, with any remedies that couldn't be agreed upon by the entire group being deleted. A few weeks after the workshop, a group of participants met again to do a last check of the third draft, and the final editing and printing of the manual was done in November 1996. All contributors, including local healers and experts, were recognized as being "authors" of the manual, and individual names were recorded either in a "list of participants" or in an "acknowledgments" section.

(Source: IIRR, 1996b)

### **4.4 Apply and Promote Improved IK**

The improved IK can be promoted and applied through the extension service, farmer centered extension, and other communication and education approaches. Participatory approaches to technology development have the advantage that local people have been involved in the development and testing of the improved IK. They are therefore more likely to use and promote it successfully than if top-down approaches are used. (IIRR, 1996a)

The documented IK must be stored in some format that allows easy access, both for community members and the wider national and international development audience. Storing IK in written documents such as books, journals, newsletters, maps and charts, is the conventional and perhaps easiest way to disseminate IK and ensure that local communities have ready access to recorded knowledge. IK can also be stored in computer databases, Internet websites, audiovisuals and museums, although such methods may be difficult or impossible for local people to access in a rural setting (IIRR, 1996a). If this is the case, then researchers must ensure that hard-copy documents of the material are made available to local communities.

### **SRISTI's computerized documentation of IK in India**

SRISTI also uses a bibliographic software system called PROCITE to document the indigenous knowledge of local farmers in India. This particular system was chosen because the field length is unlimited, the search function is easy to use, and it supports a GIST card which converts the database into the local language. In order to make the database accessible, SRISTI will set up a stall with a computer at farmer's fairs, and demonstrate the use of the computer database to the farmers directly. According to Kirit Patel, such demonstrations not only help to disseminate information, but also raise awareness of the efficacy of IK and the usefulness and need of such

databases for local farmers. SRISTI has also recently developed a multi-media software system for documenting IK, which has biographical profiles of innovators as well as audio-visual descriptions of innovations and practices by the farmers themselves

(Patel, personal communication, 1997<sup>6</sup>)

## **4.5 Benefits for Local People**

It is extremely important that local people benefit from the recording of their knowledge. Beyond contributing to project goals, documentation and storage of IK can benefit local people in the following ways:

- IK can be preserved for future generations so that it does not disappear with the passing away of Elders.
- IK can be legitimized in the eyes of younger generations by presenting it in a format that puts it on equal footing with the international knowledge system, which they are exposed to in state-run schools and through television and radio.
- IK can be taught to younger generations in schools or other fora as a regular program.
- IK can be made available to the less knowledgeable of a community. People can use research or their own experience to enhance IK, which they can pass on.
- Problems and solutions can be identified through analysis of IK, resulting in further projects that can benefit the community.

(Source: Maundu, 1995)

### **Honeybee: A Newsletter of Creativity and Innovation at the Grassroots Level**

The Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) in India has developed The Honey Bee newsletter, a publication which documents and records indigenous knowledge from around the world, giving full recognition to the local innovators whose expertise is featured. Distributed in 75 countries and adapted in seven languages, the newsletter is based on a philosophy analogous to the behavior of the honey bee, which collects pollen without impoverishing the flowers, and connects individual flowers through pollination. According to its creators, "The idea is that when we collect knowledge of people we should ensure that people don't become poorer after sharing their insights with us. Further, we should also connect one innovator with another through feedback, communication and networking in the local language. We have to share with the providers of the knowledge what we did with the knowledge. If we generate consultancies or other sources of income by writing on people's knowledge, a fair share of this income must accrue to the providers in as explicit a manner as possible. Similarly, we also have insisted that this knowledge be shared in vernacular languages so that people to people communication can take place."

## **4.6 Summary**

After IK has been collected, it needs to be assessed for its potential contributions to sustainable development. Assessment requires a set of criteria for judging 'sustainability' which should be based not only on a scientific perspective, but on an indigenous one as well. Local people often have a holistic way of assessing the effectiveness of a particular technology or practice that goes beyond a simple consideration of its ecological soundness. In the long run, it is through their own criteria that indigenous people will decide whether to adopt or reject a technology.

The evaluation process may identify IK that appears to be wrong or even harmful. Researchers need to be careful when making such judgements, ensuring that they are not based simply on their own lack of understanding. If researchers are convinced of the harmfulness of a certain belief, technology or practice, they need to consider the implications of any course of action. It may be that the only ethical way of dealing with the situation is to provide information so that indigenous people can make an informed choice about what to do on their own.

IK that is deemed effective by indigenous people and researchers can be used on its own or blended with scientific or other indigenous knowledge to increase its effectiveness. Whether this is done in the lab or on-site, it must be done with indigenous people to ensure that the technology or practice meets local needs and actually works in the local social, economic and ecological setting. Such technology or practices can be promoted through extension services or other communication or education approaches. An important consideration when doing IK research is to ensure that documented IK is stored in a format that is accessible not only to the wider development audience but to local community members as well. Documented IK can and should benefit a community in ways that go beyond immediate project goals.

## 5. Readings on Indigenous Knowledge

*This section includes eight photocopied readings on indigenous knowledge research which are meant to give readers a more in-depth understanding of some of the issues discussed earlier in the Resource Kit. A brief summary of each reading is provided, followed by the reference information for each selection. The readings themselves are numbered and marked with corresponding tabs for convenience.*

### 5.1 An Overview of the Readings

In the first reading, *What are the Issues on Indigenous Knowledge Systems in Southern Africa?*, Matowanyika gives a good overview of the important issues that need to be considered when linking IK with sustainable resource management in Africa. The author expands upon some of the topics outlined in Section One of this resource kit, discussing definitions of IK, comparisons with non-indigenous systems, the nature of IK systems, limitations and strengths of IK systems, and some ideas for future research.

In the second reading, *What is Participatory Research?*, Narayan, gives a brief introduction to PRA, identifying key characteristics, advantages and disadvantages as compared with conventional research, and roles of the researcher. It is a clearly written introduction for those who are new to the concept of participatory research.

The third and fourth readings focus on the issue of gender and gender analysis. In *Overview: Gender Equality and the Agricultural Sector*, Schalkwyk, Thomas, and Woroniuk provide a basic introduction to key gender issues with specific reference to agriculture and food security. They suggest ways in which gender-based differences are relevant in agricultural production, and explore the implications of these factors. In *GAD (Gender and Development) Analytical Tools: Program, Project and Policy Applications*, Moffat, Geadah and Stuart introduce a framework for analysing gender and describe an assortment of tools and guiding questions that can be used during fieldwork in local communities.

In the fifth reading, *Toward Protection, Compensation, and Community Development*, Posey and Dutfield deal with the issue of protecting indigenous rights to knowledge and resources. They offer general guidelines for protecting IK and resources and compensating indigenous people for sharing these with outside researchers.

The sixth and seventh readings provide descriptions of participatory methods for carrying out IK research with communities who depend on livestock for their livelihood. In *A Review of PRA Methods for Livestock Research and Development*, Kirsopp-Reed reviews a selection of PRA techniques that can be used in such communities, offering brief

descriptions of each and actual examples of their application. In the *Ethnoveterinary Question List*, Grandin describes the series of questions she developed in rural Kenya to gather indigenous knowledge of animal diseases and treatments. She also offers a brief description of the stages of research necessary for implementing the question list.

In the eighth and final reading, *Assessing, Validating, and Experimenting with IK*, Grenier discusses the issue of how indigenous knowledge can be applied to sustainable development. She describes how IK can be assessed in terms of sustainability, and how it can be developed further thorough validation and experimentation. Four short case studies highlight the importance of obtaining local people's assessments of new technologies.

## 5.2 The Readings

A copy of the full-text of each of the following articles is included in this document. To find a reading, flip to the corresponding tab number. These materials have been reproduced with permission from the publishers.

1. Matowanyika, Joseph. 1994. **What are the Issues on Indigenous Knowledge Systems in Southern Africa?**. In *Indigenous Knowledge Systems and Natural Resource Management in Southern Africa*. Report of the Southern Africa Regional Workshop, Harere, Zimbabwe, 20-22 April. Zimbabwe: IUCN-ROSA. Reprinted with permission from the author and IUCN.
2. Narayan, D. 1996. **What is Participatory Research?** In *Toward Participatory Research*. D. Narayan. Washington, D.C. World Bank. p. 17-30. Reprinted with permission from the World Bank.
3. Schalkwyk, Joanna, Hellen Thomas, and Beth Woroniuk. 1997. **Overview: Gender Equality and the Agricultural Sector**. In *Handbook for Mainstreaming: A Gender Perspective in the Agriculture Sector*. Publications on Agriculture and Rural Development: No. 6. Stockholm, Sweden: SIDA, Dept. of Natural Resources and the Environment. Pp. 1-8. Reprinted with permission from SIDA.
4. Moffat, L., Geadah, Y., Stuart, R. 1991. **GAD Analytical Tools: Program, Project and Policy Applications**. In *Two Halves Make a Whole: Balancing Gender Relations in Development*. Ottawa, Canada: Canadian Council for International Cooperation, MATCH International Centre and Association Québécoise des Organismes de Coopération Internationale. Pp 24-42.

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frontlines of social justice, humanitarian aid, economic and democratic development—both in Canada and in the developing world. CCIC is coordinating *in common*, a campaign that focuses attention and action on the elimination of poverty. Visit *in common*'s website at [www.incommon.web.net](http://www.incommon.web.net).

5. Posey, D. and G. Dutfield. 1996. **Toward Protection, Compensation, and Community Development.** Chapter 15 in *Beyond Intellectual Property*, Posey, D. and G. Dutfield (authors). Pp. 154-160. Ottawa: IDRC.
6. Kirsopp-Reed, K. 1994. **A Review of PRA Methods for Livestock Research and Development.** RRA Notes, vol. 20, pp. 11-36. Reprinted with permission from the International Institute for Environment and Development (IIED), the Sustainable Agriculture Programme, +44171 388 2826, e-mail: [sustag@iied.org](mailto:sustag@iied.org)
7. Grandin, B. 1991. **Ethnoveterinary Question List.** RRA Notes, vol. 20, pp. 39-46. Reprinted with permission from the International Institute for Environment and Development (IIED), the Sustainable Agriculture Programme, +44171 388 2826, e-mail: [sustag@iied.org](mailto:sustag@iied.org)
8. Grenier, L. 1998. **Assessing, Validating, and Experimenting with IK.** Section 6 in *Working With Indigenous Knowledge: A Guide for Researchers*, L. Grenier (author). Pp. 71-86. Ottawa: IDRC.

## 6. Other Sources of Information on IK Research

*This section provides an annotated list of selected resources available from libraries and the Internet which readers can consult for further reference.*

### 6.1 Manuals

Eckman, K. 1996. ***Doing Village Assessments: a Guide to Action-Oriented Village Research in Developing Countries.*** Ottawa: IDRC.

*Notes:* This book is designed for the field staff of nongovernmental organizations (NGOs) who undertake village assessments in developing countries. While the book is clearly not intended as a comprehensive guide to structured, formal academic social research and impact assessment, it does provide a good introduction and guide for field staff charged with assessment and planning tasks and is therefore helpful for researchers. The book begins with a brief introduction to assessment, discusses some basic differences between participatory and logframe approaches, and provides guidance for organizing tasks while in the field. Part 2 describes a variety of tools and techniques for rural assessment separated into eight chapters entitled: Basic Demographics; Getting a Historical Perspective; Learning About Land Use; Interviewing and Discussion Techniques; Understanding Sociopolitical Systems; Understanding Who Does What in Rural Communities; Rural Markets; and Assessing Natural Resources. (Author)

Grenier, L. 1998. ***Working with Indigenous Knowledge: A Guide for Researchers.*** Ottawa, Canada: IDRC.

*Abstract:* This guidebook zeroes in on what IK can contribute to a sustainable development strategy that accounts for the potential of the local environment and the experience and wisdom of the indigenous population. Through an extensive review of field examples as well as current theory and practice, it provides a succinct yet comprehensive review of indigenous knowledge research and assessment. It is meant to contribute to the improved design, delivery, monitoring, and evaluation of any program of research. Section 1 serves as a general introduction to IK, defining concepts and outlining key characteristics of IK. Section 2 addresses some of the ethical issues in IK research. Section 3 looks at research paradigms, integrating insights from several sources into one framework for doing ethical, effective IK research. Section 4 expands on the topic of IK methodology by offering details on 31 field techniques. Section 5 presents four case studies, demonstrating different approaches to IK research in terms of research objectives and collection techniques. Section 6 deals with assessing the product of IK research in terms of sustainability and looks at developing IK through validation and experimentation. Three sets of formal procedural guidelines for conducting IK research are presented in the Appendix. (Author)

Thomas-Slayter, B., Polestico, R., Esser, A.L., et al. 1995. ***A Manual for Socio-Economic and Gender Analysis: Responding to the Development Challenge***. Worcester, MA: ECOGEN - Clark University.

*Abstract:* This manual for socio-economic and gender analysis provides development professionals working as planners, organizers, educators, project managers, or community catalysts with the concepts and tools to facilitate local empowerment and capacity-building and to make their work both more effective and more appropriate to the needs and interests of local people. It introduces a conceptual framework, offers 40 tools and strategies for socio-economic and gender analysis, provides ten examples of a broad range of development activities in different settings around the world, and suggests ways to clarify objectives and to measure outcomes. (Author)

Waters-Bayer, A., Bayer, W. 1994. ***Planning with pastoralists: PRA and more. A review of methods focused on Africa***. Eschborn, Germany: German Agency for Technical Cooperation.

*Abstract:* A comprehensive description and review of participatory research in an African context. The authors first present a review of concepts and experiences in participatory planning, then offer a description of a number of participatory data collection techniques, closing with annotated bibliographies on participatory rural appraisal and using PRA with pastoralists in Africa.

## **6.2 On-Line Manuals and Publications**

### ***Recording and Using Indigenous Knowledge: A Manual***

<http://www.PanAsia.org.sg/iirr/>

A how-to manual on indigenous knowledge research put out by the International Institute of Rural Reconstruction (IIRR). The manual is divided into five main parts: Part 1 *Indigenous Knowledge and Development* contains sections on defining IK, characteristics of local systems, why IK is useful, helping communities conserve IK, using IK in development, recording IK in communities, and intellectual property rights. Part 2 *Recording and Assessment Methodologies* contains sections on recording methods, sample selection, observation and interviewing, working with groups, using diagrams and audio-visual material. Part 3 *Assessment of Indigenous Knowledge* contains sections on assessing IK, criteria for assessing IK, tapping insiders' assessment, using western science methods to assess IK, and monitoring and evaluation. Part 4 *Mini Case-Studies* contains examples to illustrate various points, and Part 5 *Question Guides* contains guides to construct questionnaires/interviews for various sustainable development topics. The present Resource Kit borrows extensively from this volume.

### ***Field Handbook: Socioeconomic and Gender Analysis Programme, FAO***

<http://www.fao.org/sd/seaga/SEfh0001.htm>

*Notes:* This SEAGA Field Handbook is written for development agents who work directly with local communities in developing countries. The purpose of this Handbook is to support participatory development planning at the community level. It is based on actual experiences in agriculture, forestry and fisheries, but can be used by those working in all sectors of rural development. The Handbook offers three toolkits: *Toolkit A- The Development Context* is for learning about the economic, environmental, social and institutional patterns that pose supports or constraints for development;

*Toolkit B- Livelihood Analysis* is for learning about the flow of activities and resources through which different people make their living; and *Toolkit C- Stakeholders' Priorities for Development* is for planning development activities based on women's and men's priorities.

The first two focus on learning about the current situation ('what is'), while the third focuses on planning for the future ('what should be'). Each toolkit is designed to answer important questions. (FAO)

### ***Guidelines for Environmental Assessment and Traditional Knowledge***

<http://www.kivu.com/indexframe.html>

The Canadian International Development Agency (CIDA) is developing a manual to help guide its officers and partners by offering information, guidance, and suggested methodology on how to apply Indigenous Traditional Knowledge Systems and involve traditional knowledge and indigenous peoples in CIDA project or programme planning implementation. A prototype of the guidelines is available on the website, and includes three main sections: (1) Indigenous Guidelines, which are intended to inform local communities about what their rights are and how to negotiate effectively with corporations and governments; (2) Corporate Guidelines, which are meant to suggest an ethical and methodological framework for corporations working in local communities; and (3) Government Guidelines, intended to assist governments in deciding how to manage the interrelationships between indigenous people, the resources that are contained within the lands they occupy, and the market forces driving projects to extract resources. (CIDA)

### ***Best Practices on Indigenous Knowledge***

<http://www.unesco.org/most/bpikpub.htm>

This full text on-line publication, put together by Nuffic-CIRAN and UNESCO, is a contribution to efforts to show how indigenous knowledge can be put to good use in development practice. It gives examples and cases that illustrate the use of IK in

developing cost-effective and sustainable survival strategies for poverty alleviation and income generation. These include indigenous land-use systems to encourage labour-sharing arrangements among farmers, using IK to increase the fuel-efficiency of local stoves instead of replacing them, and using indigenous institutions by extending credit through existing village loan groups. The details of the IK itself are not the focus, but rather the ways that it has been adapted, applied, and disseminated. (Nuffic-CIRAN and UNESCO)

Practices that might be of interest for indigenous knowledge researchers in dryland Africa are:

- Ethiopia BP.04: A semi-quantitative spatial assessment of water erosion based on limited information using expert knowledge and real-valued observations at <http://www.unesco.org/most/bpik4.htm>
- Kenya BP.06: Development Programme: Arid or Semi-Arid Lands (ASAL) at <http://www.unesco.org/most/bpik6.htm>
- Kenya BP.07: Enhancing pastoralist self-reliance through sustainable economic development at <http://www.unesco.org/most/bpik7.htm>
- Nigeria BP.10: Improving tassa planting pits - using indigenous soil and water conservation techniques to rehabilitate degraded plateaus in the Tahoua region of Nigeria at <http://www.unesco.org/most/bpik10.htm>
- Tanzania BP.12: Rangelands Utilization Strategy: utilization of arid and semi-arid rangelands by African pastoralists at <http://www.unesco.org/most/bpik12.htm>

## **6.3 Websites**

### ***Indigenous Knowledge Homepage***

<http://www.nuffic.nl/ik-pages/index.html>

A comprehensive site created by the Centre for International Research and Advisory Networks (CIRAN), which aims to facilitate and improve the exchange of information within the International IK Network. Relevant information on indigenous knowledge (IK), scattered along the Internet, is searched, indexed and made available on the Indigenous Knowledge Pages. The focus is on World Wide Web resources (including Gopher sites), mailing lists and Usenet news groups. The site creators have searched and indexed about 200 key resources of interest to people looking for information on indigenous knowledge. Resources that offer an overview of a specific subject or are specific for one region or country can be browsed through, and a short description of every resource is given. You

can browse in 'topics', 'regions' or 'organizations' to familiarize yourself with the many aspects of an issue. (CIRAN)

### ***Indigenous Knowledge and Development Monitor (IKDM)***

<http://www.nuffic.nl/ciran/ikdm/index.html>

CIRAN/Nuffic produces this on-line version of the Indigenous Knowledge and Development Monitor (IKDM) in close cooperation with indigenous knowledge resource centres around the world. The IKDM is aimed at all those with an interest in the role of indigenous knowledge in participatory approaches to sustainable development. It provides: (1) an instrument for the exchange of information; (2) a platform for debate on the concept of indigenous knowledge in a variety of disciplines; and (3) an overview of activities in the field of indigenous knowledge and sustainable development. The website provides free, downloadable electronic versions of all issues published by the IKDM. Each issue consists of two sections: (1) articles, which focus on state-of-the-art research, theory and practice, and policy in the field of IK; and (2) communications, which is divided into the following subsections: Resource centres, research, calls, conferences, networks, databases, publications, and films and audio-visual devices. (CIRAN)

### ***Center for Indigenous Knowledge For Agriculture and Rural Development (CIKARD)***

<http://monet.npi.msu.su/iitap-mirror/cikard/cikard.html>

The Center for Indigenous Knowledge for Agriculture and Rural Development (CIKARD) at Iowa State University focuses its activities on preserving and using the local knowledge of farmers and other rural people around the globe. Its goal is to collect indigenous knowledge and make it available to local communities, development professionals and scientists. CIKARD concentrates on indigenous knowledge systems (such as local soil taxonomies), decision-making systems (such as knowledge of which crops are best suited to particular types of soils), organizational structures (such as farmers' problem-solving groups), and innovations (such as local methods for pest control). The website includes a searchable on-line database, on-line publications from CIKARD, a listing of Indigenous Knowledge Centers of the World, and links to IK-related programs and institutions around the world. (CIKARD)

### ***Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI)***

<http://csf.colorado.edu/sristi/>

SRISTI is a non-governmental organisation set up to strengthen the creativity of grassroots inventors, innovators and ecopreneurs engaged in conserving biodiversity and developing eco-friendly solutions to local problems. It publishes the *Honey Bee Newsletter*, dedicated to the theme of biodiversity conservation through documentation, experimentation and value addition and dissemination of local innovations by farmers, pastoralists, artisans and horticulturalists. Website includes an on-line database which includes issues of newsletter and research papers, an on-line discussion list, and links to other web sites. (SRISTI)

## References Cited in Sections One to Four

- Adamo, A. et al. 1998. Gender and Biodiversity Research Guidelines. Sustainable Use of Biodiversity Program, IDRC, Ottawa, Canada.
- Chambers, P. 1994. Participatory Rural Appraisal (PRA): Analysis of Experience. *World Development*, vol.22, no. 9, pp. 1253-1268
- CSC (Cultural Survival Canada). 1996. *The Indigenous Knowledge Program*. Unpublished work. CSC: Ottawa, Canada.
- Dewalt, B.R. 1994. "Using indigenous knowledge to improve agriculture and natural resource management." *Human Organization* 53 (2). pp.123-131.
- Emery, A.R. 1996. The Participation of Indigenous Peoples and Their Knowledge in Environmental Assessment and Development Planning (draft). Centre for Traditional Knowledge: Ottawa, Canada.
- Grenier, L. 1998. Working With Indigenous Knowledge: A Guide For Researchers. IDRC: Ottawa, Canada.
- Halewood, Michael. 1999. "Indigenous and Local Knowledge in International Law: A Preface to *Sui Generis* Intellectual Property Protection". *McGill Law Journal*, Vol.4 (Fall)
- IIRR (International Institute of Rural Reconstruction).
- 
- 1996a. Recording and Using Indigenous Knowledge: A Manual. IIRR: Silang, Cavite, Philippines.
- 
- 1996b. Ethnoveterinary Medicine in Kenya. ITDG and IIRR: Nairobi.
- ISE (International Society for Ethnobiology).1995. Guidelines for research, collections, databases and publications-draft 3. Unpublished report.
- Johnson, M. 1992. Lore: Capturing Traditional Environmental Knowledge. IDRC: Ottawa, Canada.
- Langill, S. and A.J.N. Ndathi. 1998. Indigenous Knowledge of Desertification: A Progress Report from the Desert Margins Program in Kenya. People, Land and Water Series, Report 2. IDRC: Ottawa, Canada.



- Matowanyika, J. 1994. "What are the issues on indigenous knowledge systems in southern Africa?" In *Indigenous Knowledge Systems and Natural Resource Management in Southern Africa. Report of the Southern Africa Regional Workshop, Harare, Zimbabwe, 20-22 April 1994*. IUCN-ROSA: Zimbabwe.
- Maundu, P. 1995. "Methodology for collecting and sharing indigenous knowledge: A case study." *Indigenous Knowledge and Development Monitor* 3(2).
- Narayan, D. 1996. "What is Participatory Research?" In *Toward Participatory Research*. p. 17-30. World Bank: Washington, D.C.
- Posey, D. 1996. *Beyond Intellectual Property*. IDRC: Ottawa, Canada.
- Puffer, P. 1995. "The Value of Indigenous Knowledge in Development Programs Concerning Somali Pastoralists and Their Camels." Centre for Indigenous Knowledge for Agriculture and Rural Development (CIKARD). Available on-line at: <http://monet.npi.msu.su/iitap-mirror/cikard/Cultlit.html>
- Quiroz, C. 1994. Biodiversity, indigenous knowledge, gender and intellectual property rights. *Indigenous Knowledge and Development Monitor* 2 (3).
- RAFI (Rural Advancement Foundation International). 1994. "Conserving indigenous knowledge: Integrating two systems of innovation." United Nations Development Program: New York.
- Rathgeber, Eva. 1997. "Gender analysis: What are we looking for?" In *Management of Water Demand in Africa and the Middle East: Current Practices and Future Needs*, David B. Brooks, Eglal Rached, and Maurice Saade (editors). IDRC: Ottawa, Canada
- Simpson, B. 1994. "Gender and the social differentiation of knowledge." *Indigenous Knowledge and Development Monitor* 2 (3).
- SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions). 1996. Honeybee: A Newsletter of Creativity and Innovation at the Grassroots Level (online) Available at: <http://csf.colorado.edu/sristi/>
- Thrupp, L.A. 1989. "Legitimizing Local Knowledge: From Displacement to Empowerment for Third World People". *Agriculture and Human Values*. Summer Issue. Pp.13-24.
- UNESCO. 1982. Indigenous populations. Ref:E/Cn.4./Sub.2/L.566 United Nations.

Warren, D.M. 1991. Using Indigenous Knowledge for Agricultural Development. *World Bank Discussion Paper* 127. Washington, D.C.

1993. Putting local knowledge to good use. *International Agricultural Development* 13 (4): 8-10.

Waters-Bayer, A. and W. Bayer. 1994. Planning With Pastoralists: PRA and More. A Review of Methods focused on Africa. German Agency for Technical Cooperation (GTZ): Eschborn, Germany.

World Bank. 1997. The World Bank Participation Sourcebook. The World Bank: Washington, D.C.