

# UNDERSTANDING THE RELATIONSHIP BETWEEN AGROBIODIVERSITY AND LOCAL KNOWLEDGE

## 4.1 LOCAL KNOWLEDGE AS PART OF AGROBIODIVERSITY .....1

Key Points for fact sheet 4.1  
Process Sheet 4.1 – Notes for the trainer

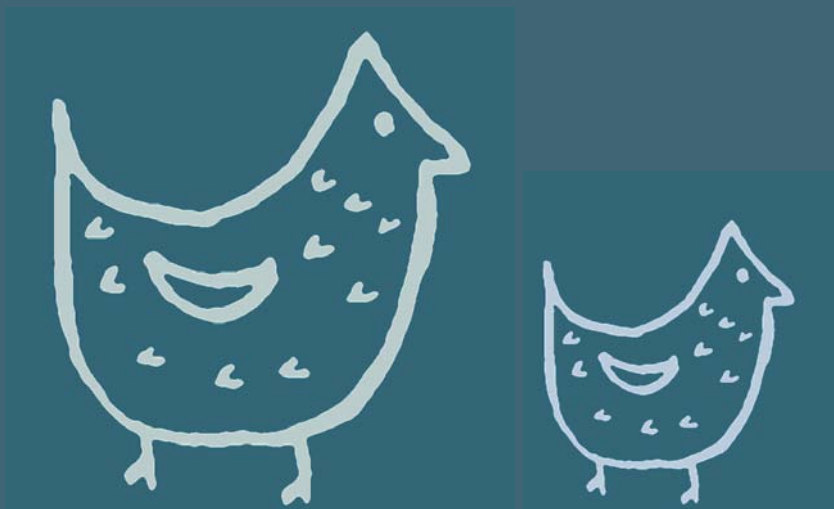
## 4.2 CHALLENGES FOR LOCAL KNOWLEDGE – .....7 UNDERSTANDING THE VULNERABILITY CONTEXT

Key Points for fact sheet 4.2  
Process Sheet 4.2 – Notes for the trainer

## 4.3 SHAPING LOCAL KNOWLEDGE AND AGROBIODIVERSITY – .....11 POLICIES, INSTITUTIONS AND PROCESSES

Key Points for fact sheet 4.3  
Process Sheet 4.3 – Notes for the trainer

**Key Readings**  
**References**





# LOCAL KNOWLEDGE AS PART OF AGROBIODIVERSITY

In Module 3, we looked at the linkages between agrobiodiversity and gender. In this Module, we will expand on these by analyzing the linkages between agrobiodiversity and local knowledge. Let us first look at a definition of ‘knowledge’ before we continue with this analysis.

## [Box 1] WHAT IS KNOWLEDGE?

Knowledge concerns the way people understand the world, the way in which they interpret and apply meaning to their experiences. Knowledge is not about the discovery of some final objective ‘truth’. It is the understanding of culturally subjective – conditioned products that emerge from complex and ongoing processes. Knowledge involves selection, rejection, creation, development and transformation of information. These processes, and hence knowledge, are inextricably linked to the social, environmental and institutional contexts they are found.

Blaikie, 1992.

This definition is very important to us as it contains a number of key features, which are significant to understanding local knowledge. These include:

- ⑥ Knowledge emerges from complex and ongoing processes
- ⑥ Knowledge development happens through selection, rejection, creation, development and transformation (adaptation)
- ⑥ Knowledge is closely linked to social, environmental and institutional contexts

Local knowledge is the information people in a given community have developed over time. It is based on experience, adapted to the local culture and environment, and is continuously developing. This knowledge is used to sustain the community, its culture and to maintain the genetic resources necessary for the continued survival of the community.

Local knowledge includes mental inventories of local biological resources, animal breeds, local plant, crop and tree species. It may include information about trees and plants that grow well together, about indicator plants that show the soil salinity, or are known to flower at the beginning of the rains. It includes practices and technologies, such as seed treatment and storage methods, and tools used for planting and harvesting. Local knowledge encompasses belief systems that play a fundamental role in people’s livelihood, maintaining their health, and protecting and replenishing the environment. Local knowledge is dynamic in nature. It may include experimentation on the integration of new plant or tree species into existing farming systems, or the tests a traditional healer carries out for new plant medicines.



Local knowledge is often collective by nature. It is considered the property of the entire community and does not belong to any single individual. As we have learned also in Module 1, this depends on the type of knowledge. We can identify the following:

- ⑥ **Common knowledge** is held by most people in a community, e.g. almost everyone knows how to cook rice (or the local staple food).
- ⑥ **Shared knowledge** is held by many, but not all, community members; e.g. villagers who raise livestock will know basic animal husbandry.
- ⑥ **Specialized knowledge** is held by a few people, who might have had special training or an apprenticeship; e.g. only a few villagers will become healers, midwives, or blacksmiths.

Depending on the type of knowledge, transmission will occur in different ways. For example, much of common knowledge is shared in daily activities, with other family members and neighbours. During daily work and interactions children, for instance, will watch and experience the knowledge held by elder people and family members and acquire it over time. Public places, such as markets or community mills, are important places where information sharing takes place. Common knowledge is intimately linked to the daily life of local people. They do not treat it as something separate or as needing specific mechanisms for transmittal.

A different case is the transmission of shared or specialized knowledge. Here, the transmission takes place through specific cultural and traditional information exchange mechanisms. For example, it may be maintained and transmitted orally by elders or specialists, breeders and healers. Often, it is only shared with a few selected people within a community.

## LOCAL KNOWLEDGE AND GENDER DIMENSIONS

Local knowledge is embedded in social structures. Different groups of people, e.g. ethnic, clans, gender, age or wealth groups may hold various types of knowledge. This type of knowledge is related to existing differences concerning:

- ⑥ Access to or control over production resources
- ⑥ Access to education, training and information in general
- ⑥ Labour divisions between women and men, farmers and herders, etc.
- ⑥ Control over the benefits of production

Gender and local knowledge are, therefore, linked in many ways. Women and men often possess very different skills and types of knowledge concerning local conditions and everyday life. For example, women are important users and processors of natural resources for human subsistence. As such, they are often the repositories of local knowledge for sustainable resource management. On the other hand, men may have more knowledge of production issues. In many societies women are mainly responsible for growing and collecting food, securing water, fuel and medicines. They also provide a cash income for education, health care and other family needs. Furthermore, women contribute much of the labour and day-to-day decision-making that goes into crop and animal production.

While both men and women are involved in crop selection, and have highly specific knowledge, they use substantially different selection criteria. Often, women's criteria and knowledge are overlooked by researchers of plant variety selection and conservation. Where women are the main crop producers, they consciously select varieties that meet a broad range of criteria related to production, processing, storage and preservation as well as culinary qualities. When men are the main producers, they depend on female family members to advise them on characteristics that are unrelated to field crop production; particularly those aspects associated with post-harvest processing and culinary use (Howard, 2003).



Age is another important factor that influences local knowledge; younger people tend to be less aware of its relevance. Research, on traditional medicines in Ghana and Zambia, showed that younger generations often undervalue this knowledge. This is partly because traditional medicine seldom brings high economic returns to the practitioner (IK Notes No. 30, 2001). Depending on the livelihood strategies adopted by different people, or across generations, the relevance of local knowledge to agricultural production will vary.

Local knowledge, and related gender differences, can be seen as key factors in shaping and influencing plant and animal diversity. Farmers' selection and management practices, and their use of genetic resources, have played an important role in agrobiodiversity conservation. Continued management of these resources will play a significant role in the success of future strategies. Local knowledge can help increase the relevance and efficiency of agrobiodiversity conservation efforts in various situations:

- ⑥ **Collection of samples:** If local knowledge is included in collection and identification it will help identify crops/varieties that are in particular danger of being lost and are important to particular farmers or groups of farmers.
- ⑥ **Documentation and information systems:** Local knowledge is relevant to a better understanding of the potential of specific varieties/breeds. This includes specific adaptations, resistance to stress factors and quality traits.
- ⑥ **Use of *ex situ* collections:** Re-introduction of lost varieties/breeds, introduction of adapted varieties/breeds, participatory breeding programmes.
- ⑥ **Designing strategies for *in situ* conservation and management:** Local knowledge can contribute to the selection of relevant sites and participants. Only if local knowledge is taken into account, meaningful interventions can be developed that respond to local needs.

However, we need to be aware that there are limitations to building on local knowledge. These are manifold and include the following:

- ⑥ Local knowledge is not equally distributed across a community. Not everybody within a community holds the same level and type of local knowledge. This can be a disadvantage to people participating in certain activities and can be an obstacle when trying to analyse local knowledge.
- ⑥ Local knowledge is not necessarily freely communicated. This is one of the reasons why it is not equally distributed at the community level. Local knowledge is part of power-relation structures, and may be managed so that certain members in the society are excluded from acquiring it.
- ⑥ Local knowledge is not easily accessible and understandable to outsiders. It should not be extracted from individuals/communities; it should be explored and shared in a participatory fashion, yielding benefits to all parties involved. Because it is dynamic, it changes and develops constantly. Furthermore, it is often location specific, and not necessarily useful in other agro-ecological or socio-economic situations.
- ⑥ Local knowledge is often regarded as inferior to 'Western' knowledge (Briggs and Sharp, 2003). This attitude is reflected in many extension and research approaches, which do not take into account existing local knowledge. There is also a vacuum at the policy level, where it does not usually contribute to decision-making processes.
- ⑥ Local knowledge does not necessarily offer a solution to changing external conditions. Therefore, it is important to establish mechanisms that allow integration of local and external knowledge sources.

The following example shows how these weaknesses, or limitations, can be overcome to achieve positive outcomes for people's livelihoods (see box 2).



## [Box 2] ENHANCING PASTORALIST SELF-RELIANCE THROUGH SUSTAINABLE ECONOMIC DEVELOPMENT IN KENYA

In Kenya, an integrated development programme for pastoralists brings together traditional (indigenous) and modern technical knowledge for training and handbooks on the treatment of cattle diseases. The programme aims to gather indigenous knowledge from different ethnic groups, share knowledge and practices, and promote pastoralism as a valid mode of production and way of life. The Kenya Economic Pastoralist Development Association (KEPDA) brings together traditional and modern technical knowledge in all project activities.

Understanding and awareness of key issues is then promoted through publications and networking. This approach has considerable potential for the sustainable improvement of dry land productivity. In the past traditional knowledge was largely considered a research topic, and technical knowledge was believed to be a replacement for 'primitive' or outdated practices. This project aims to integrate these two sets of knowledge.

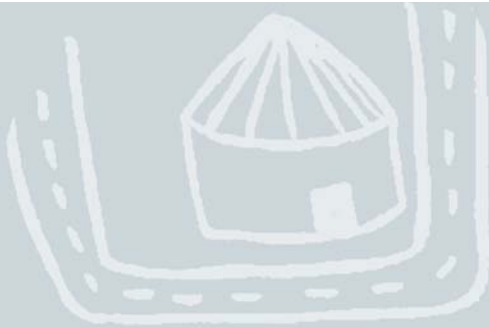
Source: World Bank.

From a livelihoods perspective, local knowledge continues to be an important asset for resource poor people. Moreover, recent studies emphasize the relevance of local knowledge on indigenous food plants for increased food security and health. This is especially true for HIV-AIDS affected households in Africa, where increasing food insecurity further aggravates the negative impact of the disease. Grassroots responses, which build on agrobiodiversity and local knowledge, can contribute to combating food insecurity and the impacts of HIV-AIDS (Garí, 2003).

### Key points

- Local knowledge is the information that people in a given community have developed over time. It is based on experience and adapted to the local culture and environment, it is continuously developing.
- Local knowledge is embedded in social structures. Different groups of people, ethnic groups, clans, gender or wealth groups, hold different knowledge. Women and men often possess very different skills and knowledge of local conditions and everyday life.
- Age is another important factor that influences local knowledge. Younger people tend to be less aware of the relevance of local knowledge.
- Local knowledge and gender differences in local knowledge can be seen as key factors that shape and influence plant and animal diversity.
- Local knowledge can help increase the relevance and efficiency of agrobiodiversity management and conservation efforts at different levels.
- Local knowledge is not easily accessible and understandable to outsiders. It should not be extracted from individuals/communities. It should be explored and shared in a participatory fashion that yields benefits to all parties involved.
- Local knowledge does not necessarily offer a solution to changing external conditions. It is therefore important to establish mechanisms that allow the integration of local and external knowledge sources.
- From a livelihoods perspective, local knowledge continues to be an important asset for resource poor people.





**OBJECTIVE:** Fact sheet 4.1 aims to enable participants to understand and apply the concept of local knowledge to the management of agrobiodiversity. Furthermore, it aims to establish the linkages between the livelihoods framework and the concept of local knowledge as a livelihoods asset.

**LEARNING GOALS:** The participants understand the importance of local knowledge and the linkages between local knowledge and the wider livelihoods context.

### PROCESS

- 1) The participants should be encouraged to explore the issues, raised in fact sheet 4.1, based on their own working experience. This exercise should not take more than 1 hour. The trainer could facilitate this process by providing guiding questions such as:
  - ▶ What type of knowledge is relevant to the implementation of your project?
  - ▶ Who holds this knowledge?
  - ▶ How does this knowledge relate to the management of agrobiodiversity?
  - ▶ How does this knowledge develop and change and why?
  - ▶ Who communicates this knowledge to whom and how?
  - ▶ etc.
- 2) The information generated during this exercise could then be organized by the trainer, together with the participants, and key conclusions could be established. (30 minutes)
- 3) The key issues, presented in fact sheet 4.1, may be followed and used by the trainer to check the points identified by the group. If appropriate, missing aspects may be presented to the participants. (30 minutes)

**OUTCOMES:** The participants have established a shared understanding of the concept of local knowledge and recognize it as an important livelihoods asset for poor people. The linkages to agrobiodiversity and gender have been established.

**TIME ALLOCATION:** Minimum 2 hours.



# CHALLENGES TO LOCAL KNOWLEDGE

## UNDERSTANDING THE VULNERABILITY CONTEXT

Local knowledge and the local institutions that manage this knowledge are particularly challenged by rapid socio-economic and environmental changes. Looking back at the livelihoods framework, we will recognize that shocks and trends can lead to dramatic losses of local knowledge.

Blaikie *et al.* (1992) distinguishes five common trends and shocks in which the utility and maintenance of local knowledge is extremely challenged.

- ⑥ Areas of very rapid population growth, or a concomitant reduction in resources caused by external pressures, may require adaptations of new agricultural technologies to increase food production and diversify livelihoods. All these adaptations require the rapid learning of new skills. In this situation local knowledge would have to develop, and adapt very quickly, to respond to the new challenges. High population density and reduced field sizes often lead to a reduction in crop diversity in favour of main staple crops. High-yielding crop varieties have been promoted for decades in response to growing populations. No consideration has been given to the potential negative effects on agrobiodiversity and local knowledge.
- ⑥ Circumstances in which rapid immigration to a particular area has meant that the repertoires of knowledge for agricultural/pastoral production and environmental conservation, are out of focus with a new set of opportunities and constraints. The socio-economic structures, creating this knowledge, may also face fracturing and contradictory additions as new migrants arrive. Resettlement programmes provide one example of these circumstances. People find themselves in a new situation, where their local knowledge is no longer relevant. For instance, the crops brought with those resettling may not be adapted to the new environment, or new livestock diseases may threaten existing local veterinary practices. These types of shocks can lead to the complete loss of existing local knowledge.
- ⑥ Disasters and other extreme events cause a disjuncture, both materially and culturally. The knowledge system frequently suffers a shock. Such instances are both opportunistic as well as limiting. A relevant example in Africa is HIV-AIDS, where local knowledge may regain importance as a local-level strategy to combat food insecurity. Or its existence may be threatened because many people possessing the knowledge are lost to the disease.
- ⑥ There are other processes of slower moving environmental changes such as climate change, widespread deforestation or land degradation, that challenge the resilience and adaptability of local knowledge systems. For instance, criteria for crop variety or breed selection have to adapt to the changing environmental conditions. Then, an innovation and adaptation process must take place to adjust the system to arising challenges. Many examples exist of how farmers manage to adapt their practices and knowledge to changing environments, often the result is greater diversity.



- Ⓒ Rapid commercialization and economic shocks may also undermine local knowledge. The marketing of local products in a global market will necessarily disconnect the product from its related knowledge context. The focus on commercial agricultural activities will replace local practices and threaten the local knowledge base. We have previously seen the example from Mali, where local vegetable production was challenged by commercial gardening practices (see box 1, fact sheet 3.2). This competition led to a reduction in local vegetables grown and the decreased involvement of women, who were previously responsible for this activity. With the decline in crop diversity, the importance of local knowledge has been reduced (Wooten, 2003).

All these aspects present a challenge to local knowledge systems. However, their impact does not need to be negative. There are many examples of successful adaptations and innovations that have resulted from external challenges. To understand this better, we will call upon the holistic theory of **co-evolution**.

Co-evolution refers to the continuous and dynamic process of mutual adaptation between humankind and the natural environment. Co-evolution theory shows how social (e.g. knowledge systems), and ecological systems are interconnected, and how they influence one another. Co-evolution leads to constant adaptations to changing environments, which in turn leads to increased diversity. Let us look at an example to understand this theory more easily.

Dryland farming requires the specific skills of farmers to identify and further develop crop varieties that can withstand the difficult environment. In Africa, and elsewhere, droughts are a common problem in many agricultural systems. However, farmers have learned to respond to them by cultivating a wide range of crops and varieties. Instead of planting only one maize variety, farmers have developed complex intercropping systems, containing several species and varieties. This means they can save at least a part of the harvest if there is a drought.

From a co-evolutionary perspective, the challenges described by Blaikie *et al.* (1992) above will lead to adaptations, and this in turn will increase existing diversity. For us, the most important lesson is that the broader context must be taken into account when trying to understand existing local knowledge. The context strongly influences the dynamics of local knowledge adaptation and development and in turn the adaptations and changes within agrobiodiversity.

## Key points

- Local knowledge and local institutions managing this knowledge are particularly challenged by rapid socio-economic and environmental changes.
- Areas of very rapid population growth, or a concomitant reduction in resources by external pressures, may require particular adaptations of new agricultural technologies to increase food production and the diversification of livelihoods.
- Circumstances in which rapid immigration, to a particular area, has meant that the repertoires of knowledge, for agricultural/pastoral production and environmental conservation, are out of focus with the new set of opportunities and constraints.
- Disasters, and other extreme events, cause a disjuncture, both materially and culturally. The knowledge system frequently suffers a shock. Such instances are both opportunistic as well as limiting.
- There are other processes of slower moving environmental changes, such as climate change, widespread deforestation, or land degradation, that challenge the resilience and adaptability of local knowledge systems.
- Rapid commercialization and economic shocks can also undermine local knowledge.
- All these aspects present a challenge to local knowledge systems. However, their impact does not need to be negative. There are many examples of successful adaptations and innovations that have resulted from external challenges.



**OBJECTIVE:** Fact sheet 4.2 aims to enhance participants' awareness of the importance of the broader context influencing local knowledge development and its relevance to the management of agrobiodiversity.

**LEARNING GOALS:** The participants understand the importance of the context and identify shocks, trends and other processes that impact, positively or negatively, upon agrobiodiversity and local knowledge.

### PROCESS

- 1) The trainer should remind the participants of the livelihoods framework and refer to the issues covered in Module 2. This will help the participants recall the vulnerability context and its importance to people's livelihoods. (20 minutes)
- 2) The participants could be invited to brainstorm, in groups, on potential shocks and trends that may impact upon the existence and relevance of local knowledge. (1 hour)
- 3) The group's findings should be presented to the plenary, where it will provide a good basis for further discussion. The trainer should emphasize the importance of distinguishing between the positive and negative effects that trends and shocks may have in certain situations. (1 hour)
- 4) Following this, the participants could apply the information generated to their own working environment. They could then discuss the relevance of these findings to their ongoing or future projects and initiatives. (40 minutes)

**OUTCOMES:** The participants recognize the dynamic nature of local knowledge and understand the close linkages between local knowledge and the broader livelihood context.

**TIME ALLOCATION:** Minimum 3 hours.





# SHAPING LOCAL KNOWLEDGE AND AGROBIODIVERSITY

## Policies, institutions and processes

This section examines how international laws affect those working with plant genetic resources (PGR) managers<sup>1</sup> in national (government) programmes. How far are they obliged to obtain the prior informed consent (PIC) of indigenous peoples and local communities? When and how can plant genetic resources in food and agriculture (PGRFA) be accessed, used or exchanged? How can the associated related knowledge be used? In order to attempt to answer the above questions both existing international instruments, and those currently under development/negotiation are examined.

### THE CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

This international agreement has the highest profile of accords addressing this issue. The Convention on Biological Diversity (CBD), Article 8(j) requires that signatories ‘shall, as far as possible and as appropriate’ and ‘subject to [their] national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant to the conservation and sustainable use of biological diversity, 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 benefits arising from the utilization of such knowledge, innovations and practices’. Article 10(c) commits contracting parties, ‘as far as possible, and as appropriate ... [to] protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with the conservation or sustainable use requirements’.

Both of these articles are relatively vague. They do not actually spell out what states can or should do to fulfill their obligations. Part of the reason for this, is that parties negotiating the CBD did not agree on how far signatories should be obliged to go to protect traditional knowledge.

In the period leading up to 1992, when the CBD was finalized, the idea of protecting traditional knowledge was still new; no one had any fixed ideas about how it should be done. Partly, as a consequence of this ambiguity, the Conference of the Parties to the CBD (COP–CBD) established two Ad Hoc Open Ended Intersessional Working Groups to investigate, among others, the means member states could use ‘as appropriate’ and ‘subject to their own legislation’ to protect traditional knowledge.

In May 1998, the Fourth COP–CBD created the Ad Hoc Open Ended Intersessional Working Group on the Implementation of Article 8(j) to advise the Parties on the ‘development of legal and other appropriate forms of protection of the knowledge of indigenous and local communities’. In May 2000, the Fifth Conference of the Parties extended the mandate of this working group, and directed it to take steps towards the development of parameters for such legal systems.

<sup>1</sup> Plant genetic resource managers are, primarily, farmers and farming communities throughout the world who have been, and continue to be, in charge of the management of genetic resources. In this section we refer to PGR managers as those who interact with farming communities in the management of their resources (breeders, scientists, gene bank managers).



The Working Group's mandate was renewed by the Sixth Conference of the Parties (COP VI) in April 2002. In fact, this group's progress has been slow. However, it must be appreciated that the 8 (j) Working Group's mandates is extraordinarily broad, as it attempts to work through largely uncharted territory. Furthermore, its very existence is an important stage in the potential evolution of a better defined international norm for the protection of traditional knowledge.

In October 2001, the Ad Hoc Open Ended Working Group on Access and Benefit Sharing created the draft Bonn Guidelines. This was for State Parties developing national legislation to regulate access to genetic resources and benefit sharing. A variation of these guidelines was adopted by the COP VI in April 2002 through Decision VI/24.

Though they are not binding, they still have great potential for influencing the way countries develop their access laws. Among others, the Bonn Guidelines recommend that 'respecting established legal rights of indigenous and local communities associated with the genetic resources being accessed or where traditional knowledge associated with these genetic resources is being accessed, the prior informed consent of indigenous and local communities and the approval and involvement of the holders of traditional knowledge, innovations and practices should be obtained, in accordance with their traditional practices, national access policies and subject to domestic laws.'

This is significant, because the CBD does not explicitly state that it is necessary to get the PIC of constituent communities. It has been argued that the requirement to obtain such consent is implicit in the text of the Convention; nonetheless, it is not an explicit requirement. Consequently, it could be argued that the Bonn Guidelines go one step further than the CBD in this regard. In other words, they offer an interpretation of the CBD that clarifies an outstanding ambiguity.

Furthermore, COP VI recommended that state parties should include, in their national laws, requirements for parties to provide the origin of genetic resources and traditional knowledge used when developing innovations over which they seek IP rights (Decisions VI/10 and I/24).

## OBLIGATIONS FOR NATIONAL PGRFA PROGRAMME MANAGERS

How much does this add up to concerning the obligations of national PGRFA programme managers? There are two answers to this question: one is legal (1) and the other is political/moral (2).

(1) The preliminary legal issue, to be considered by national genetic resources programme managers, is whether or not the country, in which programme activities are taking place, has ratified the CBD. If not, the convention does not apply, and national genetic resources programme managers do not need to follow the CBD, when taking into account their obligations towards indigenous and local communities. If the country concerned has ratified the CBD, the national genetic resource programme managers must consider a few related issues.

First, as agents or representatives of the national government, they are bound by the standards established by the CBD, even if the country concerned has not created laws to implement the CBD.

Second, if the country has implemented legislation, they should look to those laws for guidance as to how to conduct their operations. However, they may not be able to rely on the national laws. It is always possible that national legislation may not implement all the standards established by the CBD. In such cases, the national programme manager must voluntarily consider complying with higher standards of conduct than those required by national law.



This will ensure compliance with the Convention. Unfortunately, for national programme managers, these are very difficult judgements to make and are complicated by the facts set out above. In particular, the CBD does not explicitly state that national implementing laws must require access-seeking parties to obtain PIC from indigenous and local communities or traditional knowledge holders. In addition, the implementing guidelines, developed by the CBD Working Group on Access and Benefit Sharing – which include this requirement – are not legally binding. Consequently, national governments have a great deal of latitude in the interpretation and implementation of the CBD.

Strictly speaking, from a legal viewpoint, and with such precedents before them, national genetic resources programme managers are unable to ascertain if they must obtain PIC from indigenous and local communities during programme activities. As stated above, it has been argued that the CBD requires the PIC of communities, but there is no universal consensus on this point.

(2) While the CBD may not include many concrete legal obligations, it has given rise to an unprecedented level of political sensitivity to genetic resources related issues. In the court of public opinion there is no defense for parties accused of taking and using genetic resources associated with indigenous communities, without their permission. Charges of bio-piracy are not tempered by technical legal explanations, that the activity in question took place in a country that:

- ⊗ has not yet signed or ratified the CBD; or
- ⊗ determined that the CBD did not entail their requiring access, or seeking parties to obtain the PIC of indigenous and local communities.

As far as the general public is concerned, the CBD creates standards of conduct applicable to everyone, everywhere in the world. The reputations of programmes and institutions can be lost overnight through allegations of violating the spirit of the CBD. Complicating this situation, once again, are the vague terms of the CBD covering what can and should be done to advance its objectives. One party's interpretation of the CBD's definition of compliant behaviour may be another's definition of bio-piracy.

The term bio-piracy is often used to describe the misappropriation of knowledge and/or biological materials from traditional communities. The case presented below, on traditional medicines, is just one example of bio-piracy taking place (see box 1). The commercial and research enterprises, involved in such activities, often use the term bio-prospecting for their screening activities. However, if the benefits obtained from such activities are not equally shared, with the local communities, bio-prospecting can rightly be considered to be bio-piracy.

### [Box 1] **USE OF LOCAL KNOWLEDGE FOR BIO-PROSPECTING – the case of drug development**

The knowledge and use of specific plants for medicinal purposes, often referred to as traditional medicine, is an important component of local knowledge. Once, traditional medicines were a major source of materials and information for the development of new drugs. However, in the 20<sup>th</sup>-century, new sources for pharmaceuticals led to a decline in the importance of ethnobotany in drug discovery programmes. Nonetheless, new discoveries of potentially potent anti-cancer agents in plants (such as turmeric and taxol), as well as a rapidly growing herbal remedies market, has revived industry interest in traditional medicinal knowledge and practices. The rekindling of interest in traditional medicine has resulted in an alarming increase in the exploitation of indigenous knowledge of the cultivation and application of genetic resources. In this regard, world sales of herbal medicine alone were estimated at US\$30 billion in 2000.

Source: Svarstad and Dhillion



The short example above shows that local knowledge can be ‘mined’ or ‘extracted’ through research processes. Its ‘wisdom’ can then be incorporated by scientists into formal research methods and commercially oriented programmes. It is doubtful, in these cases, whether the ‘owners’ of the original knowledge benefit from the commercial gains made.

On the other hand, external and local actors can bring together their respective knowledge to produce an output, which is greater than the sum of its parts. The following examples from Kenya and Cameroon illustrate the positive impacts of collaborative research based on local knowledge (see box 2 and box 3).

### **[Box 2] LOCALLY AVAILABLE INDIGENOUS EDIBLE SPECIES OF PLANTS ENHANCE COMMUNITY HEALTH, PROVIDE INCOME AND CONSERVE BIODIVERSITY IN KENYA**

The National Museum of Kenya is compiling a database of indigenous food plants of Kenya. This is to compile agronomic, nutritional, cultural and market data on priority species; to promote the cultivation, consumption and marketing of these foods through field demonstrations, educational materials and the media. People had abandoned their traditional foods in favour of exotic foods. This was most common among the younger generation, who took pride in their ‘modern’ patterns of consumption. However, despite the fact that local foods were readily available, poverty, famine and malnutrition were common in rural areas. Much local knowledge of the nutritional value and cultivation of local edible plants was in the process of being lost. Most people no longer knew, for example, when and where to collect seeds. Having never been written down, the indigenous knowledge of the elderly was slipping away day-by-day. A number of important species, or varieties of species, were on their way to extinction. Indigenous knowledge was thus the starting point. Specialists in nutrition, ecology, and botany based their research on it because there was simply not enough time, money or human resources to duplicate all that knowledge. The scientific, economic, and socio-cultural significance of the indigenous knowledge becomes apparent as specialists and practitioners work with it. The practice is beneficial in several ways. It improves the local communities’ living standards and health, enhances the knowledge extension workers put into daily use, generates knowledge useful to NGOs seeking ways to alleviate poverty and improve public health. Scientific knowledge is generated that is useful for the preservation of both cultural and biological diversity. By raising the status of indigenous knowledge, in the eyes of local communities, the practice helps alleviate poverty and increases people’s respect for their own culture. There are some dangers. Commercial interest may result in a selection of species and varieties and reduce the present diversity. Moreover, research may expose local knowledge to piracy.

Source: World Bank.



### [Box 3] **TRADITIONAL ETHNO-VETERINARY MEDICINE AND MODERN MEDICINE WORK AS PARTNERS IN CAMEROON**

The modern veterinary sector is plagued by numerous constraints. This includes the erratic supply and prohibitive expense of veterinary drugs and supplies, poor communication facilities and shortage of labour. The project promoted complementary use of indigenous and conventional veterinary medicine for sustainable livestock production and the conservation of medicinal plant resources. Through interdisciplinary collaboration, with governmental and non-governmental organizations, the project documented the indigenous treatment of various diseases and livestock ailments. Diseases are now treated using effective remedies, which were used by local communities many years before the arrival of modern drugs. The practice depends on indigenous farmers' knowledge. Modern drugs complement the indigenous and are used for certain diseases, if no effective indigenous remedies are available. Farmers are now using more local remedies, which are several times cheaper than modern drugs. Low investment costs and increased livestock productivity improve farmers' profits and their nutrition. Because the practice builds on indigenous knowledge and practices, it enjoys a high rate of acceptance. There is sustainable preservation of indigenous knowledge and farmers are empowered and encouraged to participate in development. Finally, there is an increased awareness of the importance of environmental conservation.

A popular misconception assumes that 'benefits' are purely monetary. In these cases, where the use of genetic resources is commercial, any royalties arise between ten and twenty years after the original access to genetic resources. Since the probabilities of an individual sample succeeding on the market are very small, only a tiny proportion of individual access transactions would give rise to such benefits. However, the examples above show that benefits are not necessarily monetary. The collaborative ventures in Cameroon and Kenya contribute to the empowerment of local communities, their re-evaluation of existing local knowledge and the improvement of local food security and resilience.

Politically and morally speaking, it is advisable that national genetic resources programme managers be extremely diligent in obtaining PIC from indigenous and local community representatives. This must be done before obtaining, exchanging and using genetic resources and related information associated with these communities.

## **THE 1991 ACT OF THE UNION POUR LA PROTECTION DES VARIÉTÉS VÉGÉTALES (UPOV)**

The 1991 Act of the UPOV provides a *sui generis* intellectual property protection for plant varieties. Exclusive rights are provided to commercial plant breeders. Plant breeder's rights are granted for a period of 15 to 30 years for plant varieties that are new, distinct, stable and homogeneous. Plant breeder's rights have been highly criticized by non-governmental organizations dedicated to the conservation of genetic diversity and the protection of small farmers' communities. The UPOV system has been accused of 'playing the game' of giant seed companies that promote intensive monoculture, and the replacement of traditional seeds by highly productive and resistant seeds. Also, the 1991 UPOV Act limits the exercise of the breeder's privilege. Indeed, Article 15 (2) provides that 'each Contracting Party may, within reasonable limits, and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety'.



Conversely, pro-UPOV opinions argue that it is the most efficient current legal tool for triggering research and development on biotechnology for food and agriculture. In the review process of Article 27 of the TRIPS agreement, some industrialized countries are in favor of designating the UPOV Act of 1991 as the *sui generis* regime for the protection of plant varieties.

At the regional level, the members of the Office Africain de la Propriété Intellectuelle have joined the revised Bangui Agreement<sup>2</sup> of the 28<sup>th</sup> of February 2002. This generally adheres to the principles and obligations of the UPOV Act of 1991.

## INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE (ITPGRFA OR INTERNATIONAL SEED TREATY)

This international treaty was adopted by the Food and Agriculture Organization of the United Nations (FAO) General Assembly in November 2001 and came into force in June 2004. The Treaty was developed and adopted, after a long negotiating process of seven years at the international level, and responds to outstanding issues not covered by the CBD<sup>3</sup>. The ITPGR deals specifically with the nature and needs of the agricultural sector. It sought to find a balance between the interests of developing and developed countries and between the rights of farmers (farmers' varieties) and breeders (commercial varieties, breeders' lines). However, it is in harmony with the CBD and reflects some of its major principles, including:

- ⦿ the sovereign rights of states over their plant genetic resources;
- ⦿ the sustainable conservation and use of plant genetic resources;
- ⦿ access to an exchange of information on 'scientific, technical and environmental matters related to plant genetic resources for food and agriculture', with a view to contributing to the sharing of benefits there from;
- ⦿ participation in decision-making on plant genetic resources.

What makes the ITPGRFA a major achievement, is the formal endorsement of Farmers' Rights through a legally binding instrument at the global level. This is a significant landmark as it is an important step towards acknowledging and implementing the rights of informal innovators (farmers). It places them on an equal footing with the rights already granted to formal innovators (modern breeders). Article 9 of the International Treaty states that: 'In accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers' Rights, including:

- ⦿ protection of traditional knowledge relevant to plant genetic resources for food and agriculture; and
- ⦿ the right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture...'

Farmers' Rights are based on the recognition of the enormous contribution made by local and indigenous communities and farmers in all regions of the world. This particularly includes those who are at the centres of origin and crop diversity. Furthermore, Farmers' Rights cover the conservation and development of plant genetic resources that constitute the basis of food and agriculture production throughout the world.

<sup>2</sup> The Bangui Agreement is the African response to UPOV.

<sup>3</sup> Access to *ex situ* collections are not required to be in accordance with the CBD or Farmers' Rights.



#### [Box 4] FARMERS' RIGHTS

Farmers' Rights include:

- ⑥ protection of traditional knowledge, relevant to plant genetic resources for food and agriculture;
- ⑥ the right to participate equitably in sharing benefits, arising from the utilization of plant genetic resources for food and agriculture; and
- ⑥ the right to participate in decision-making at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture.

In this case, the entire principle of Farmers' Rights is explicitly made subject to national legislation. As a consequence, legally speaking, national genetic resources programme managers can simply look to the legislation of the country, in which the relevant programme activities are taking place, to determine what his or her responsibilities are. Despite the limiting legal effect of making Farmers' Rights subject to national laws, there is little doubt that the inclusion of these provisions in the international treaty will underscore the political pressure that already exists by virtue of the CBD (and less so, the United Nations Convention to Combat Desertification - UNCCD). This is particularly in reference to obtaining PIC when acquiring, exchanging and using genetic resources and related knowledge associated with indigenous peoples and local communities. Art 4 and 6 stipulate that domestic policies, and laws relating to agrobiodiversity, need to be designed or adjusted to meet the Treaty's requirements. As Farmers' Rights are so innovative, new legislation is often required. Some countries, such as India, have already passed new laws such as the Protection of Plant Varieties and Farmers' Rights Act No. 53 of 31 August 2001.

Another important breakthrough connected to the Treaty is the sharing of benefits that accrue from the use of plant genetic resources in a fair and equitable way. In particular, the sharing of monetary benefits arising from commercial use<sup>4</sup>.

*It is believed that 'Farmers' Rights are crucial to food security in providing an incentive for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world. Making those rights a reality, under the Treaty and other relevant legal instruments, at the national level as well as between nations, will represent a challenge for years to come...'* (Mekoaur, 2002).

## THE AFRICAN CONVENTION ON THE CONSERVATION OF NATURE AND NATURAL RESOURCES

Adopted at the Summit of the African Union in Maputo, Mozambique, on 11 July 2003, the revised African Convention on the Conservation of Nature and Natural Resources commits member states to the conservation and sustainable use of natural resources. The African Convention requires parties to provide for fair and equitable access to genetic resources, on mutually agreed terms, as well as the fair and equitable sharing of the benefits arising from biotechnologies, based on genetic resources and related traditional knowledge, with the providers of such resources.

<sup>4</sup> For more information on sharing mechanisms, partnerships and collaboration between private and public sectors, mandatory and voluntary payments, please see Mekoaur, A. 2002. A global instrument on agrobiodiversity: The International Treaty on Plant Genetic Resources for Food and Agriculture. FAO Legal Papers Online, #24 (available at [www.fao.org/Legal/prs-ol/lpo24.pdf](http://www.fao.org/Legal/prs-ol/lpo24.pdf)).



Acknowledging the traditional rights of local communities and indigenous knowledge, the Convention compels member states to enact national legislation to ensure that the traditional rights, intellectual property rights of local communities including farmer's rights, are respected. Also, the Convention requires that access to traditional knowledge be subject to the prior informed consent (PIC) of the communities and that communities participate in the process of planning and management of natural resources.

## **OTHER INTERNATIONAL AGREEMENTS AND DECLARATIONS**

Other international agreements, although they do not explicitly mention indigenous and local knowledge, certainly support the notion that countries are under a growing obligation to introduce policies to deal with indigenous and local knowledge. For example, the International Covenant on Social and Cultural Rights (ICESR) includes the right to the development and diffusion of science and culture. It further obliges signatories to provide measures for the enjoyment of the cultural heritage of indigenous peoples.

The International Labor Organization (ILO) Convention Concerning Indigenous and Tribal Peoples in Independent Countries (ILO 169) states that member states should promote 'the full realization of social, economic and cultural rights [of indigenous and tribal peoples] with respect to their social and cultural identity, their customs and traditions, and their institutions.' While neither of these instruments creates an explicit obligation, for nation states to implement means of vesting exclusive forms of protection rights in traditional knowledge holders, it could be argued that they support this kind of legislative measure.

## **DRAFT DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES**

Article 19 of the Draft Declaration on the Rights of Indigenous Peoples states that indigenous peoples 'are entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property. They have the right to special measures to control, develop, and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literature, designs and visual and performing arts.'

## **THE INTERGOVERNMENTAL COMMITTEE ON INTELLECTUAL PROPERTY, GENETIC RESOURCES, TRADITIONAL KNOWLEDGE AND FOLKLORE**

Among others, the Intergovernmental Committee (IC) will develop recommendations for a non-binding model for intellectual property clauses. These will be included in contractual agreements governing exchanges of PGRFA between various public and private institutions and national gene banks. It will also look at other types of exchange, e.g. the supply of a wild plant with medicinal uses from an indigenous community to foreign research institutes. The IC is also examining means by which traditional knowledge (TK) can be included in patent offices' searches for prior art. For the time being, the IC is considering working towards recommending a number of TK-related journals that should be included in such searches. In preparation for the next meeting, the Secretariat will assemble a list of TK-related journals, and make an initial effort at establishing the most important for inclusion.



## THE TRADE-RELATED INTELLECTUAL PROPERTY AGREEMENT

Article 27(3)(b) of the TRIPS agreement requires all World Trade Organization (WTO) members to offer intellectual property protection for plant varieties in the form of patents or ‘effective *sui generis* protection.’ There is no mention in the TRIPS agreement of traditional knowledge, but it is flexible enough to allow some forms of protection. However, there was a review of Article 27(3)(b) (in 1999), and a review of the progress of member states in implementing the TRIPS agreement (in 2000), wherein it may be possible to introduce amendments to protect traditional knowledge.

Many developing countries have attempted to interject consideration of traditional knowledge protection in the context of these reviews. Their efforts have coincided with, and consequently been included in, the decision to launch a new comprehensive round of trade negotiations under the aegis of the WTO. To this end, Article 19 of the Doha Ministerial Declaration instructs the TRIPS Council to examine: ‘the relationship between the TRIPS Agreement and the Convention on Biological Diversity, the protection of traditional knowledge and folklore,’ in the context of its review of Article 27.3 (b) and the review of the implementation of the TRIPS Agreement. Meanwhile, it seems unlikely that the WTO member states will arrive at the consensus necessary to alter the TRIPS agreement. This would oblige members to provide some form of intellectual property protection for indigenous and local knowledge (including, presumably, farmers’ varieties that satisfied the new *sui generis* criteria for protection). Until such time, there is nothing explicit in the TRIPS agreement that obliges PGR managers to obtain PIC from indigenous communities if collecting or exchanging those communities’ plant varieties.

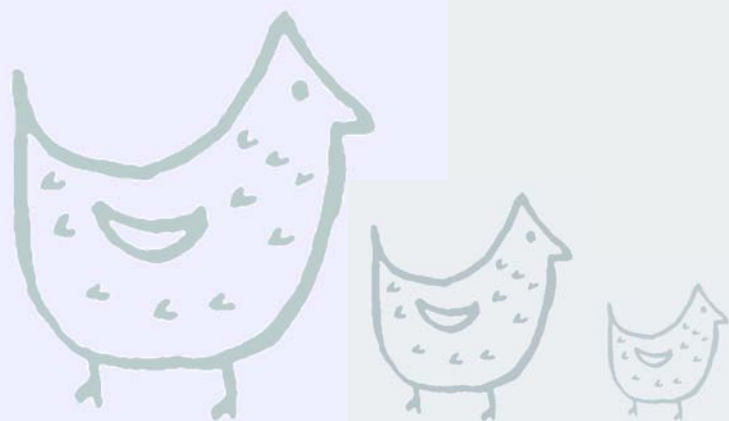
## CONCLUSION

In recent years there has been a proliferation of international fora considering different aspects of the protection of indigenous peoples’ and local communities’ technologies and knowledge. There is a growing trend towards the recognition/creation of rights of control in these communities over genetic resources, with which they are associated, and related knowledge. For the time being, the international law has not gone so far as to set minimum standards for the creation and enforcement of *sui generis* indigenous people’s rights of communities over their technologies and associated knowledge. Nor is it explicitly stated, in any currently binding international legal instrument, that it is necessary to obtain the PIC of indigenous peoples and local communities before collecting, using or exchanging these resources and knowledge. It could certainly be argued that international law is definitely moving in this direction; it is not there yet. Meanwhile, given the political climate, it should be argued that it is incumbent upon all national genetic resources programme managers to exceed their strict legal obligations. Particularly, in living up to higher standards of behaviour, and obtaining the PIC of indigenous peoples and local communities, when accessing, exchanging and using genetic resources and related information with which these groups are associated.



## Key points

- In recent years there has been a proliferation of international fora considering different aspects of the protection of indigenous peoples' and local communities' technologies and knowledge.
- The Convention on Biological Diversity (CBD) addresses the issue of local knowledge in two articles. However, both articles are relatively vague. They do not actually spell out what states can or should do to fulfill their obligations. Part of the reason for this is that parties negotiating the CBD did not agree on how far signatories should go to protect traditional knowledge.
- The Conference of the Parties to the CBD (COP—CBD) established two Ad Hoc Open Ended Intersessional Working Groups to investigate, among others, means by which member states could 'as appropriate' and 'subject to their own legislation' protect traditional knowledge.
- The International Treaty on Plant Genetic Resources was an important breakthrough, as it formally endorsed Farmers' Rights through a legally binding instrument at the global level. Farmers' Rights are based on the recognition that farmers play an important and crucial role in the management and conservation of plant genetic resources. They include the protection of traditional knowledge, participatory decision-making and the right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture.
- Other existing international instruments support the protection of traditional knowledge, though they do not mention it explicitly. These include the International Labour Organization (ILO) Convention Concerning Indigenous and Tribal Peoples in Independent Countries and the International Convention on Social and Cultural Rights (ICESR).
- There is a growing trend towards the recognition/creation of rights of control in these communities over genetic resources, with which they are associated, and related knowledge.
- International law has not gone so far as to set minimum standards for the creation and enforcement of sui generis indigenous people's rights for communities over their technologies and associated knowledge.



**OBJECTIVE:** Fact sheet 4.3 aims to introduce important legal agreements that are relevant to the management and sharing of local knowledge.

**LEARNING GOALS:** The participants are aware of the existing legal agreements and can reflect upon the influence of policies and institutions on the management of local knowledge and its impact on agrobiodiversity management.

### PROCESS

- 1) The participants should have had access to this fact sheet before the session in order to be able to absorb the contents of the different legal agreements.
- 2) The participants could start this session by breaking into three groups. Each group reading one of the three case examples provided in fact sheet 4.3. (Including case example on exercise sheet). Their task would be to identify strategies of knowledge management, and related key issues, to be further explored and discussed during the session. (1 hour)
- 3) Afterwards, the trainer could briefly present the relevant legal frameworks, which are related to local knowledge and benefit sharing. In a plenary session these frameworks could be clarified. (1 hour)
- 4) In groups, the participants could work on the short case examples, and think about possible strategies to enhance farmers' involvement and benefit sharing. Participants could be encouraged to draw on their practical work experience for doing so. The findings would be presented to the plenary and organized by the trainer. (1 hour)

**OUTCOMES:** The participants are aware of the existence of important legal frameworks, for local knowledge and benefit sharing, and have identified relevant strategies to improve farmers' involvement and benefit sharing.

**TIME ALLOCATION:** Minimum 3 hours

**Note:** If further information on laws and policies is required, please refer to Bragdon, S., Fowler, C. and Franca, Z. (eds). 2003. *Laws and policy of relevance to the management of plant genetic resource*. Learning Module. ISNAR. The Hague, The Netherlands.

## 4.3 EXERCISE SHEET - Promoting local communities' strategies for conservation

**WORKING GROUP TASK:** Please read the following short case study, provided below, and, with your group, discuss the possibility of promoting something similar within the context of your own work. Look at the potential strengths and weaknesses of this type of initiative, and discuss the opportunities and constraints. Use the case study provided as an initial input, also draw on your own experience working with farmers and other stakeholders.

### [Box 7] PROMOTING LOCAL COMMUNITIES' STRATEGIES FOR CONSERVATION OF MEDICINAL-PLANT GENETIC RESOURCES IN AFRICA

In Africa more than 80 percent of the continent's population relies on plant and animal based medicine to meet its health care requirements. For the most part, the plants and animals used in traditional medicine are collected from the wild, and, in many cases, demand exceeds supply. As Africa's population grows, demand for traditional medicines will increase, and pressure on natural resources will intensify. Africa has a history of conserving bio-diversity in medicinal plants for two reasons: traditional practices surrounding their use reflect local knowledge and wisdom, and the plants are readily available and relatively cheap - being either easy to gather in the wild, or simple to cultivate. Herbalists have preserved traditional knowledge and practices of herbal medicine, often using it in combination with spiritual powers. Certain families keep their recipes secret.

Plants continue to provide most of Africa's rural population with ingredients for traditional medicines. For many generations, throughout the continent, small plots of land near the homesteads have been used as home gardens. Because these gardens serve a family's own needs, they contain an entire range of plants that provide food and medicine. They are used widely to prevent and treat common ailments. Their conservation also means that the indigenous knowledge, associated with their unique properties and correct application, will be preserved.

Through a combination of participatory research, and development activities involving local communities, project workers first learn about the local communities' own solutions to conserving medicinal plants and for putting them to safe and effective use for traditional health care.

Appropriate incentives then provide further encouragement of community efforts to safeguard bio-diversity at the village level. Economic incentives include seed funds, the promotion of income-generating activities and help with marketing. Social incentives include technical assistance and training, information and consciousness-raising related to conservation, the provision of equipment, and technical and scientific advice and assistance. Institutional incentives include guarantees of full property rights and the establishment of local committees and associations for monitoring and planning.

The fact that income can be generated from medicinal plants and traditional medicines helps sustain their cultivation. Recognition of the value of traditional medicine and medicinal plants will foster sustainable methods of propagation and cultivation. Traditional knowledge and practices, pertaining to medicinal plants, will be preserved as herbal medicines are increasingly used to complement other forms of community health care.

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Source: Traditional knowledge case studies. [www.worldbank.org/afr/ik/casestudies/](http://www.worldbank.org/afr/ik/casestudies/) World Bank

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### Web sites

- FAO Web site on HIV/AIDS: [www.fao.org/hiv aids](http://www.fao.org/hiv aids)
- FAO Web site on gender, Agrobiodiversity and Local Knowledge: [www.fao.org/sd/links](http://www.fao.org/sd/links)
- World Bank Web site on Local Knowledge: [www.worldbank.org/afr/ik/what.htm](http://www.worldbank.org/afr/ik/what.htm)