



BUILDING ON GENDER, AGROBIODIVERSITY AND LOCAL KNOWLEDGE



A TRAINING MANUAL



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The present Training Manual is based on experiences collected in numerous training workshops carried out under the FAO-LinkS project¹ in Eastern and Southern Africa. This Training Manual constitutes a conceptual guide for trainers that can be used to lead them through the issues of gender and local knowledge which are important elements for agrobiodiversity management and food security.

It is apparent, when working with this Training Manual, that agrobiodiversity and food security are complex issues that need careful consideration. The myth that technologies taught to farmers will ease their poverty and hunger because the expertise or seeds provided are modern or new, persists in many contexts. This leads to positive results not materializing and rural farmers being faced with failed crops, or it is found that the technology applied is not appropriate to the particular situation.

There have been successes, this is true; however, a careful reading of the case studies contained in this Manual, will prompt the readers to pause and reflect. In some cases, the fine balance between wild foods and cultivated local varieties offers better solutions for local contexts and the introduction of new technologies may disturb the equilibrium.

One result of participating in the training will be a growing awareness of the importance of gender and local knowledge for sustainable agrobiodiversity management. The issues of gender, local knowledge and agrobiodiversity and their linkages are clearly explained. The sustainable livelihoods approach is used as an overall framework to understand better these linkages. In addition, the Manual gives an overview of the policies, processes and institutions at the global level that may affect farmers and agrobiodiversity in general.

The fact sheets contained in the Manual provide a general understanding of the issues. Sharing experiences and applying the participants' knowledge and understanding will be even more important. The Manual includes some exercises which encourage participants to bring in their own experiences, share their ideas, and apply them to their own work situation. The Manual provides tools for researchers, extensionists and those involved in day-to-day project implementation to better guide the processes that lead towards sustainable agrobiodiversity management and improved food security. Furthermore the Manual emphasizes the importance of involving the holders of local knowledge, both men and women in the decision-making process. Most important, to quote from the Manual, they will remember that 'the entry point to agrobiodiversity management is people themselves'.

This participatory process takes time, but it leads to more effective and sustainable results.



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¹ The FAO LinkS project (Gender, biodiversity and local knowledge systems for food security) works to improve rural people's food security and promote the sustainable management of agrobiodiversity by strengthening the capacity of institutions to use participatory approaches that recognize men and women farmer's knowledge in their programme and policies. The project is funded by the Government of Norway. For further information visit the web site of the project: www.fao./sd/links, or send an e-mail to links-project@fao.org.

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ABBREVIATIONS AND ACRONYMS

CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CIP	International Potato Center
COP	Conference of the Parties
DFID	Department for International Development (UK)
ESEAP	Regional Office for East, Southeast and the Pacific
FAO	Food and Agriculture Organization of the United Nations
GPA	Global Plan of Action
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
IC	Intergovernmental Committee
ICESR	International Convention on Social and Cultural Rights
IDRC	International Development Research Centre (Canada)
IITA	International Institute of Tropical Agriculture
IK	Indigenous knowledge
ILO	International Labour Organization
IP	Intellectual Property
IPGRI	International Plant Genetic Resources Institute
ISNAR	International Service for National Agricultural Research
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IU	International Undertaking on Plant Genetic Resources
IUCN	The World Conservation Union
KEPDA	Kenya Economic Pastoralist Development Association
NGO	Non-governmental organization
NRI	Natural Resources Institute (UK)
ODI	Overseas Development Institute (UK)
PGR	Plant genetic resources
PGRFA	Plant genetic resources in food and agriculture
PIC	Prior informed consent
PIPs	Policies, institutions and processes
SEAGA	Socio-economic and Gender Analysis Programme (FAO)
SEARICE	South East Asia Regional Initiatives for Community Empowerment
SL	Sustainable livelihoods
SNNPR	Southern Nations, Nationalities and People's Region
TK	Traditional knowledge
TRIPS	Trade Related Intellectual Property Agreement
UNEP	United Nations Environment Programme
UPOV	Union pour la Protection des Variétés Végétales
UPWARD	User's Perspectives with Agricultural Research and Development
WTO	World Trade Organization



PURPOSE OF THE MANUAL

This training manual focuses specifically on the linkages between local knowledge systems, gender roles and relationships, the conservation and management of agrobiodiversity, plant and animal genetic resources, and food security. Its aim is to promote a holistic understanding of these components. The training objective is to strengthen the institutional capacity in the agricultural sector and to recognize and foster these linkages in the relevant programmes and policies.

Other manuals may cover these same topics, but there is an obvious lack of integrated training materials that address all three topics. Moreover, FAO's local partner organizations have requested specific training materials that focus on these cross-cutting issues. We strongly believe that a better understanding of the key concepts, and their linkages, will lead to improved project planning and implementation.

This manual therefore aims to explore the linkages between agrobiodiversity, gender and local knowledge, and to show the relevance of doing so, within the context of research and development. This manual will not equip you with the skills needed to conduct participatory or action research at the field level, or provide guidance for research tools and methods. However, it is meant to complement existing manuals covering tools, methods and approaches, such as the FAO/SEAGA handbook material for socio-economic and gender analysis (www.fao.org/sd/seaga).

THE TARGET AUDIENCE

The manual is aimed at a wide target group. We hope it will be useful as a conceptual guide for trainers, as resource material for participants in training courses, mainly researchers and extension workers, and as reference material for others working within the context of agrobiodiversity management, gender and local knowledge. Although this manual was written for the LinKS project¹ in eastern and southern Africa, its content is of global relevance.

ORGANIZATION OF THE MODULE

The manual is divided into five modules. Each module contains fact sheets², covering key aspects and linkages between agrobiodiversity, gender and local knowledge. The fact sheets include short case examples to show practical evidence of the relevance of the topics. The rationale behind this structure is to permit flexible use of the manual. Each fact sheet contains a list of Key Points at the end, to help the reader synthesize the information covered. Depending on the demand, and need of the participants, modules can be added or taken out. A brief outline of the five Modules can be found below.

¹ The LinKS project works to improve rural people's food security and promote the sustainable management of agrobiodiversity by strengthening the capacity of institutions to use participatory approaches that recognise men and women farmer's knowledge in their programme and policies. The LinKS project's three main activity areas are capacity building and training, research and communication and advocacy. The project is funded by the Government of Norway. For more information on the LinKS project, please see www.fao.org/sd/links

² These fact sheets are also available as hand-outs for the participants, which are in the separate folder.

INTRODUCTION TO THE MANUAL

Additional trainer's guidance sheets (Process Sheets) aim to help the trainer structure and plan each module from the viewpoint of the training process. We want to encourage trainers to adapt the material to each unique training situation and to the information needs and demands of the participants. Ideas for exercises are provided in the Process Sheets, which can be adapted to the different training events. Exercises marked with (a) are basic exercises that can be carried out if time is limited. Exercises marked with (b) require more time and can be added if time is available. It is important to show participants, from the beginning, that the training approach is based on the mutual sharing of knowledge and information. Moreover, throughout the training, the participants' and trainers' knowledge is equally respected and valued.

The **Key Points** provided at the end of each fact sheet are to be used as a checklist by the trainer. This will ensure all key issues have been covered and will help the trainer monitor participants' learning progress.

Key Readings are suggested for each module. They may form part of the participants' exercises or serve as an additional information source on the topics presented.

MODULE 1 introduces the key concepts of agrobiodiversity, gender and local knowledge in the context of improved food security and provides an overview of the main issues.

MODULE 2 introduces the sustainable livelihoods framework as an analytical tool in order to explore the linkages between agrobiodiversity, gender and local knowledge.

MODULE 3 focuses on the linkages between agrobiodiversity and gender. It explores the complexity of this relationship from a livelihoods perspective.

MODULE 4 analyses the relationship between agrobiodiversity and local knowledge from a livelihoods perspective and explores the dynamic nature of these linkages.

MODULE 5 provides a case study reflecting the conceptual aspects covered in the previous modules.

USEFUL ADDITIONAL TRAINING RESOURCES

The SEAGA Intermediate handbook (FAO) is written for development planners in all public and private sector groups, including government ministries and community groups. It is designed to assist small- and medium-sized organizations such as community based groups. Some government offices or ministries may find the ideas useful. The analytical concepts and tools in the handbook focus on planning and implementing participatory change that takes into account differences in gender roles, relationships and other socio-economic characteristics of various stakeholder groups. The handbook encourages practical application of the SEAGA concepts and tools.

Source: <http://www.fao.org/sd/seaga/downloads/En/Intermediateen.pdf>

Law and policy of relevance to the management of plant genetic resources (S. Bragdon, C. Fowler and Z. Franca (Eds) SGRP, IPGRI, ISNAR Learning Module).

Source: IPGRI/ ISNAR.

The sustainable livelihoods (SL) approach is a framework, developed by the UK Department for International Development (DFID), to ensure that people and their priorities are at the centre of development. These guidance sheets are intended to be a resource to help explain and provide the tools for implementing the sustainable livelihoods approach to development.

Source: www.livelihoods.org/info/info_guidancesheets.html or www.livelihoods.org/info/info_distanceLearning.html

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WHAT IS AGROBIODIVERSITY?

Agrobiodiversity is the result of natural selection processes and the careful selection and inventive developments of farmers, herders and fishers over millennia. Agrobiodiversity is a vital sub-set of biodiversity. Many people's food and livelihood security depend on the sustained management of various biological resources that are important for food and agriculture. Agricultural biodiversity, also known as agrobiodiversity or the genetic resources for food and agriculture, includes:

- 🌱 Harvested crop varieties, livestock breeds, fish species and non domesticated (wild) resources within field, forest, rangeland including tree products, wild animals hunted for food and in aquatic ecosystems (e.g. wild fish);
- 🌱 Non-harvested species in production ecosystems that support food provision, including soil micro-biota, pollinators and other insects such as bees, butterflies, earthworms, greenflies; and
- 🌱 Non-harvested species in the wider environment that support food production ecosystems (agricultural, pastoral, forest and aquatic ecosystems).

[Box 1] AGROBIODIVERSITY IS CENTRAL TO OVERALL BIODIVERSITY



Agrobiodiversity is the result of the interaction between the environment, genetic resources and management systems and practices used by culturally diverse peoples, and therefore land and water resources are used for production in different ways. Thus, agrobiodiversity encompasses the variety and variability of animals, plants and micro-organisms that are necessary for sustaining key functions of the agro-ecosystem, including its structure and processes for, and in support of, food production and food security (FAO, 1999a). Local knowledge and culture can therefore be considered as integral parts of agrobiodiversity, because it is the human activity of agriculture that shapes and conserves this biodiversity.



[Box 2] A DEFINITION OF AGROBIODIVERSITY

The variety and variability of animals, plants and micro-organisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources (varieties, breeds) and species used for food, fodder, fibre, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil micro-organisms, predators, pollinators), and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agro-ecosystems.

Many farmers, especially those in environments where high-yield crop and livestock varieties do not prosper, rely on a wide range of crop and livestock types. This helps them maintain their livelihood in the face of pathogen infestation, uncertain rainfall and fluctuation in the price of cash crops, socio-political disruption and the unpredictable availability of agro-chemicals. So-called minor or underutilized crops, more accurately, companion crops, are frequently found next to the main staple or cash crops. They often grow side by side and their importance is often misjudged. In many cases, from a livelihoods perspective, they are not minor or underutilized as they can play a disproportionately important role in food production systems at the local level. Plants that will grow in infertile or eroded soils, and livestock that will eat degraded vegetation, are often crucial to household nutritional strategies. In addition, rural communities, and the urban markets with which they trade, make great use of these companion crop species.

[Box 3] COLLECTION OF WILD PLANTS FOR HOUSEHOLD CONSUMPTION

In Burkina Faso, and throughout the West African Sahel, rural women carefully collect the fruit, leaves and roots of native plants such as the baobab tree (*Adansonia digitata*), red sorrel leaves (*Hibiscus sabbdarifa*), kapok leaves (*Ceiba pentandra*) and tigernut tubers (*Cyperus esculentus* L.) for use in the families' diet. These supplement the agricultural grains (millet, sorghum) that provide only one part of the nutritional spectrum and may fail in any given year. More than 800 species of edible wild plants have been catalogued across the Sahel.

Source: IK Notes No. 23.

There are several distinctive features of agrobiodiversity, compared to other components of biodiversity:

- ⑥ Agrobiodiversity is actively managed by male and female farmers;
- ⑥ many components of agrobiodiversity would not survive without this human interference; local knowledge and culture are integral parts of agrobiodiversity management;
- ⑥ many economically important agricultural systems are based on 'alien' crop or livestock species introduced from elsewhere (for example, horticultural production systems or Friesian cows in Africa). This creates a high degree of interdependence between countries for the genetic resources on which our food systems are based;
- ⑥ as regards crop diversity, diversity within species is at least as important as diversity between species;
- ⑥ because of the degree of human management, conservation of agrobiodiversity in production systems is inherently linked to sustainable use – preservation through establishing protected areas is less relevant; and
- ⑥ in industrial-type agricultural systems, much crop diversity is now held *ex situ* in gene banks or breeders' materials rather than on-farm.



An overview of the key roles of agrobiodiversity is provided in the following Box. Not all the roles listed will be relevant in any given situation. Nonetheless, this list may serve as a checklist to prioritize those that are crucial in a project/work situation.

[Box 4] THE ROLE OF AGROBIODIVERSITY

Experience and research have shown that agrobiodiversity can:

- ☉ Increase productivity, food security, and economic returns
- ☉ Reduce the pressure of agriculture on fragile areas, forests and endangered species
- ☉ Make farming systems more stable, robust, and sustainable
- ☉ Contribute to sound pest and disease management
- ☉ Conserve soil and increase natural soil fertility and health
- ☉ Contribute to sustainable intensification
- ☉ Diversify products and income opportunities
- ☉ Reduce or spread risks to individuals and nations
- ☉ Help maximize effective use of resources and the environment
- ☉ Reduce dependency on external inputs
- ☉ Improve human nutrition and provide sources of medicines and vitamins, and
- ☉ Conserve ecosystem structure and stability of species diversity.

(Adapted from Thrupp)

WHAT IS HAPPENING TO AGROBIODIVERSITY?

Locally varied food production systems are under threat, including local knowledge and the culture and skills of women and men farmers. With this decline, agrobiodiversity is disappearing; the scale of the loss is extensive. With the disappearance of harvested species, varieties and breeds, a wide range of unharvested species also disappear.

[Box 5] 100 YEARS OF AGRICULTURAL CHANGE:

SOME TRENDS AND FIGURES RELATED TO AGROBIODIVERSITY

- ☉ Since the 1900s, some 75 percent of plant genetic diversity has been lost as farmers worldwide have left their multiple local varieties and landraces for genetically uniform, high-yielding varieties.
- ☉ 30 percent of livestock breeds are at risk of extinction; six breeds are lost each month.
- ☉ Today, 75 percent of the world's food is generated from only 12 plants and five animal species.
- ☉ Of the 4 percent of the 250 000 to 300 000 known edible plant species, only 150 to 200 are used by humans. Only three – rice, maize and wheat – contribute nearly 60 percent of Calories and proteins obtained by humans from plants.
- ☉ Animals provide some 30 percent of human requirements for food and agriculture and 12 percent of the world's population live almost entirely on products from ruminants.

Source: FAO. 1999b



More than 90 percent of crop varieties have disappeared from farmers' fields; half of the breeds of many domestic animals have been lost. In fisheries, all the world's 17 main fishing grounds are now being fished at or above their sustainable limits, with many fish populations effectively becoming extinct. Loss of forest cover, coastal wetlands, other 'wild' uncultivated areas, and the destruction of the aquatic environment exacerbate the genetic erosion of agrobiodiversity.

Fallow fields and wildlands can support large numbers of species useful to farmers. In addition to supplying Calories and protein, wild foods supply vitamins and other essential micro-nutrients. In general, poor households rely on access to wild foods more than the wealthier (see Table 1). However, in some areas, pressure on the land is so great that wild food supplies have been exhausted.

The term 'wild-food', though commonly used, is misleading because it implies the absence of human influence and management. Over time, people have indirectly shaped many plants. Some have been domesticated in home gardens and in the fields together with farmers' cultivated food and cash crops. The term 'wild-food', therefore, is used to describe all plant resources that are harvested or collected for human consumption outside agricultural areas in forests, savannah and other bush land areas. Wild-foods are incorporated into the normal livelihood strategies of many rural people, pastoralists, shifting cultivators, continuous croppers or hunter-gatherers. Wild-food is usually considered as a dietary supplement to farmers' daily food consumption, generally based on their crop harvest, domestic livestock products and food purchases on local markets. For instance, fruits and berries, from a wide range of wild growing plants, are typically referred to as 'wild-food'. Moreover, wild fruits and berries add crucial vitamins to the normally vitamin deficient Ethiopian cereal diet, particularly for children.

[Table 1]		Proportion of food from wild products for poor, medium and relatively wealthy households		
Survey site	Date	Very Poor %	Middle %	Better off %
* Wollo – Dega, Ethiopia	1999	0–10	0–10	0–5
* Jaibor, Sudan	1997	15	5	2–5
* Chitipa, Malawi	1997	0–10	0–10	0–5
* Ndoywo, Zimbabwe	1997	0–5	0	0

Source: Biodiversity in development

There are many reasons for this decline in agrobiodiversity. Throughout the twentieth century the decline has accelerated, along with increased demands from a growing population and greater competition for natural resources. The principal underlying causes include:

-  **The rapid expansion of industrial and Green Revolution agriculture.** This includes intensive livestock production, industrial fisheries and aquaculture. Some production systems use genetically modified varieties and breeds. Moreover, relatively few crop varieties are cultivated in monocultures and a limited number of domestic animal breeds, or fish, are reared or few aquatic species cultivated.



 **Globalization of the food system and marketing.** The extension of industrial patenting, and other intellectual property systems, to living organisms has led to the widespread cultivation and rearing of fewer varieties and breeds. This results in a more uniform, less diverse, but more competitive global market. As a consequence there have been:

- ⑥ changes in farmers' and consumers' perceptions, preferences and living conditions;
- ⑥ marginalization of small-scale, diverse food production systems that conserve farmers' varieties of crops and breeds of domestic animals;
- ⑥ reduced integration of livestock in arable production, which reduces the diversity of uses for which livestock are needed; and,
- ⑥ reduced use of 'nurture' fisheries techniques that conserve and develop aquatic biodiversity.

 The main cause of the genetic erosion of crops – as reported by almost all countries – is **the replacement of local varieties by improved or exotic varieties and species**. Frequently, genetic erosion occurs as old varieties in farmers' fields are replaced by newer. Genes and gene complexes, found in the many farmers' varieties, are not contained in the modern. Often, the number of varieties is reduced when commercial varieties are introduced into traditional farming systems. While FAO (1996) states that some indicators of genetic erosion have been developed, few systematic studies of the genetic erosion of crop genetic diversity have been made. Furthermore, in the FAO Country Reports (1996) nearly all countries confirm genetic erosion is taking place and that it is a serious problem.

Key points

- Agrobiodiversity is a vital subset of biodiversity, which is developed and actively managed by farmers, herders and fishers.
- Many components of agrobiodiversity would not survive without this human interference; local knowledge and culture are integral parts of agrobiodiversity management.
- Many economically important agricultural systems are based on 'alien' crop or livestock species introduced from elsewhere (for example, horticultural production systems or Friesian cows in Africa). This creates a high degree of interdependence between countries for the genetic resources on which our food systems are based.
- As regards crop diversity, diversity within species is at least as important as diversity between species.
- Locally diverse food production systems are under threat and, with them, the accompanying local knowledge, culture and skills of the food producers.
- The loss of forest cover, coastal wetlands, 'wild' uncultivated areas and the destruction of the aquatic environment exacerbate the genetic erosion of agrobiodiversity.
- The main cause of genetic erosion in crops, as reported by almost all countries, is the replacement of local varieties by improved or exotic varieties and species.



1.1 PROCESS SHEET - NOTES FOR THE TRAINER

OBJECTIVE: Fact sheet 1.1 provides a general introduction and overview of agrobiodiversity. It introduces the definitions of the concept and describes the different components and dynamics of agrobiodiversity. The overall aim is to establish a shared understanding of relevant terms and concepts among the participants.

LEARNING GOALS: Participants acquire a shared level of understanding of the relevant terms and concepts related to agrobiodiversity.

PROCESS: The fact sheet 1.1 should be circulated to the participants after the session. This will help them to explore the concepts, from their own working background, without being biased by the information provided.

It is important to show participants, from the beginning, that the training approach is based on the mutual sharing of knowledge and information. Moreover, the participants' and trainer's knowledge is equally respected and valued.

- 1) Depending on time availability participants could be invited to:
 - a) Name components/examples of agrobiodiversity. This would take place in the form of a brain-storming activity. The information generated during this exercise could then be jointly organized and serve as an entry point for a more formal presentation.
 - b) In small groups, develop maps of agricultural systems on which different components of agrobiodiversity are located. These maps could then be displayed and shared with the other participants.
- 2) This exercise could be followed by a presentation of overheads/Power Point covering definitions and differences between agrobiodiversity and biodiversity in general.
- 3) Afterwards it would be useful to discuss the dynamics and trends in agrobiodiversity. This may be based on:
 - a) Participants discussion, in general, of dynamics and trends in agrobiodiversity.
 - b) Participants, using the maps they have developed, indicating past changes and trends.
- 4) Together with the participants, key issues should be extracted from this discussion.
- 5) Finally, the trainer could present the key learning points for fact sheet 1.1.

It would be useful to integrate other visual aids, such as videos or slides to increase participants' interest and involvement.

OUTPUTS: The participants understand the concept of agrobiodiversity. They have established a shared understanding of key issues and terms. For further details please refer to the Key Points for fact sheet 1.1.

TIME ALLOCATION: A minimum of 3 hours is suggested for fact sheet 1.1.

¹ Ideas for exercises are provided in the Process Sheets, which can be adapted to the different training events. Exercises marked with (a) are basic exercises that can be carried out if time is limited. Exercises marked with (b) require more time and can be added if time is available.



WHAT IS LOCAL KNOWLEDGE?

Local knowledge is the knowledge that people in a given community have developed over time, and continue to develop. It is:

- ⑥ Based on experience
- ⑥ Often tested over centuries of use
- ⑥ Adapted to the local culture and environment
- ⑥ Embedded in community practices, institutions, relationships and rituals
- ⑥ Held by individuals or communities
- ⑥ Dynamic and changing

Local knowledge is not confined to tribal groups or to the original inhabitants of an area. It is not even confined to rural people. Rather, all communities possess local knowledge – rural and urban, settled and nomadic, original inhabitants and migrants. There are other terms, such as *traditional knowledge* or *indigenous knowledge*, which are closely related, partly overlapping, or even synonymous with local knowledge. We have chosen the term *local knowledge* because it seems least biased in terms of its contents or origin. As it embraces a larger body of knowledge systems, it includes those classified as *traditional* and *indigenous*.

[Box 1] LOCAL, TRADITIONAL AND INDIGENOUS KNOWLEDGE

Local knowledge is a collection of facts and relates to the entire system of concepts, beliefs and perceptions that people hold about the world around them. This includes the way people observe and measure their surroundings, how they solve problems and validate new information. It includes the processes whereby knowledge is generated, stored, applied and transmitted to others.

The concept of **traditional knowledge** implies that people living in rural areas are isolated from the rest of the world and that their knowledge systems are static and do not interact with other knowledge systems.

Indigenous knowledge systems are often associated with indigenous people. This concept is rather limiting for policies, projects and programmes seeking to work with rural farmers in general. Furthermore, in some countries, the term *indigenous* has a negative connotation, as it is associated with backwardness or has an ethnic and political connotation.

Sources: Warburton and Martin



Knowledge systems are dynamic, people adapt to changes in their environment and absorb and assimilate ideas from a variety of sources. However, knowledge and access to knowledge are not spread evenly throughout a community or between communities. People may have different objectives, interests, perceptions, beliefs and access to information and resources. Knowledge is generated and transmitted through interactions within specific social and agro-ecological contexts. It is linked to access and control over power. Differences in social status can affect perceptions, access to knowledge and, crucially, the importance and credibility attached to what someone knows. Often, the knowledge possessed by the rural poor, in particular women, is overlooked and ignored.

[Box 2] WILD-FOOD PLANTS IN SOUTHERN ETHIOPIA

The rural people of Ethiopia are endowed with a profound knowledge of the use of wild plants. This is particularly true for medicinal and wild plants, some of which are consumed during drought, war and other hardship. Elders, and other knowledgeable community members, are the key sources or reservoirs of plant knowledge. Wild-food consumption is still very common in the rural areas of Ethiopia, particularly for children. Among these, the most common wild plant fruits consumed by children, are from the plant species *Ficus spp.*, *Carissa edulis* and *Rosa abyssinica*.

The consumption of wild plants seems to be more common and widespread in food insecure areas, where a wide range of species are consumed. The linkage has given rise to the notion of famine-foods, plants that are eaten only at times of food stress and that are therefore an indicator of famine conditions. Local people know of the importance and the contribution that wild plants make to their daily diet. Also, they know of the possible health hazards, such as an upset stomach that may occur after eating certain wild plants.

For example, *Balanites aegyptiaca* (*bedena* in Amharic), an evergreen tree, about 10 to 20 m tall, is typical of this category. Children eat its fruit at any time when ripe, when there are food shortages they will be eaten by adults. The new shoots, which are always growing during the dry season, are commonly used as animal forage. Although, during food shortages, people cut the newly grown succulent shoots and leaves, which are cooked like cabbage. People in the drought-prone areas of southern Ethiopia also apply these consumption habits to the fruits and young leaves of *Solanium nigrum* (black nightshade), a small annual herb, and *Syzygium guineense* (waterberry tree), which is a dense, leafy forest tree around 20 m tall.

In parts of southern Ethiopia, the consumption of wild-food plants seems to be one of the important local survival strategies. This appears to have intensified because of repeated climatic shocks that have hampered agricultural production, leading to food shortages. Increased consumption of wild-foods allows people to better cope with erratic, untimely rains. They are able to face several consecutive years of drought, without facing severe food shortages, famine and general asset depletion, as is the case in other areas of Ethiopia. The key to this survival strategy is the collection and consumption of wild plants. These are found in uncultivated lowland areas such as bush, forest and pastoral land. In the more densely populated, and intensively used mid- and highlands, a great variety of these indigenous plants and trees have been domesticated for home consumption and medicinal use. Southern Ethiopia, particularly Konso, Derashe and Burji special *weredas*¹ and parts of the southern nations, nationalities and people's region (SNNPR) may still be considered part of these biodiversity hot-spots in Ethiopia.

Source: Guinand and Lemessa

¹ The basic administration unit in Ethiopia, equivalent to a district.



Local knowledge is unique to every culture or society; elders and the young possess various types of knowledge. And, women and men, farmers and merchants, educated and uneducated people all have different kinds of knowledge.

-  **Common knowledge** is held by most people in a community; e.g. almost everyone knows how to cook rice (or the local staple food).
-  **Shared knowledge** is held by many, but not all, community members; e.g. villagers who raise livestock will know more about basic animal husbandry than those without livestock.
-  **Specialized knowledge** is held by a few people who might have had special training or an apprenticeship; e.g. only few villagers will become healers, midwives, or blacksmiths.

The type of knowledge people have is related to their age, gender, occupation, labour division within the family, enterprise or community, socio-economic status, experience, environment, history, etc. This has significant implications for research and development work. To find out what people know, the right people must be identified. For example, if boys do the herding they may know, better than their fathers, where the best grazing sites are. If we ask the fathers to show us good pastures, we might only get partial information. Development professionals sometimes think villagers know very little, when in fact the wrong people have been interviewed.

It is important to realize that local knowledge – as with other types of knowledge – is dynamic and constantly changing, as it adapts to a changing environment. Because local knowledge changes over time, it is sometimes difficult to decide whether a technology or practice is local, adopted from outside, or a blend of local and introduced components. In most cases the latter situation is most likely. For a development project, however, it does not matter whether a practice is really local or already mixed with introduced knowledge. What is important before looking outside the community for technologies and solutions, is to look first at what is available within the community. Based on this information, a decision can be made on the type of information that would be more relevant to the specific situation. Most likely, it will be a combination of different knowledge sources and information types.

This again has important implications for the research and development process. It is not sufficient to document existing local knowledge. It is equally important to understand how this knowledge adapts, develops and changes over time. How this knowledge is communicated is also significant, and by whom, both within and beyond the community.

WHY IS LOCAL KNOWLEDGE IMPORTANT?

Local knowledge is the human capital of both the urban and rural people. It is the main asset they invest in the struggle for survival, to produce food, provide for shelter or achieve control of their own lives. Significant contributions to global knowledge have originated with local people, for instance for human and veterinary medicine. Local knowledge is developed and adapted continuously to a gradually changing environment. It is passed down from generation to generation and closely interwoven with people's cultural values.

In the emerging global knowledge economy, a country's ability to build and mobilize knowledge capital is as essential to sustainable development as the availability of physical and financial capital. The basic component of any country's knowledge system is its local knowledge. This encompasses the skills, experiences and insights of people, applied to maintain or improve their livelihood.



Today, many local knowledge systems are at risk of becoming extinct. This is because globally natural environments are rapidly changing, and there are fast-paced economic, political, and cultural changes. Practices vanish, when they are inappropriate, in the face of new challenges, or because they adapt too slowly. However, many practices disappear because of the intrusion of foreign technologies, or development concepts, that promise short-term gains or solutions to problems. The tragedy of the impending disappearance of local knowledge is most obvious to those who have developed and make their living from it. A case in point is the wild-food example from southern Ethiopia (see Box 2 in this fact sheet). These plants are especially vital for the survival of the poor, during food shortages, when there are no other means of satisfying basic needs. Moreover, the implication for others may also be detrimental, when skills, technologies, artifacts, problem-solving strategies and expertise are lost. Local knowledge is a part of people's lives. Especially, the poor depend, almost entirely, for their livelihoods on specific skills and knowledge essential to their survival. Accordingly, for the development process, local knowledge is of particular relevance to the following sectors and strategies:

- ⦿ **Agriculture**, knowledge related to crop selection, intercropping, planting times.
- ⦿ **Animal husbandry and ethnic veterinary medicine**, knowledge of breeding strategies, livestock characteristics and requirements, plant uses to treat common illnesses.
- ⦿ **Use and management of natural resources**, knowledge of soil fertility management, sustainable management of wild species.
- ⦿ **Health care**, knowledge of plant properties for medicinal purposes.
- ⦿ **Community development**, common or shared knowledge provides links between community members and generations; and
- ⦿ **Poverty alleviation**, knowledge of survival strategies based on local resources.

Conventional approaches imply that development processes always require technology transfers from places that are perceived to be more advanced. This practice has often led to overlooking the potential of local experiences and practices. The following example from Ethiopia's food security programme illustrates what may happen if local knowledge is not adequately considered (see Box 3).

[Box 3] INTRODUCTION OF SORGHUM VARIETIES IN ETHIOPIA

Higher yielding sorghum varieties were introduced into Ethiopia to increase food security and income for farmers and rural communities. When weather and other conditions were favourable, the modern varieties proved a success. However, in some areas complete crop failures were observed, whereas local varieties, with a higher variance of traits, were less susceptible to the frequent droughts. The farming community considered the loss of an entire crop to be more than offset by the lower, average yields of the local variety that performed under more extreme conditions. An approach, that included local farming experience, could have resulted in a balanced mix of local and introduced varieties, thus reducing the producers' risk.

Source: Oduol



Local knowledge is relevant at three levels of the development process.

- ⑥ Obviously, it is most important to men and women, old and young, in the local community where the bearers of such knowledge live and produce.
- ⑥ Development agents (CBOs, NGOs, governments, donors, local leaders and private sector initiatives) need to recognize, value and appreciate local knowledge in their interaction with the local communities. They need to understand exactly what it is before it is incorporated in their approaches. They also need to critically validate it against the usefulness of their intended objectives.
- ⑥ Finally, local knowledge forms part of global knowledge. In this context, it has a value and relevance in itself. Local knowledge can be preserved, transferred, or adopted and adapted elsewhere.

However, it is important to stress that local knowledge is not exclusive or necessarily sufficient for tackling the challenges people face today. Much evidence shows that local actors seek information and concepts from wherever they can in their efforts to solve their problems and achieve their goals. For people involved in research and development processes, with local communities, it is important to see local knowledge as one component within a more complex innovation system. Therefore, a thorough analysis of existing sources of information and knowledge is an important step in any research or development project. These sources, by nature, can be formal and informal. For instance, community groups, involved in similar agricultural practices, could be an informal source of local knowledge. Regional, or national, extension or research centres would be a formal source of knowledge. In this context, it is important to consider private service providers, such as local seed retailers, as they are becoming increasingly important as knowledge providers.

Key points

- Local knowledge is developed over time by people living in a given community, and is continuously developing.
- Knowledge systems are dynamic, people adapt to changes in their environment and absorb and assimilate ideas from a variety of sources.
- Knowledge and access to knowledge are not spread evenly through a community or between communities; people have different objectives, interests, perceptions, beliefs and access to information and resources.
- The type of knowledge people have is related to their age, gender, occupation, labour division within the family, enterprise or community, socio-economic status, their experience, environment, history.
- Local knowledge is the human capital of the rural and urban people, it is the main asset they invest in the struggle for survival, to produce food, provide for shelter or achieve control of their own lives, and
- For those involved in research and development processes, with local communities, it is important to see local knowledge as one component within a more complex innovation system.



OBJECTIVE: Fact sheet 1.2 provides a general introduction to the concept of local knowledge. It introduces definitions and describes the dynamic nature of local knowledge. The overall aim is to establish a shared understanding of relevant terms and concepts among the participants.

LEARNING GOALS: Participants understand the concept of local knowledge and are aware of its position in a wider knowledge system.

PROCESS

- 1) It is important to show the participants, from the beginning, that the training approach is based on the mutual sharing of knowledge and information. Moreover, the participants' and trainer's knowledge is equally respected and valued.
- 2) Participants could be invited to first share experiences, related to local knowledge, from their own working background. The trainer may encourage looking at different aspects, such as gender roles, knowledge management, knowledge development, etc. The information generated, during this exercise, could then be jointly organized in order to establish key characteristics of local knowledge.
- 3) In a further exercise, participants could be asked to summarize the information, to define the concept. If time is limited, the trainer can move directly to Step 4 and include the definition in his/her presentation.
- 4) A presentation given by the facilitator on local knowledge (concepts, definitions).
- 5) A discussion of the dynamics and trends in local knowledge development could follow. This again may be based (a) on general ideas and participants brain-storming, or (b) on participants presenting a few examples of agricultural systems in their region, comparing past and present situations in terms of the relevance of local knowledge.
- 6) Together with the participants, key issues should be extracted from this discussion.

It would be useful to integrate other visual aids, such as videos or slides to increase participants' interest and involvement.

OUTPUTS: The participants understand the concept of local knowledge. They have established a shared understanding of key issues and terms and have covered the key points listed in fact sheet 1.2.

TIME ALLOCATION: Minimum 2 hours.



WHAT IS GENDER?

Gender is defined by FAO as ‘the relations between men and women, both perceptual and material. Gender is not determined biologically, as a result of sexual characteristics of either women or men, but is constructed socially. It is a central organizing principle of societies, and often governs the processes of production and reproduction, consumption and distribution’ (FAO, 1997). Despite this definition, gender is often misunderstood as being the promotion of women only. However, as we see from the FAO definition, gender issues focus on women and on the relationship between men and women, their roles, access to and control over resources, division of labour, interests and needs. Gender relations affect household security, family well-being, planning, production and many other aspects of life (Bravo-Baumann, 2000).

[Box 1] DEFINITION OF GENDER ROLES AND GENDER RELATIONS

Gender roles are the ‘social definition’ of women and men. They vary among different societies and cultures, classes, ages and during different periods in history. Gender-specific roles and responsibilities are often conditioned by household structure, access to resources, specific impacts of the global economy, and other locally relevant factors such as ecological conditions (FAO, 1997).

Gender relations are the ways in which a culture or society defines rights, responsibilities, and the identities of men and women in relation to one another (Bravo-Baumann, 2000).

Rural people’s roles, as food producers and food providers, link them directly to the management and sustainable use of agrobiodiversity. Through their daily work, rural people have accumulated knowledge and skills concerning their ecosystems, local crop varieties, animal breeds, agricultural systems and the nutritional values of various underused plants. They have become adept at maintaining their own scarce resources. Men and women act differently, because of their socially ascribed roles; therefore they have different sets of knowledge and needs.

Experience shows that agricultural, environmental and related policies and programmes do not differentiate between male and female farmers. Therefore, they often fail to recognize the differences between men’s and women’s work, knowledge, contributions and needs. This has significant consequences for biodiversity as well as for gender equality. The case study presented in Module 5, for instance, clearly shows how agrobiodiversity and the local knowledge held by women, were negatively affected by the introduction of exotic vegetables for market production, which was mainly a men-driven enterprise.

[Box 2] GENDER DIFFERENCES IN KNOWLEDGE OF TRADITIONAL RICE VARIETIES IN MALI

In Bafoulabé region in Mali, rice was traditionally considered a female crop. It was grown near rivers or where water stagnated during the rainy season. Women would take care of the field individually or in a group. Their knowledge of landraces was vast. They could identify 30 different varieties by growth cycle, plant growth habit, plant height, number of stems, grain yield, grain size, form, colour, preparation quality, utilization and taste of the end product. Men had very little knowledge of traditional rice varieties, but they had the main responsibility for three improved rice varieties introduced to the village.

Source: Synnevag



Both men and women farmers play an important role as decision-makers in agrobiodiversity management. They decide when to plant, harvest and process their crops. They decide how much of each crop variety to plant each year, how much seed to save from their own production and what to buy or exchange. All these decisions affect the total amount of genetic diversity that is conserved and used.

In most farming systems, there is a division of labour. This determines the different tasks for which men and women are responsible. Generally, women have an important role in the production, processing, preservation, preparation and sale of staple crops. Men tend to focus on market-oriented or cash crop production. Often we find a division in crop and livestock management practices. Weeding is often a women's task, while spraying or fertilizer application is mainly carried out by men. Women and children often look after the smaller livestock species and men are often in charge of cattle. These are only a few examples, which are not generally applicable, but will depend on the specific situations and cultures we are working.

[Box 3] GENDER AND AGE-SPECIFIC DIFFERENCES REGARDING THE COLLECTION, PREPARATION AND CONSUMPTION OF WILD-FOOD PLANTS IN RURAL ETHIOPIA

Mostly children collect and eat the fruit from wild plants. Other wild-food and famine-food plants are collected by children and women and prepared by the latter in all the areas surveyed. Women frequently collect wild-food when they are on their way to fetch water, collect firewood, go to market, and when walking home from their fields.

Able-bodied male members of the community usually migrate to find work during food shortage. Women and children are left behind to manage as best they can. Therefore, women and children are the main actors concerning the collection, preparation and consumption of wild-food plants. Children forage and climb trees for collection while women do the preparation and the cooking.

In normal times, young rural males eat more wild foods than the older generation. Although, when there is a food shortage, all ages and both sexes eat the wild foods to satisfy their need for additional nourishment, traditional fulfillment and local curative treatments. This includes consumption of *Embelia schimperi* (*enkoko* in Amharic), a fruit that is eaten to control intestinal parasites.

Source: Guinand and Lemessa

Women are often involved in the selection, improvement and adaptation of plant varieties. They often have more specialized knowledge of wild plants used for food, fodder and medicine than men (see Box 2 and 3). Men and women may be responsible for different crops, or varieties, or be responsible for different tasks related to one crop.

Recent decades have witnessed substantial gains in agricultural productivity and rapid advances in agricultural technology. These advances have often bypassed women farmers and reduced their productivity. Frequently the changes were linked to credit requirements that were either inaccessible to women, or were not tailored to their needs and demands. Therefore, women face a variety of gender-based constraints as farmers and managers of natural resources. In order to meet the challenges of food production for the increasing population, countries must find ways to overcome this gap in productivity.

GENDER AND AGROBIODIVERSITY MANAGEMENT

There are increasing concerns that the vital contribution of women to the management of biological resources, and to economic production generally, has been misunderstood, ignored, or underestimated (Howard, 2003). Women are the sole breadwinners in one-third of all households in the world. In poor families, with two adults, more than half the available income is from the labour of women and children. Furthermore, women direct more of their earnings to meet basic needs. Women produce 80 percent of the food in Africa, 60 percent in Asia and 40 percent in Latin America (Howard, 2003).



Women tend to be more actively involved than men in the household economy. This typically involves the use of a much wider diversity of species for food and medicine than are traded in regional or international markets. Women generally have the primary responsibility of providing their families with food, water, fuel, medicines, fibres, fodder and other products. Often they need to rely on a healthy and diverse ecosystem for a cash income. As a result, rural women are the most knowledgeable about the patterns and uses of local biodiversity. Yet, these same women are often denied access to land and resources. In many countries, such as Kenya, women have access only to the most marginal land – medicinal plants are collected along road banks and fence rows and fuel is collected in the de facto commons – land too far from villages to be claimed by men.

Gender issues cut across agrobiodiversity management activities in several ways. First, agrobiodiversity management is community-based, and requires the support of the entire community – young and old, rich and poor, men and women, boys and girls. Because women play a restricted or invisible role in the public affairs of many communities, special steps need to be taken so that women are consulted on agrobiodiversity management.

Tradition may dictate that the household head speaks for the household. However, many men are not sufficiently aware of women's concerns to raise them adequately in public meetings. Hence, other ways must be found to tap women's knowledge, needs and requirements, and to determine their commitment and contributions to agrobiodiversity management.

Second, men and women use agrobiodiversity in different ways and have diverse allocation and conservation measures. Agrobiodiversity management therefore requires information, participation in decision-making, management and commitment from both sexes.

Moreover, in several regions, women's roles and responsibilities are greater than ever because of male migration to urban areas. Frequently, men are absent from rural homes because they leave to earn an alternative income. This creates de facto female-headed households, where the men may retain decision-making power, even though the women are managing the farm and household on their own for long periods. This feminization of agriculture may indicate that women are obtaining more decision-making power with regard to agrobiodiversity management.

Because of these above-mentioned tendencies, it is important for us to recognize that gender considerations in agrobiodiversity always need to take into account both men's and women's roles, responsibilities, interests and needs. Furthermore, within these two groups, we need to be aware of other differences that need to be taken into consideration: those of age, ethnicity and social status.

Failure to consider these differences, between men and women, leads to unsuccessful project activities. It may also lead to the marginalization of a major sector of society and a large part of the agricultural workforce. Thus, understanding gender relationships, and adjusting methods and messages, is crucial for the full participation of all sectors of the community.

Key points

- Mainstream agricultural, environmental and related policies and programmes tend to see farmers as men. Or, no differentiation is made between male and female farmers.
- Rural men's and women's roles, as food producers and providers, link them directly to the management and sustainable use of agrobiodiversity.
- Both men and women farmers play an important role as decision-makers in agrobiodiversity management. All of these decisions affect the total amount of genetic diversity that is conserved and used.
- In most farming systems there is a division of labour, which determines the different and complementary tasks for which men and women are responsible.
- Women tend to be more actively involved than men in the household economy, which typically involves the use of a much wider diversity of species for food and medicine than are traded in regional or international markets.
- There are increasing concerns that the vital contribution of women to the management of biological resources, and to economic production generally, has been misunderstood, ignored, or underestimated.



1.3 PROCESS SHEET - NOTES FOR THE TRAINER



OBJECTIVE: Fact sheet 1.3 provides an introduction to the concept of gender within agrobiodiversity management. It introduces definitions and describes the relevance of gender roles and responsibilities. The overall aim is to establish a shared understanding of relevant terms and concepts among the participants.

LEARNING GOALS: Participants come to an understanding of the concept of gender and are aware of its position within agrobiodiversity management.

PROCESS

It is important to show the participants from the beginning that the training approach is based on the mutual sharing of knowledge and information. Moreover, the participants' and trainer's knowledge is equally respected and valued.

- 1) As an introduction to the session, a short exercise could be conducted to reveal the different roles and responsibilities of men and women in agriculture (See the SEAGA manual www.fao.org/sd/seaga/4_en.htm).
- 2) Brain-storming sessions on gender and gender-related terms based on SEAGA training material.
- 3) The outcome of this exercise could be used to explore the relevance of the findings for agrobiodiversity management.
- 4) The trainer could guide the discussion towards more complex levels of analysis. The participants might be encouraged to include aspects of age, social status in their discussion.
- 5) A following step might be to invite participants to discuss the consequences of gender-blind¹ project interventions and development approaches.
- 6) The findings of the participants should be organized together with the trainer. Participants could be encouraged to provide examples from their own work experience.

OUTPUTS: The participants are aware of the importance of the gender dimension within agrobiodiversity management. They have jointly established a shared understanding of the concept. The Key Points of fact sheet 1.3 are taken up by the participants.

TIME ALLOCATION: Minimum 2 hours

¹ Ignoring/failing to address the gender dimension, as opposed to gender sensitive or gender neutral.



WHAT IS FOOD SECURITY?

The 1996 World Food Summit reached near-consensus on the main features of the global problem of food security. Food security is the adequate supply of food and food availability. This means stability of supplies and access to food and consumption by all. 'Food security... is achieved when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life' (FAO, 1996). The right to food is a basic human right, mandated in international law and recognized by all countries.

Food availability is necessary for food security, but is not sufficient. Food-insecure households may be in areas where there is enough food, but the household lacks the income or entitlements (production, trade or labour) to get it. Improving entitlements means expanding economic opportunities and making markets work better for the poor. Moreover, food-insecure individuals may live in food-secure households. Ensuring all family members have an adequate diet means overcoming gender or age discrimination.

A DEFINITION OF HOUSEHOLD FOOD SECURITY

Households are food secure when all members have year-round access to the amount and variety of safe foods required to lead active and healthy lives. At the household level, food security refers to the ability of all household members to secure adequate food to meet dietary needs, either from household production or through purchases.

State of world food security: There is no food scarcity for those who can afford to buy it. Although the global picture shows aggregate food surpluses and falling prices, food security remains a key concern. This is because millions of people do not have economic access to sufficient food:

- ⦿ over 826 million people are chronically hungry; they need to eat 100–400 Calories more per day;
- ⦿ worldwide, 32 percent of pre-school children are stunted, 26 percent are underweight;
- ⦿ Asia has more hungry people than anywhere else, but hunger is greatest in sub-Saharan Africa, and worst in countries affected by conflict;
- ⦿ poverty is the most widespread cause of food insecurity;
- ⦿ progress has been uneven, poverty continues to rise in sub-Saharan Africa and in Asia, the proportion living in poverty has declined dramatically, but progress has slowed recently.



Links to livelihoods analysis: The livelihoods approach, which considers people's assets and constraints, is a valuable tool for finding ways to improve poor people's access to food. It helps us to arrive at an understanding of transitory food insecurity and vulnerability. This includes, for example, how changes in vulnerability (HIV infection, drought), institutions (market reforms) or endowments (soil degradation) impact on livelihood outcomes (food security). Assets and livelihood strategies, including non-farm strategies, are valuable in that they allow us to move away from thinking of food security as being only focused on agriculture (see Module 2).

Biodiversity, and especially agrobiodiversity, are important assets that favour poor people's food security. Agrobiodiversity contributes to the achievement of sustainable livelihoods as it is an essential element of the natural resource base. Moreover, the greatest range and volume of biodiversity is held by developing countries. These genetic resources are particularly important for food and income security, health care, shelter, cultural and spiritual practices. This is true for many rural communities, in developing countries, as genetic resources are crucial elements for environmental risk management and food production. The importance of local knowledge is closely related to this aspect of food security, as it is not enough to have genetic diversity at hand. People rely on local knowledge for the sustainable management and utilization of these resources so they can benefit from them. (More details on agrobiodiversity and local knowledge can be found in fact sheet 1.1 and fact sheet 1.2).

HIV/AIDS has been one important factor in the discussion of food security. From a livelihoods perspective, HIV/AIDS represents a severe shock, within the vulnerability context of many people around the world. HIV/AIDS typically strikes the household's most productive members first. When these people become ill, there is an immediate strain on the family's ability to work, feed themselves and provide care. As the disease progresses, it can become even harder for a family to cope. The state of poverty advances as resources are drained and valuable assets, such as livestock and tools, are sold to pay for food and medical expenses.

Without food or income, some family members may migrate in search of work, increasing their chances of contracting HIV – and bringing it back home. For others, commercial sex may be the only option to feed and support their family. Food insecurity also leads to malnutrition, which can aggravate and accelerate the development of AIDS. Likewise, the disease itself can contribute to malnutrition by reducing appetite, interfering with nutrient absorption, and making additional demands on the body's nutritional status. (www.fao.org/es/ESN/nutrition/household_hiv aids_en.stm)

In Module 2, you will learn more about the livelihoods framework and understand how food security is centrally placed within it.



OBJECTIVE: Fact sheet 1.4 provides a short introduction to an aspect of food security. That is, sustainable agrobiodiversity management, which is an important prerequisite for achieving food security. Moreover, this is directly linked to local knowledge and gender relations.

LEARNING GOALS: Participants are aware of the overall importance of improved food security.

PROCESS

It is important to show the participants from the beginning that the training approach is based on the mutual sharing of knowledge and information. Moreover, the participants' and trainer's knowledge is equally respected and valued.

- 1) As an introduction to this session, participants can share ideas on why the three concepts of agrobiodiversity, gender, and local knowledge are important for food security.
- 2) The trainer can cluster the different ideas and the aspect of 'food security' should be highlighted. Finally, the trainer can: (a) Present a definition of food security based on fact sheet 1.4. (b) If time allows, the participants could form small groups and develop a definition of food security on their own, which will then be shared in the plenary.

OUTPUTS: The participants are aware that the entire course is embedded in the objective of achieving food security. In addition, they will have established a shared understanding of the term.

TIME ALLOCATION: Minimum 1 hour.



KEY READINGS - MODULE 1

Key readings for fact sheet 1.1

-  Thrupp, L.A. 2003. The central role of agricultural biodiversity: Trends and challenges. *In* Conservation and sustainable use of agricultural biodiversity. Published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE
-  IK Notes No. 23. August 2000. Seeds of life: Women and agricultural biodiversity in Africa.

Key reading for fact sheet 1.2

-  Mujaju, C., Zinhanga, F. & Rusike, E. 2003. Community seed banks for semi-arid agriculture in Zimbabwe. *In* Conservation and sustainable use of agricultural biodiversity. Published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE

Key readings for fact sheet 1.3

-  FAO. 1999. Women-users, preservers and managers of agrobiodiversity.
-  Torkelsson, A. 2003. Gender in agricultural biodiversity conservation. *In* Conservation and sustainable use of agricultural biodiversity. Published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE

Key reading for fact sheet 1.4

-  Biodiversity in development, Biodiversity Brief No. 6, IUCN/ DFID.
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- Mujaju, C., Zinhanga, F. & Rusike, E. 2003. Community seed banks for semi-arid agriculture in Zimbabwe. *In* Conservation and sustainable use of agricultural biodiversity. Published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE.
- Oduol, W. 1995. Adaptive responses to modern technology: Kitui farmers in the semi-arid regions of eastern Kenya. *In* Technology policy and practices in Africa, Canada, International Development Research Centre.
- Synnevag, G. 1997. Gender differentiated management of local crop genetic resources in Bafoulabe Cercle, Kayes region of Mali – A case study. *In* Actes du Colloque, Gestion des Ressources Génétiques de Plantes en Afrique des Savanes.
- Thrupp, L.A. 1997. Linking biodiversity and agriculture: Challenges and opportunities for sustainable food security. World Resources Institute, USA.
- Warburton, H. & Martin, A.M. 1999. Local people’s knowledge. Best practice guideline. Socio-Economic Methodologies Programme, DFID, United Kingdom
- Warren, D. M. 1991. Using indigenous knowledge in agricultural development. World Bank Discussion Paper No. 127, Washington, DC, World Bank.
- World Resources Institute (No date) Women and biodiversity. www.wri.org/biodiv/women-01.html

Web sites

- FAO Web site on Agrobiodiversity: www.fao.org/biodiversity/index.asp?lang=en
- FAO Web site on Gender, Agrobiodiversity and Local Knowledge: www.fao.org/sd/links
- FAO Web site on Gender: www.fao.org/Gender/gender.htm
- FAO Web site on Sustainable Development issues: www.fao.org/sd/index_en.htm
- FAO Web site on HIV/AIDS: www.fao.org/hiv aids/links/index_en.htm
- FAO Web site on Food Security: www.fao.org/es/ESN/nutrition/household_hiv aids_en.stm
- World Bank Web site on indigenous knowledge: www.worldbank.org/afr/ik/what.htm

AGROBIODIVERSITY MANAGEMENT FROM A SUSTAINABLE LIVELIHOODS' PERSPECTIVE

2.1 WHAT IS A SUSTAINABLE LIVELIHOODS APPROACH?1

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WHAT IS A SUSTAINABLE LIVELIHOODS APPROACH?

This fact sheet will introduce you to the sustainable framework. The sustainable livelihoods framework¹ can help to explore the linkages between agrobiodiversity, gender and local knowledge. Moreover, it will help us broaden our perspective and apply a more holistic view to these issues. This Module is mostly theoretical, but in Module 3 and 4 you will find more practical examples of issues developed here. Recent research, on traditional crops and livestock species, suggests there is a significant gap between development and research priorities and farmers' needs (Blench, 1997). One way of explaining this gap is to reflect upon the underlying viewpoints taken by these different actors. Two main perspectives can be identified, which are compared in the table below.

[Table 1] Comparison of different perspectives on agrobiodiversity	
LIVELIHOODS PERSPECTIVE	NATURAL RESOURCE MANAGEMENT PERSPECTIVE
Focus is on local people and their livelihood strategies	Focus is on genetic resources and their production potential and use
Holistic in terms of understanding the purposes and functions played by agrobiodiversity in livelihood strategies	Narrow in terms of understanding and strengthening different purposes and functions of agrobiodiversity
Dynamic in terms of changing priorities and needs of different people at different times	Static resulting from the pre-selection of priority species for improvement and conservation
Builds on people's strength, e.g. local knowledge for species selection and <i>in situ</i> conservation practices	Draws heavily on external knowledge and technologies for species improvement, including <i>ex situ</i> conservation practices
Macro-micro linkages, e.g. policy lobbying for Farmers' Rights to secure local access to genetic diversity	Tends to focus more on either natural resource level or policy level
Sustainability related to improved local capacities and empowerment of local people	Sustainability questionable because little attention is given to building local capacities

What is the departure point of the livelihoods perspective? The people themselves must be the main entry point for analysing the management of agrobiodiversity. If people are not the starting point, it will be difficult to come up with research and development priorities that are in line with the views of the local people. The merits of using a livelihoods perspective to understand the management of agrobiodiversity are described in more detail below:

PEOPLE-CENTRED

The entry point to agrobiodiversity management is people themselves. A livelihoods perspective facilitates a more thorough analysis of different social groups, including the distribution of benefits and access to resources from a **gender** perspective. Adoption of a livelihoods perspective will, therefore, facilitate identification of the multiple functions and purposes agrobiodiversity plays. Be it for different social groups and different environments, it will place the food security of poor people at the centre of the discussion.

HOLISTIC

From a livelihoods perspective, agrobiodiversity management is not seen as a separate activity that aims to conserve individual species, varieties or breeds. Rather, it is seen to be part of the day-to-day livelihood strategies around the world. Farmers do not maintain agrobiodiversity for the mere purpose of conservation. They apply a more integrated and holistic perspective to the use of species, varieties and breeds within their agricultural system. Agrobiodiversity is managed by farmers, for a wide range of reasons, and the success of conservation and improvement depends on the benefits people obtain.

¹ This fact sheet is based on the Sustainable Livelihoods Guidance Sheets from DFID, which can be accessed at www.livelihoods.org/info/info_guidanceSheets.html.



DYNAMIC

The use and management of agrobiodiversity is dynamic. Different components of agrobiodiversity are used by different people at various times and places, thus contributing to the development of complex livelihood strategies. Understanding how this use differs according to wealth, gender, age and ecological situation is essential to the understanding of agrobiodiversity's contribution to the livelihoods of different members in a community.

BUILDING ON STRENGTH AND ASSETS

If we take a livelihoods perspective it means we focus on livelihoods' existing strengths and assets, rather than on weaknesses and needs. From a livelihoods perspective, local knowledge and genetic resources are considered important assets. The knowledge held by farmers, for example, on their local plant and livestock species is a crucial component of species selection, conservation and improvement. Local plants and animals form part of a complex agro-ecosystem; farmers have built up a significant stock of knowledge on how these have to be managed under specific conditions.

MACRO-MICRO LINKAGES

Research and development activities tend to focus on either the macro or micro level. Applying a livelihoods perspective, it is important to link these levels for the successful management of agrobiodiversity. As we have seen in Module 1.1, many factors related to the loss of agrobiodiversity are linked to the macro level. Factors

contributing to the loss of agrobiodiversity include globalization of markets, funding strategies and the setting of priorities for research and development and access rights to genetic resources. On the other hand, the micro level is relevant to the consideration of agrobiodiversity as a valuable asset managed by a variety of people.

SUSTAINABILITY

The livelihoods approach emphasizes the importance of building on existing strengths and capacities. Key aspects are the empowerment of local people through information sharing and capacity building. In addition, the negotiation of Farmers' Rights and the equitable sharing of these benefits will contribute to livelihood sustainability (see Module 4).

Overall, the livelihoods perspective is concerned first and foremost with people. An accurate and realistic understanding is sought of people's strengths (assets or capital endowments) and how they may convert these into positive livelihood outcomes. The approach is based on the belief that people require a range of assets to achieve positive livelihood outcomes. No single category of assets, on its own, is sufficient to yield the many and varied livelihood outcomes that people seek. This is particularly true for the poor whose access, to any given category of assets, tends to be very limited. They have to seek ways of nurturing and combining the assets they have in innovative ways to ensure survival.

[Box 1] BEAN FARMING IN KENYA

Bean farming among the Kikuyu in Kenya provides a case in point. Available evidence indicates that, in pre-colonial times, a large variety of different bean species was cultivated in the Kenyan uplands. Beans, moreover, constituted a critical element of the diet of rural people as they furnish a rich source of protein to complement maize consumption and other available foodstuffs. In particular, the varieties of indigenous black beans named *njahe* in Kikuyu (*Lablab niger* and *Dolichos lablab* by their scientific names) were cultivated by women, and made up a good proportion of the harvest. *Njahe* had, moreover, special meaning for women, as the bean was considered to increase fertility, and to have curative virtues for post-partum mothers. It was, at the same time, a quasi-sacred food as the beans grew on the Ol Donyo Sabuk mountain, which is the second most important dwelling place of the Creator in Kikuyu religion, and was widely used in divination ceremonies. Beans in Kenya are predominantly a small landholder crop, largely farmed by women to feed their families. Traditionally, women tended to grow multiple varieties on the same field – and saved multiple seed stocks – as a hedge against disease and unpredictable climate. Furthermore, local dishes, such as *githeri* and *irio*, were based on multiple types of beans.

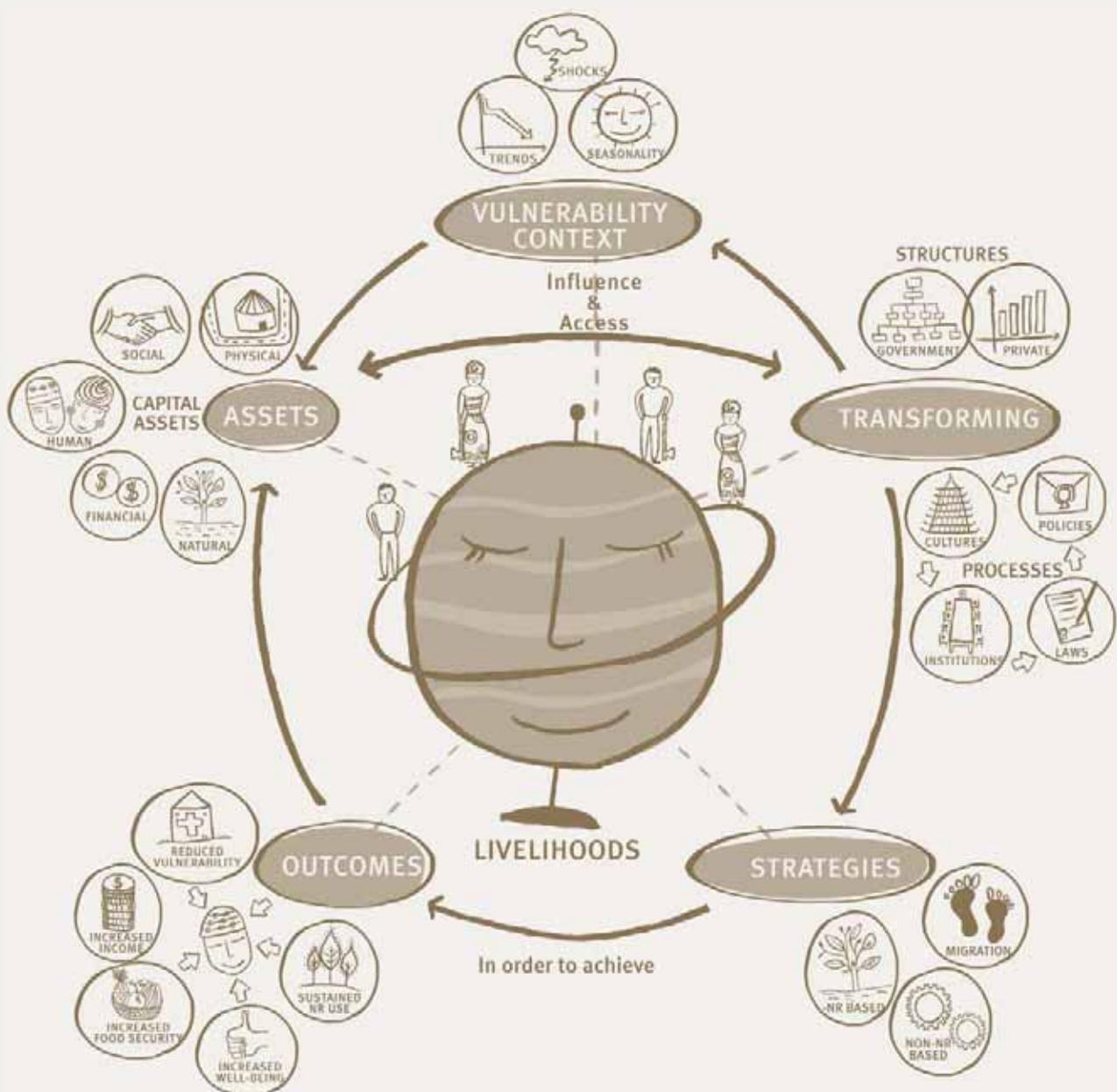
Source: IK Notes



The example from Kenya shows the complexity behind a simple activity such as bean growing. Women farmers try to achieve a range of different livelihood outcomes, by using a diversity of bean varieties. In this case, their bean varieties form a central asset in their livelihoods strategy. The land they use to plant these crops is another important asset, and so is their labour, which they use to manage these crops. The livelihood outcomes they achieve include food security, health issues, pest management strategies.

The livelihoods approach furthermore emphasizes the relevance of the wider context in which people's livelihoods and their assets are embedded. This is very important to bear in mind, when agrobiodiversity and its potential contribution to people's livelihoods are discussed, people's vulnerability context, existing policies, institutions and processes need to be considered as well. We must consider the different livelihood strategies and outcomes that strongly determine how these assets can be used. The figure below is a schematic view of the sustainable livelihoods framework. The terms used in this framework will now be explained and presented in more detail.

[Figure 1] Sustainable livelihoods framework²



²This diagram is based on the Natural Resources Institute (NRI) Livelihoods fact sheet



The sustainable livelihoods framework presents the main factors affecting people's livelihoods, and typical relationships between these. The framework can be used in both planning new development activities and assessing the contribution to livelihood sustainability made by existing activities. In particular the framework:

- ⑥ provides a checklist of important issues and sketches out the way these **link** to each other;
- ⑥ draws attention to core influences and processes; and
- ⑥ emphasizes the multiple interactions between the various factors affecting livelihoods.

The framework does not work in a linear manner and does not try to present a model of reality. Its aim is to help stakeholders, with their different perspectives, engage in structured and coherent debate of the many factors affecting livelihoods, their relative importance and the way in which they interact. In our case, the framework should help exploring linkages between agrobiodiversity, gender and local knowledge and to better understand their potential in contributing to improved livelihoods.

Livelihoods are shaped by a multitude of different forces and factors, which are themselves constantly changing. People-centred analysis is most likely to begin with the simultaneous investigation of people's assets, their objectives (the *livelihoods outcomes* they seek) and the *livelihood strategies* they adopt to achieve these objectives. Following, the terms used in the framework and their relevance will be explained.

ASSETS are what people use to gain a living. They are the core aspects of a livelihood. Assets can be classified into five types – *human, social, natural, physical and financial*. People will access assets in different ways, e.g. through private ownership or as customary rights for groups.

Human capital is the part of human resources that is determined by people's qualities, e.g. personalities, attitudes, aptitudes, skills, knowledge, also their physical, mental and spiritual health. Human capital is the most important, not only for its intrinsic value, but because other capital assets cannot be used without it. Like social capital, described below, it can be difficult to define and measure. For instance, the case study on bean farming in Kenya (see Box 1) shows that women's knowledge, concerning the different local bean varieties, is an important asset for household food security as well as for female health.



Social capital is that part of human resources determined by the relationships people have with others. These relationships may be between family members, friends, workers, communities and organizations. They can be defined by their purpose and qualities such as trust, closeness, strength, flexibility. Social capital is important because of its intrinsic value. This is because it increases well-being, facilitates the generation of other capital and serves to generate the framework of society in general; with its cultural, religious, political and other norms of behaviour. With agrobiodiversity, we could think of the linkages between generations that facilitate the flow of information and knowledge. Or, we could think of seed exchange strategies between households, as part of a safety-net, in case of crop losses, etc.



Natural capital is made up of the natural resources used by people: air, land, soil, minerals, water, plant and animal life. They provide goods and services, either without people's influence, (forest wildlife, soil stabilization) or with their active intervention (farm crops, tree plantations). Natural capital can be measured in terms of quantity and quality (acreage, head of cattle, diversity and fertility). Natural capital is important for its general environmental benefits, and because it is the essential basis of many rural economies, (in providing food, building material, fodder). This is probably the easiest asset to understand, because agrobiodiversity, as such, forms a natural capital.



Physical capital is derived from the resources created by people. These include buildings, roads, transport, drinking-water, electricity, communication systems and equipment and machinery that produce more capital. Physical capital is made up of producer goods and services and consumer goods that are available for people to use. Physical capital is important, because it directly meets the needs of people through provision of access to other capital via transport or infrastructure. A relevant example related to the management of agrobiodiversity is the availability of storage facilities to keep seeds from one cropping cycle to the next.

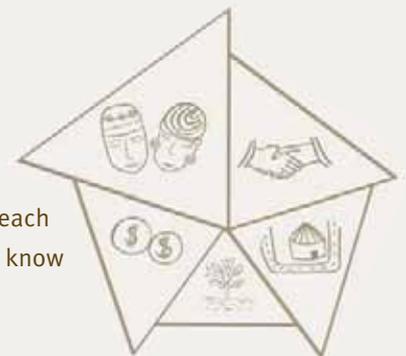


Financial capital is a specific and important part of created resources. It comprises the finance available to people in the form of wages, savings, supplies of credit, remittances or pensions. It is often, by definition, poor people's most limiting asset. Although it may be the most important, as it can be used to purchase other types of capital, and can have an influence, good and bad, over other people. With regard to agrobiodiversity, financial assets may be important in that they prevent people from having to eat, or sell all their crops and seeds, or slaughter all their livestock.



BALANCE

The relative amount of assets possessed, or available to an individual, will vary depending on gender, location and other factors. The pentagon diagram representing assets can be redrawn, as shown in the example, to visualize the relative amount of each capital that is available to be accessed by an individual or community. It is important to know how this access and availability varies over time.



THE VULNERABILITY CONTEXT

The extent, to which people's assets can be built up, balanced; and how they contribute towards their livelihoods, depends on a range of external factors that change people's abilities to gain a living. Some of these factors will be beyond their control and may exert a negative influence. This aspect of livelihoods can be called the **vulnerability context**. This context must be understood, as far as possible, so as to design ways to mitigate the effects. There are three main types of change:



 **Trends:** These are gradual and are relatively predictable. Changes may relate to population, resources, economy, governance or technology. They can have a positive effect, although here we focus on negative effects. Examples are:

- ⦿ **Gradual degradation of natural resource quality.** The processes of desertification can lead to the loss of valuable plant and animal species.
- ⦿ **Excessive population increase because of migration,** which can lead to increased pressure on local resources resulting in unsustainable use and depletion.
- ⦿ **Inappropriate developments in technology** may displace local crop or livestock species or varieties.
- ⦿ **Undesired changes in political representation** might lead to political systems that exploit local natural resources.
- ⦿ **General economic stagnation** may lead to increased poverty, and result in the unsustainable management of local resources. This could, for instance, lead to the depletion of certain plant genetic resources.

 **Shocks** - Some external changes can be sudden and unpredictable. They may be related to health, nature, economy, or relations. Generally, they are far more problematic. Examples are:

- ⦿ **Climatic extremes** (drought, flood, earthquake), which could wipe out existing plant or animal resources.
- ⦿ **Civil disturbance** (revolution) could affect social structures. May result in the interruption of knowledge transfers for the management of animal or plant genetic resources.
- ⦿ **Outbreaks of disease,** e.g. HIV/AIDS could lead to changes in labour resources for agricultural activities. Certain crops might be abandoned along with the related knowledge of their management.

 **Seasonality:** Many changes are determined by the seasonal effects of crop production, access and living conditions. Although short-term, enduring for a season, they can be critical for poor people who have a subsistence livelihood. Examples are changes in:

- ⦿ **Prices** – could make production of certain products, and their related plant resources, too expensive and therefore unattractive. In turn, this may lead to their abandonment.
- ⦿ **Employment opportunities** – could change the availability of labor resources, for agricultural production in important seasons, leading to the loss of some agricultural practices and crops.



POLICIES, INSTITUTIONS AND PROCESSES (PIPs)

In addition to the factors that determine the *vulnerability context*, there is a range of *policies, institutions and processes* designed to influence people and the way they make a living. If designed well, these influences on society should be positive. However, depending on their original purpose, some people may be affected negatively.

Policies, institutions and processes, within the livelihoods framework, are the institutions, organizations, policies and legislation that shape livelihoods. Their importance cannot be over-



emphasized. They operate at all levels, from the household to the international arena. They function in all spheres, from the most private to the most public. They effectively determine:

- ⑥ **Access** to various types of capital, to livelihood strategies, and to decision-making bodies and sources of influence.
- ⑥ **Terms of exchange** between different types of capital; and
- ⑥ **Returns**, economic and otherwise, to any given livelihood strategy.

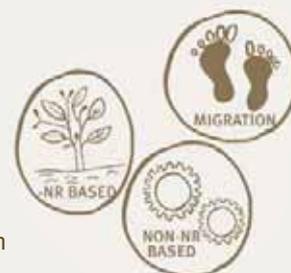
In addition, they directly impact people's feelings of inclusion and wellbeing. Because culture is included in this area, PIPs account for other unexplained differences in the way things are done in different societies.

Examples of PIPs include:

- ⑥ **Policies** – on plant genetic resource use and biodiversity management.
- ⑥ **Legislation** – on patenting of plant genetic resources, property rights.
- ⑥ **Taxes, incentives, etc.** – incentives for growing cash crops or improved varieties that could replace local varieties.
- ⑥ **Institutions** – extension or research institutions that promote external innovations, and represent the interest of prosperous farmers who depend less on agrobiodiversity.
- ⑥ **Cultures** – concerning gender relationships, which may affect access and decision-making on crop and livestock selection and management.

LIVELIHOOD STRATEGIES

To sum up the features of livelihoods: people use *assets* to make a living. They cope as best they can with factors beyond their control that make their livelihoods *vulnerable*. They are affected by existing *policies, institutions and processes*, which they can partly influence themselves. There are three main types of strategies, which can be combined in multiple ways:



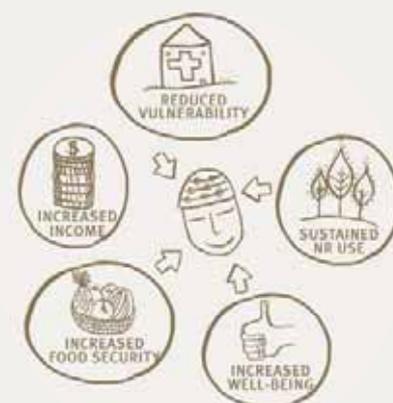
- ⑥ **Natural resource based:** The majority of rural dwellers will plan on ways to make a living, based directly on the natural resources around them e.g. subsistence farmers, fishers, hunter/gatherers, plantation managers.
- ⑥ **Non-natural resource based:** Some rural dwellers, and most urban-based people, will opt to make a living based on created resources ranging from begging, service jobs, drivers, government jobs to shop-keeping.
- ⑥ **Migration:** If there are no appropriate opportunities for people to make a living, then a third option may be to migrate away from the area to a place where they can make a living. Examples vary from nomadic tribes to the expatriate academic. This migration can be seasonal or permanent.

Recent studies have drawn attention to the enormous diversity of livelihood strategies at every level – within geographic areas, across sectors, within households and over time. This is not a question of people moving from one form of employment or 'own-account' activity (farming, fishing), to another. Rather it is a dynamic process in which people combine their activities to meet their various needs at different times. A common manifestation of this, at the household level, is 'straddling', whereby different members of the household live and work in different places temporarily, e.g. seasonal migration, or permanently.



LIVELIHOOD OUTCOMES

The aim of these livelihood strategies is to meet people's needs, as efficiently and effectively as possible. These needs can be expressed as desired *livelihood outcomes* of a chosen livelihood strategy. When considering 'poor' people, there are five basic outcomes that will usually be most important to them. The priority given to each will depend on the individual's perception of his or her circumstances. They are as follows:



- ⑥ **Increased food security:** A basic requirement for any livelihood is to achieve food security. It is not enough to have adequate food for part of the year and insufficient in another. There must be a secure supply all year round.
- ⑥ **Increased well-being:** An *increased* feeling of physical, mental and spiritual well-being is an important and basic need. To a certain extent, it is dependant on other needs being met.
- ⑥ **Reduced vulnerability:** As far as possible, a chosen livelihood should help *reduce* the effect of the various factors that make life more vulnerable, e.g. drought, conflict.
- ⑥ **Increased income:** Clearly, most poor people will want their income *increased* to an adequate level, and to have the maximum flexibility in meeting their needs.
- ⑥ **Sustainable natural resource use:** Since many livelihoods of the rural poor depend on access to natural resources, it is important that their strategies lead to *more sustainable* use of these resources.

Key points

- The sustainable livelihoods framework presents the main factors affecting people's livelihoods and the typical relationships that exist between these features.
- The entry point to agrobiodiversity management is people themselves.
- Agrobiodiversity management is not a separate activity that aims to conserve individual species, varieties or breeds. Rather, it is seen as part of the day-to-day livelihood strategies of people throughout the world.
- Taking a livelihoods perspective means focusing on existing strengths and livelihoods assets, rather than on weaknesses and needs.
- It is important to link macro and micro levels for the successful management of agrobiodiversity.
- The use and management of agrobiodiversity is dynamic. Different components of agrobiodiversity are used by different people at different times and in different places, contributing to the development of complex livelihood strategies.
- The livelihood approach emphasizes the relevance of the wider context in which people's livelihoods and their assets are embedded.
- The empowerment of local people, through information sharing and capacity building, are key aspects of a livelihoods approach.



OBJECTIVE: Fact sheet 2.1 aims to introduce the livelihoods framework and to raise participants' awareness of the different assets poor people use to build their livelihoods. Furthermore, it emphasises the relevance of the vulnerability context and the linkages between the vulnerability context and the livelihoods assets.

LEARNING GOALS: The participants understand the complexity of people's livelihoods. They are able to use the livelihoods framework, as an analysis tool, to identify people's strengths and assets. Participants should be able to recognize local knowledge and agrobiodiversity as key assets of poor people's livelihoods.

PROCESS

- 1) Depending on the available time, and interest/background of the participants the trainer, together with the participants, could either analyse the difference between the livelihoods and natural resource management approach in more detail (Step 1), or go directly to Step 2.

- 1) Forming two groups, the participants should explore for themselves the meaning of a *livelihoods approach*, compared to a *natural resource management approach*. This exercise will encourage participants to reflect on their own understanding of the concepts, prior to the introduction of the livelihoods framework.

- 2) The facilitator provides a short introduction of the livelihoods perspective and the livelihoods framework. Depending on the audience, s/he could either use a Power Point presentation for this purpose, or develop the framework on a large board in front of the participants. The second option is slower, and may be more suitable for participants who do not know the livelihoods framework at all. During this presentation, emphasis should be given to the relevance of the livelihoods framework for understanding the linkages between agrobiodiversity, gender and local knowledge. Afterwards a short feed-back session for clarifications should follow.

- 3) After the conceptual presentation, the trainer could introduce the Mali case study (Module 5) to help participants apply the framework to a real situation. Depending on the time, and the participants' mood, the case study could either be read in small groups, or presented by the trainer. This would lead into an exercise, which is described below (see Exercise Sheet 2.1)

OUTCOME: Participants understand the main aspects and foci of the livelihood framework and are able to apply it to the management of agrobiodiversity.

TIME ALLOCATION: Minimum 4 hours.

2.1 EXERCISE SHEET

The participants are invited to break into small groups of 4–5 people.

GROUP WORK TASK:

Using the sustainable livelihoods framework as a guide, ‘map’ out:

- 1) What are the different **assets** described in the case study? What degree of control do different people in the village have over them?
- 2) There factors outside the immediate control of the village people, which could make them **vulnerable** (e.g. trends, shocks, seasons)?
- 3) What **policies**, **institutions** and **processes** affect the current and future management of their assets?
- 4) Can you identify different **livelihoods strategies** in the case study? What do people want to achieve with these strategies?

After this exercise is completed, the groups are invited to present their findings, and to discuss differences and similarities between them.

WHAT ARE THE LINKAGES BETWEEN AGROBIODIVERSITY, LOCAL KNOWLEDGE AND GENDER FROM A LIVELIHOODS PERSPECTIVE?

In fact sheet 2.1, we learned that *Agrobiodiversity* can be considered an important natural capital, or asset, for poor people's livelihoods, having the potential of contributing to *food security* and income generation. Human capital – such as *local knowledge* – is considered to be a livelihood asset that can contribute to different livelihood strategies. *Gender roles and relations* form part of the policies, institutions and processes influencing the probability that people will use their assets to achieve their desired livelihood outcomes.

The challenge, faced by us and the research and development community, is to understand the linkages and complexities between these different livelihood components. Only then can we achieve the sustainable management of agrobiodiversity and can we contribute to the improvement of livelihoods, economic development as well as the maintenance of genetic diversity and associated local knowledge.

There is sufficient evidence, from past and current experiences, that these linkages and the way they function, result in positive or negative livelihood outcomes.

In the following section, we explore the potential relationships and linkages in more detail. This section illustrates the underlying concepts of these linkages. The applied considerations are presented in Module 3 and 4.

Relationships between assets

Assets combine in a multitude of different ways to generate positive livelihood outcomes. Two types of relationships are particularly important:

- ⑥ *Sequencing*: Do those who escape poverty start with a particular combination of assets? Is access to one type of asset, or a recognizable subset of assets, either necessary or sufficient to escape poverty?

This is an important question to consider, in terms of the conservation efforts employed to maintain agrobiodiversity. Is it enough to have access to a wide range of diversity? Or, do people need other types of assets to make effective use of agrobiodiversity? The short case study from Cameroon and Uganda (see Box 2) shows that the availability of a market structure is crucial to the successful selling of products. Usually, the livelihoods of poor people are quite complex and draw on very different resources for their survival. Therefore, it seems unlikely that only one type of asset will be sufficient to make a living. Moreover, increasing evidence suggests that access to information, knowledge and market infrastructure are important factors governing the successful management of agrobiodiversity. In Module 4 we will discuss in more detail, the relevance of local knowledge to the sustainable management of agrobiodiversity.

- ⑥ *Substitution*: Can one type of capital be substituted for others? For example, can increased human capital compensate for a lack of financial capital in any given circumstance?



Existing research and development results show that poor people especially depend on natural capital. The possibility of their replacing the loss of diversity with other types of assets is extremely limited. However, this question cannot be answered in general terms and depends very much on individual or case specific conditions. For example, if there are alternative employment possibilities outside the agricultural sector, people having the relevant skills could move away from agriculture to other sectors.

Relationships with other framework components

Relationships within the livelihood framework are highly complex. Understanding them is a major challenge, and a core step in the process of livelihoods analysis, leading to actions to eliminate poverty.

 **Assets and the vulnerability context:** assets are both destroyed and created, as a result of the trends, shocks and seasonality of the *vulnerability context* (see Figure 1). For example, the sudden disappearance of formal seed distribution systems in a given area could cause people to return to local crop varieties and seed systems, which would enhance diversity. Or a natural or human-induced disaster could lead to the loss of local seeds in a region.

 **Assets and policies, institutions and processes (PIPs):** Policies, institutions and processes have a profound influence on access to assets. They:

- ⦿ **Create assets** – government policy to invest in basic infrastructure, physical capital, or technology generation, yielding human capital, or the existence of local institutions that reinforce social capital. For instance, these could be important for the maintenance of local seed systems or livestock management practices.
- ⦿ **Determine access** – ownership rights, institutions regulating access to common resources. This is extremely relevant with respect to agrobiodiversity for intellectual property rights, patents, etc.
- ⦿ **Influence rates of asset accumulation** – policies affecting returns to different livelihood strategies, taxation, etc. With respect to agrobiodiversity management one could think about incentive structures to enhance various systems.

However, this is not a simple one-way relationship. Individuals and groups themselves influence policies, institutions and processes. Generally speaking, the greater people's asset endowment, the more influence they can exert. Hence, one way to achieve empowerment may be to support people in building up their assets.

 **Assets and livelihood strategies:** People with more assets tend to have a greater range of options. They also have the ability to switch between multiple strategies to secure their livelihoods. When looking at available assets and livelihood strategies, there is an important gender dimension. As men and women have different livelihood strategies, they manage agrobiodiversity in different ways.

 **Assets and livelihood outcomes:** Poverty analyses have shown that people's ability to escape from poverty is critically dependent upon their access to assets. Different assets are required to achieve different livelihood outcomes. For example, some people may consider a minimum level of social capital essential to the achievement of a sense of wellbeing. Or, in a remote rural area, people may feel they require a certain level of access to natural capital to provide security.



The following short example illustrates most of the issues mentioned above. It shows how a natural asset (indigenous vegetables) is used to contribute to various desired livelihood outcomes. It also illustrates that the existence of certain infrastructure (markets) is required to successfully carry out a particular livelihood strategy (in this case the marketing of these vegetables). Furthermore, it shows that trends, such as the increasing production of exotic vegetables, do not necessarily negatively affect this livelihood strategy.

[Box 2] INDIGENOUS VEGETABLES IN CAMEROON AND UGANDA

In Cameroon and Uganda indigenous vegetables play an important role, in both income generation and subsistence production. Indigenous vegetables offer a significant opportunity for the poorest people to earn a living, as producers and/or traders, without requiring a large capital investment. These vegetables are an important commodity in poor households. This is because their prices are relatively affordable, compared with other food items. Arguably, the indigenous vegetable market is one of the few opportunities for poor, unemployed women to earn a living. Despite the growth in exotic vegetable production, indigenous vegetables remain popular, especially in rural areas, where they are often considered to be more tasty and nutritious than exotic vegetables. Indigenous vegetables often have a ceremonial role, and are an essential ingredient in traditional dishes.

Source: Schippers

Linkages between policies, institutions and processes within the framework

The influence of PIPs extends throughout the framework:

- ⑥ There is direct feedback to the *vulnerability context*. PIPs affect trends both directly, policies for agricultural research and technology development/economic trends, and indirectly, health policy/population trends. They can help cushion the impact of external shocks, policy on drought relief, food aid, etc. Other types of PIPs are also important, for example, well-functioning markets can help reduce the effects of seasonality by facilitating inter-area trade. In turn this could be an incentive for local farmers to maintain certain crop varieties, which would otherwise be replaced by marketable crops.
- ⑥ PIPs can restrict people's choice of *livelihood strategies*. Common examples are policies and regulations that affect the attractiveness of particular livelihood choices through their impact upon expected returns. For instance, establishment of quality norms of fruit and vegetables can cause the production of local varieties to be less attractive, as these may be less uniform than improved varieties.
- ⑥ There may also be a direct impact on *livelihood outcomes*. Responsive political structures that implement pro-poor policies, including the extension of social services into the areas in which the poor live, can significantly increase people's sense of well-being. They can promote awareness of rights and a sense of self-control. They can also help reduce vulnerability, through the provision of social safety nets. Relationships between various policies and the sustainability of resource use are complex and sometimes significant.



Key points

- Assets combine in a multitude of different ways to generate positive livelihood outcomes. Two types of relationship are particularly important: sequencing and substitution.
- Livelihood assets are both destroyed and created as a result of the trends, shocks and seasonality of the vulnerability context.
- Policies, institutions and processes have a profound influence on access to assets.
- Those with more assets tend to have a greater range of options, and an ability to switch between multiple strategies to secure their livelihoods.
- Men and women have different livelihood strategies, and therefore manage agrobiodiversity in different ways.
- Poverty analyses have shown that people's ability to escape from poverty is critically dependent upon their access to assets. Different assets are required to achieve different livelihood outcomes.



OBJECTIVE: Fact sheet 2.2 aims to introduce the linkages between different livelihood components. It shows the need to consider agrobiodiversity within a complex framework in order to understand the linkages between agrobiodiversity, gender and local knowledge.

LEARNING GOALS: Participants are aware of the relevance of different types of linkages and are able to use the livelihoods framework as an analysis tool.

PROCESS

- 1) The starting point for this session could be a brief presentation by the trainer. The content of the session is theoretical and may require a guided introduction.
 - (a) If time is limited, the trainer could refer to the Mali case study to explore the issues presented in fact sheet 2.2.
 - (b) If sufficient time is available, the participants could form small groups and develop country scenarios of situations, in which people base their livelihoods on the management of agrobiodiversity. It is important to include local knowledge and gender roles and relations as part of these scenarios. These scenarios could then be used to develop the conceptual issues presented in fact sheet 2.2.
- 2) Exercise 2.2 focuses on the impact of policies, institutions and processes on different components within the livelihood framework. Depending on the time allocation, the participants could either work on the Mali case study, or on their own country scenarios to develop the exercise (see Exercise Sheet 2.2).
- 3) The results of the working groups would be brought back to the plenary. They would then be presented in the form of a podium discussion. It is important to suggest different presentation and feedback mechanisms. This makes the discussion more lively and interesting.

OUTPUT: The participants have explored the utility of the livelihood framework. They now understand the complexity of agrobiodiversity management and the linkages to other livelihood components.

TIME ALLOCATION: Minimum time allocation is 3 hours. If country scenarios are to be developed and used for the exercise, then the minimum is 5 hours.

2.2 EXERCISE SHEET

GROUP WORK TASK

- 1) Please take some time, as a group, to read through the relevant parts of fact sheet 2.1 and 2.2 on policies, institutions and processes.
- 2) Break up into three groups. Identify examples of policies, institutions and processes, within the context of agrobiodiversity management, that impact upon (Group 1) the vulnerability context, (Group 2) livelihood assets and (Group 3) livelihood strategies and outcomes.
- 3) Use the scenario, developed in this session, as a starting point for your discussion. Please feel free to go beyond this scenario and draw on your own experiences within your work context.

[TO VIEW THE KEY READINGS, CLICK ON THE TITLES]

-  Blench, R. 1997. Neglected species, livelihoods and biodiversity in difficult areas: How should the public sector respond? London, ODI Natural Resource Perspective Paper 23.
-  Ghotge, N. & Ramdas, S. 2003. Livestock and livelihoods (Paper 24). *In* Conservation and sustainable use of agricultural biodiversity. Published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE.
-  Anderson, S. 2003. Sustaining livelihoods through animal genetic resources conservation. *In* Conservation and sustainable use of agricultural biodiversity. Published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE.

REFERENCES - MODULE 2

- Anderson, S. 2003. Sustaining livelihoods through animal genetic resources conservation. *In* Conservation and sustainable use of agricultural biodiversity. Published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE.
- Blench, R. 1997. Neglected Species, Livelihoods and Biodiversity in difficult areas: How should the public sector respond? London, ODI Natural Resource Perspective Paper 23.
- Ghotge, N. & Ramdas, S. 2003. Livestock and livelihoods (Paper 24). *In* Conservation and sustainable use of agricultural biodiversity, published by CIP-UPWARD in partnership with GTZ, IDRC, IPGRI and SEARICE.
- IK Notes, No 23. August 2000. Seeds of life: Women and agricultural biodiversity in Africa.
- Livelihood fact sheet, United Kingdom, Natural Resources Institute (NRI), University of Greenwich.
- Schippers, R. 1999. Indigenous vegetable becoming more popular in Central Africa, ph Action News, No. 1, IITA.

Web sites

DFID Web site on Sustainable Livelihoods: www.livelihoods.org/info/info_guidancesheets.html