A brochure series with accompanying materials on development cooperation for the UN Decade of Education for Sustainable Development

SUSTAINABILITY HAS MANY FACES

Development Needs Diversity

People, natural resources and international cooperation

Contributions from the countries of the south

gtz

Federal Ministry
for Economic Cooperation
and Development

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People, natural resources and international cooperation

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The following brochures have been published in the series "Sustainability Has Many Faces":

Development Needs Diversity
People, natural resources and international cooperation
Contributions from the countries of the south
Editors: Stefanie Eissing and Dr. Thora Amend
Languages: German, English, French, Spanish

Nature Conservation Is Fun
Protected area management and environmental communication
Contributions from Panama
Editors: Dr. Thora Amend and Stefanie Eissing
Languages: German, Spanish

Use It or Lose It
Hunter tourism and game breeding for conservation and development
Contributions from Benin
Editors: Monika Dittrich and Stefanie Eissing
Languages: German, French

Land Rights Are Human Rights
Win-win strategies for sustainable nature conservation
Contributions from South Africa
Editors: Dr. Thora Amend, Petra Ruth, Stefanie Eissing and Dr. Stephan Amend
Languages: German, English

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Federal Ministry
for Economic Cooperation
and Development

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Sustainability Has Many Faces

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Contents

Foreword to the series

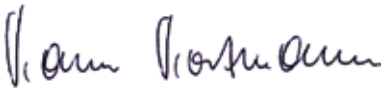
In 1992 the yawning gap between rich and poor, combined with an awareness of the limits to natural resources and the growing threat posed to the ecological foundations of economic and social development, roused the heads of state and government of 178 nations to action: at the United Nations Conference on Environment and Development in Rio de Janeiro, they signed the Convention on Biological Diversity. This binding agreement under international law sees the conservation of biological diversity, together with the sustainable use of its components and the fair and equitable sharing of the benefits arising out of this utilisation, as key elements for future action. Guided by the vision of sustainable development, people in many countries of the world have since then been looking for ways to manage the natural resources available to them soundly and responsibly. Preserving biological diversity is key to this, because it means keeping development options open both for the people alive today, and for future generations.

A further agreement in international law is becoming more and more important in view of the changing global climate. The United Nations Framework Convention on Climate Change, also adopted in Rio in 1992, has by now been signed by almost all the states of the world. The impacts of global warming are threatening people and nature everywhere, without regard for national boundaries. While at first the industrialised nations in particular were hesitant to take resolute action to curb greenhouse gas emissions, now strategies to effectively counter climate change are on the policy agenda of practically every country. It is now recognised around the world that climate change threatens the economic capacity and wealth of rich countries while at the same time jeopardising the development potential of poor countries and the very survival of their populations.

In the year 2000, the United Nations adopted its Millennium Development Goals, undertaking a commitment to halve poverty worldwide, improve environmental protection and ensure more balanced development within the following 15 years. Within the framework of the Agenda 2015, Germany set out its contribution to assisting the developing countries to attain the MDGs. Today, development cooperation is less and less about finding purely technical solutions. It is rather about supporting and accompanying people and organisations in difficult economic and social change processes.

Young people are often keenly aware of what is going on in other countries. Many have a pronounced sense of justice, and are eager to understand the complex interrelationships between our actions at home and what happens elsewhere. Moreover, they are committed to identifying fundamental and sustainable solutions. The United Nations has underlined how important education is for just and peaceful global development, and has declared the years 2005–2014 the Decade of Education for Sustainable Development.

GTZ's "Sustainability Has Many Faces" series is designed as a contribution to this Decade. The brochures in the series show how people in countries with which we are less familiar find ways of improving their livelihoods, while at the same time learning to put less pressure on their environment. The examples presented here effectively and clearly illustrate the different facets or "faces" of sustainability. They encourage us to become more aware of the differences and commonalities between rich and poor countries. And they encourage us to practise global learning by discussing how solutions found in "the South" might also harbour new and stimulating ideas for us in "the North".



Karin Kortmann

Parliamentary State Secretary in the German Federal Ministry for Economic Cooperation and Development (BMZ)

Foreword to the brochure "Development Needs Diversity"

How can we prevent the extinction of gorillas in the Congolese rainforest?
Can wild vegetables improve the diet of people living in China?
How and why do smallholders in Ethiopia benefit from the cultivation of teff, their traditional grain crop, in Holland?

Such questions are typically asked when cooperating with developing countries in the area of biodiversity. To answer them, an innovative approach is called for. The topics raised in these questions stand for the three equal-ranking objectives of the UN Biodiversity Convention: conserving biological diversity, using it sustainably and sharing equitably the benefits arising from such use. The Convention on Biological Diversity, CBD for short, was agreed at the Rio Earth Summit in 1992, and so far it has been signed by 187 nations. It is a binding agreement in international law, and provides the foundation for promoting sustainable development.

Biological diversity is of vital importance to us humans in many respects. All economic and social development depends on it. We must conserve it, not least in the interests of future generations. Diversity is needed to allow plants, animals and habitats to adapt to changing climatic conditions. The convention places biological diversity under sovereign national control, but transboundary cooperation is needed for its conservation. No less than 70% of species identified so far are in the developing countries. The industrialised countries derive great benefit from them, and for this reason they have an obligation to help the developing countries to implement the agreement. They can best do this by providing their scientific and technical expertise on how to use this natural wealth sparingly.

On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), GTZ is helping partner countries to implement the CBD. It also provides advice to BMZ on negotiating with national governments and further developing the convention. Answers to ecological, legal and technical questions in the developing countries are not all that is required, however. Local stakeholder groups also need organisational support and training to enable them to represent their concerns on the conservation and use of natural resources in negotiations with national institutions. This area of consultancy is one of GTZ's particular strengths. One of the challenges is to encourage private-sector companies to step up their involvement in biodiversity conservation.

This brochure “Development Needs Diversity” clearly illustrates the inextricable link between the convention and development cooperation, and how GTZ can support the implementation of the agreement in developing countries. Numerous examples and back-up material highlight how various proposals have been developed in those countries on handling the natural environment with foresight.

The brochure also contributes to global learning in the spirit of the United Nations Decade of Education for Sustainable Development (2005–2014). If we are talking about shaping a liveable future for us all, we “in the North” cannot fail to be inspired by the links it outlines between conservation, sustainable use and equitable benefit-sharing of biodiversity “in the South”. I hope you enjoy reading the brochure!

Dr. Bernd Eisenblätter
Managing Director of Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ – German Technical Cooperation)

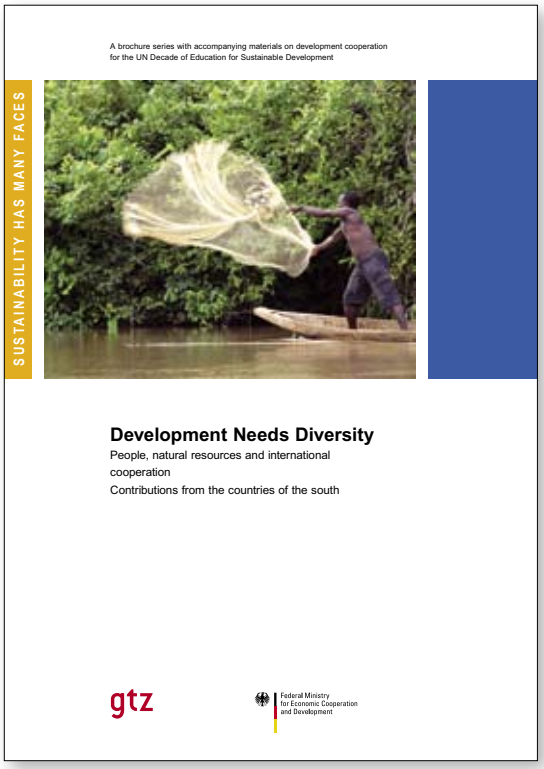
Part 1
Sustainability Has Many Faces

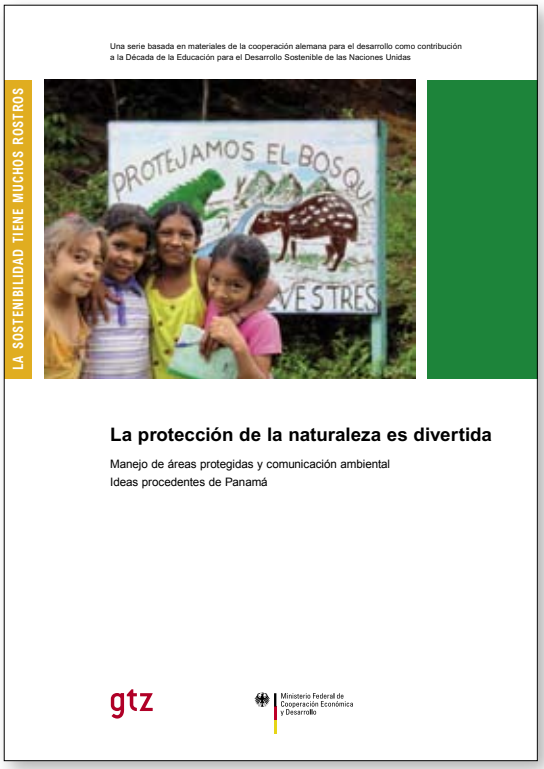
Introduction to the series

In recent years, and in particular in the wake of the second Earth Summit known as "Rio + 10" held in Johannesburg in 2002, the international community has been according ever greater importance to environmental education and awareness-raising in support of a more conscious, responsible management of natural resources. Over the course of the Decade of Education for Sustainable Development launched by the United Nations, stretching from 2005 through 2014, a multitude of activities will spotlight the goals set out at both Earth Summits. GTZ, too, has joined the drive: a wide range of environmental communication aspects has been integrated into on-site project work. In Germany, GTZ is broadening its efforts to inform the public on the issues of development cooperation, sustainable resource use and poverty reduction and to promote a more equitable distribution of the opportunities and burdens that result from conserving while simultaneously utilising the global natural heritage.

To this end, GTZ has compiled photo exhibitions with large-format images shot by renowned photographers. The exhibitions have travelled the world to great acclaim and have also been shown in Germany. Using these travelling exhibitions, the concept of speaking directly to people through pictures has been brought to the various partner countries and regions of German Development Cooperation such as China, Namibia and West Africa. Video clips have been produced that are being shown on 130 screens in the subway and regional train stations of all major German cities, while music depicting the relationships children and teenagers in other countries feel towards their natural environment have been recorded on CDs, movingly bringing their message home. With the help of on-site project staff, posters have been designed and printed that portray the contributions made by individual actions of German Development Cooperation towards achieving the international community's Millennium Development Goals. In addition to numerous and lively panel discussions and podium events, creative publications have also been launched, educational games initiated and topical documentary films made for German television.

The critical responses from teenagers and young adults to German Development Cooperation work are taken very seriously, for they are a touchstone of that work's aspiration to foster sustainable development in a manner embracing international nature conservation, resource use

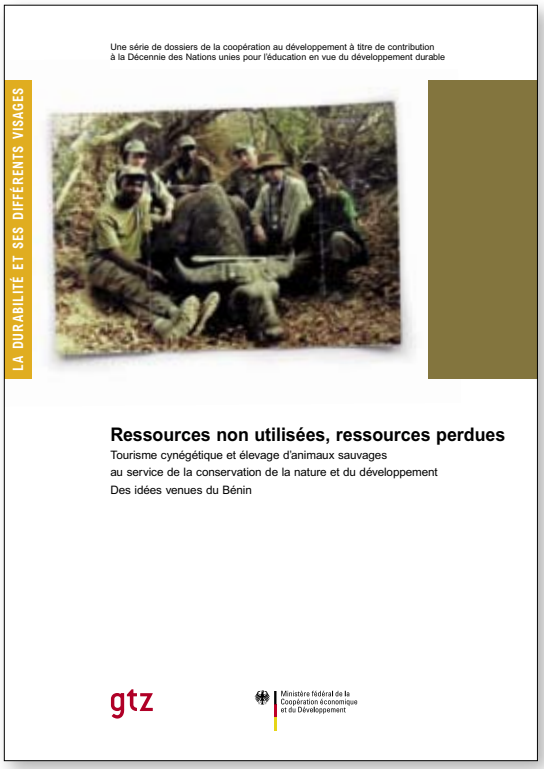


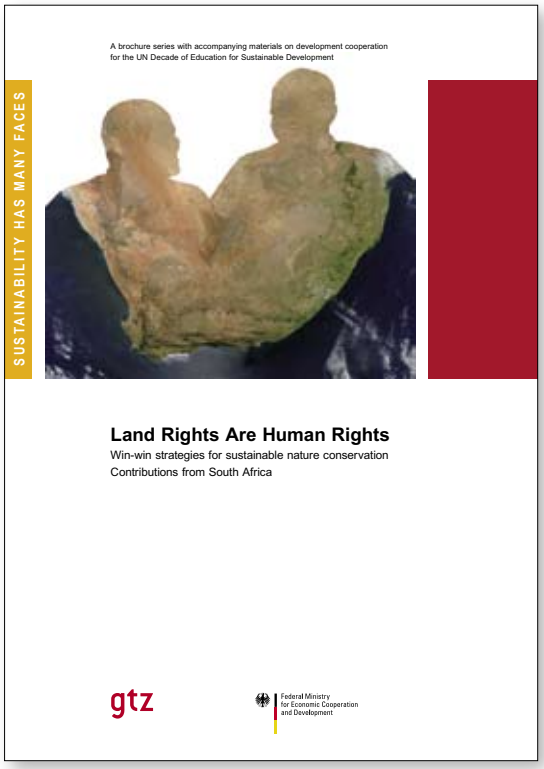


and common global responsibility:

- Many young people make good use of internship opportunities in respective GTZ departments; high school students conduct research for school projects; university students write critical degree or thesis papers, discussing the issues with GTZ project staff at home and abroad.
- Thanks to the fruitful partnership begun between Panama, Brazil and Germany with the initiative "A Day of Adventure in the Forest", fostering an experience-oriented approach to nature that concentrates on the senses, hundreds of dedicated people in Latin America received training and continuing education; and after presentation of their experiences in Durban, South Africa, at the World Congress of Protected Areas (also known as the World Parks Congress), the initiative was expanded to Africa and Asia, as well.
- All institutions based in the metropolitan area of Frankfurt am Main that dedicate efforts to conserving biodiversity (the Palmengarten botanical garden, the Senckenberg Museum, various university institutes, the Frankfurt Zoo, the Frankfurt Zoological Society, WWF Germany, the KfW Entwicklungsbank development bank and of course GTZ) have joined forces to form a competence network called "BioFrankfurt" that, with its defined vision of "Together for Diversity and Sustainability", works to promote the UN Decade of Education for Sustainable Development.
- The establishment, likewise supported by GTZ, of an international wilderness camp in Germany's Bavarian Forest National Park has been awarded special recognition by UNESCO for the Decade of Education for Sustainable Development. The camp is intended to give children and young people the chance to experience first hand the daily lives, actions and feelings of people in Mongolia, Viet Nam, Venezuela, Chile or Benin by living in huts, tents and other lodgings and shelters of traditional inhabitants of nature conservation areas. Partnerships are created between youth groups to strengthen their feeling of sharing a common responsibility for the world's resources.
- This brochure series "Sustainability Has Many Faces" as well was conceived for educational work with children, teenagers and young adults in and outside of schools. The series is intended to motivate people to gain inspiration from the countries of the south when searching for solutions that will lead to fair and equitable conservation of nature and resources for all – for present and future generations alike.

Four brochures have been published in the series





In a global learning context, the brochures of the series "Sustainability Has Many Faces" provide an opportunity to gain fresh perspectives. They encourage people to seek inspiration from the countries of the south when seeking ways to conserve nature and resources equitably and for all.

so far. This brochure, "Development Needs Diversity: People, natural resources and international cooperation", is the first to appear in the series. It provides a summary overview of the three objectives that the international community agreed to in 1992 at the Earth Summit in Rio and spelled out in the Convention on Biological Diversity. Various examples are provided to illustrate how German Development Cooperation is supporting implementation of these goals in the developing world.

The other three brochures in the series, listed below, each explore a specific topic within the context of international nature conservation and sustainable development on the basis of specific, exemplary projects:

- Nature Conservation is Fun: Protected area management and environmental communication – Contributions from Panama
- Use It or Lose It: Hunter tourism and game breeding for conservation and development – Contributions from Benin
- Land Rights Are Human Rights: Win-win strategies for sustainable nature conservation – Contributions from South Africa.

In a global learning context, these brochures provide an opportunity to gain fresh perspectives: many of the approaches introduced show how similar challenges could be met and managed at home, too. The ecological footprint that serves as our measuring stick for comparing the resource consumption of societies and nations is in many developing countries so small that the people there consume far fewer resources than their country produces – in contrast, Germany consumes 4.4 hectares per capita while actually only 1.8 ha would be available to each person: thus, consumption far exceeds the biological capacity.

Development Needs Diversity: Introduction, overview and structure of the brochure

What does conservation of resources have to do with poverty reduction? What governance mechanisms and global agreements exist that enable an equitable trade-off, i.e. "benefit-sharing", to be achieved between the ecologically wealthy but economically weak developing countries and those nations of the financially rich but ecologically poorer developed world, where vast regions have experienced significant loss of diversity due to agriculture and building? What roles do nature and resource conservation play in German Development Cooperation?

This brochure is intended to address these and other questions. It is the first publication to appear in the series "Sustainability Has Many Faces", thereby assuming the key function of providing a framework for subsequent brochures and examples and explaining the basic principles of Nature and resource conservation in development cooperation.

The core idea of the Rio Earth Summit – the concept of mutually dependent spheres of ecological, economic and social sustainability – justifies the commitment of German Development Cooperation to these issues. Part 1 of the brochure describes development cooperation efforts to conserve resources for the specific aim of reducing poverty and hunger.

The structure of the main section of this brochure, Part 4, is based on the structure and content of the Convention on Biological Diversity (CBD). Using the three objectives, or "pillars", defined by the CBD as the main points of departure (conservation, use and equitable benefit-sharing; see Part 3 of the brochure for a more in-depth explanation), six examples of German Development Cooperation in practice in Africa, Asia and Latin America are presented. Specific articles of the CBD to which this development cooperation contributes are illustrated with additional information, and the objectives and operations of the CBD explained; obligations and opportunities arising from the CBD for the individual states parties as bound by international law are spelled out, and the role played by German Development Cooperation jointly with its local partners in implementing the convention's provisions is explained.

A wide variety of genes, species and ecosystems is needed if we are to achieve and maintain biodiversity conservation, sustainable use and equitable benefit-sharing. Measures enabling the conservation and sustainable use of natural resources must take local cultural conditions and traditions as their starting point

The case studies that serve as the centrepieces of these brochures are presented in a way that enables their use for educational purposes in schools as well as outside of formal school curricula. The images provided by outstanding photographers, received with successful acclaim as independent photo exhibitions touring several countries, as well as a short firm and posters illustrating the international community's Millennium Development Goals and their relationship to specific aspects addressed here, serve to visualise the complex work involved in nature and resource conservation against the background of the demands of development promotion in the developing world.

Background information as well as lists of references and links provide additional materials for more in-depth exploration of the topics covered here.

Part 2
Nature and resource conservation in development cooperation

Each year, 150,000 km^2 of rainforest are logged worldwide – more than half the total area of Germany. Rainforests are home to some 90% of all flora and fauna species on Earth, including many plants and animals yet unknown. Each week sees one more farm animal breed become extinct. Since the mid-19th century, about 75% of crop plant diversity has disappeared. The greatest portion of biological diversity is found today in the so-called developing countries. With the destruction of the world's ecosystems and depletion of biological diversity, we are not only responsible for the loss of wild flora and fauna and domesticated crops and farm animals, but also for the related disappearance of knowledge and irreplaceable genetic information – an immense ecological and, indeed, economic loss for us all.

A large portion of this loss occurs stealthily and almost unnoticed, brought on by land coverage and loss of continuity in landscapes carved up by roads, power lines and oil pipelines, or caused by advancement of the "agricultural front". The fragmentation or isolation of sites leads to immense ecological impoverishment. When species become extinct, food chains are broken and – often with extensive time lag, vital cycles irreversibly damaged.

All of us depend on functioning ecosystems and a broad variety of genetic resources; for many people in developing countries, theses ecosystems and resources constitute their very livelihoods. Nature and resource conservation is therefore a priority issue for development cooperation targeting global conservation of biological diversity and ecosystems as well as local economic and social development.

Further information:
- World Bank (2000): Voices of the Poor, Can Anyone Hear Us? Oxford University Press.
- www.runic-europe.org/german/mdg
- BMZ (2001): Poverty Reduction - a Global Responsibility. Program of Action 2015. The German Government's Contribution Towards Halving Extreme Poverty Worldwide. Topics 108, 39 pages.

For many people in developing countries, functioning ecosystems constitute their very livelihood.

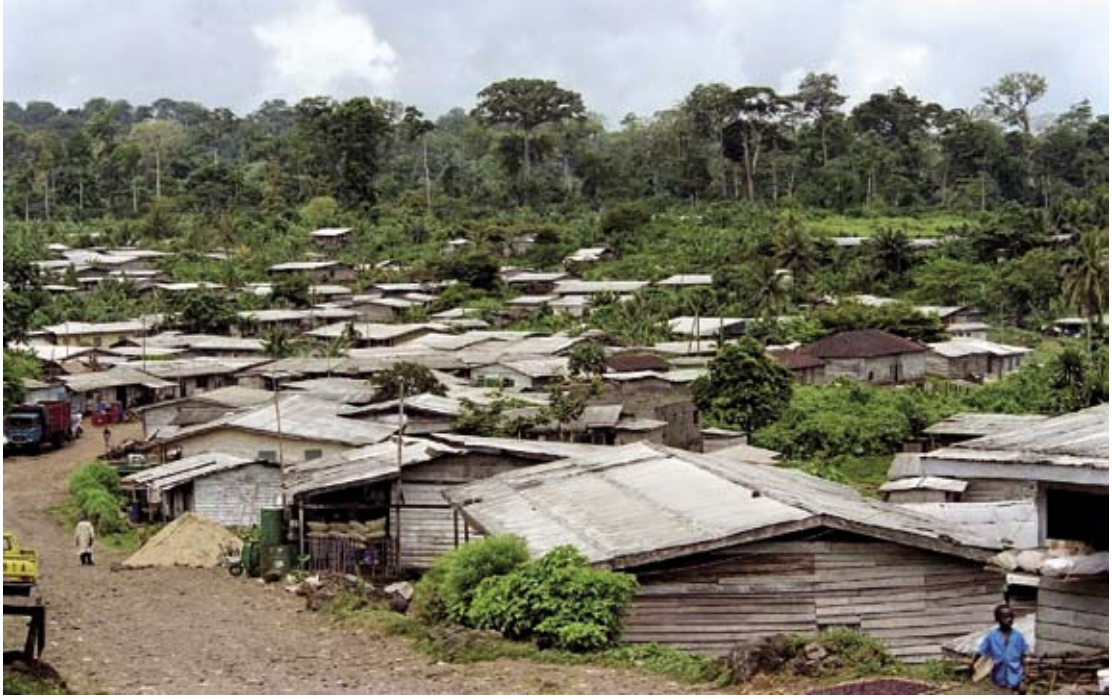
Reducing poverty, conserving resources

Anyone who has to live on less than one US dollar per day is classified by the United Nations as living in extreme poverty. Worldwide, over one billion people fall into this category. An additional 2.7 billion people live on less than two US dollars a day. However, poverty has many other faces: it is not just a lack of purchasing power that makes survival so difficult, but also social exclusion, disease and lack of opportunities to get an education.

In 2000, the international community reached an accord in the Millennium Declaration of the United Nations defining eight Millennium Development Goals, and declared its commitment to fulfil these goals by 2015. Heads of state and government leaders set as their primary goal to halve the number of people living in poverty by 2015. This central objective is closely linked to the other development goals:
The eight Millennium Development Goals of the United Nations are:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

In 2001, the Federal Government of Germany adopted its Programme of Action 2015 as a contribution towards achieving the Millennium Devel-



Poverty often implies direct dependency on the use of natural resources. Conservation of biological diversity to safeguard the economic, ecological and cultural bases of people's livelihoods is a major pursuit of German Development Cooperation.

opment Goals. According to this programme, poverty reduction is the overarching objective of Germany's development cooperation. Conservation of natural resources provides an important basis for these efforts – particularly in developing countries, and most especially in the economically weak rural regions of those nations.

Protection of biological diversity targets not only the goal of conserving natural resources: the primary emphasis of development cooperation is placed on preserving people's livelihoods. It is the rural poor who are most dependent on biological diversity. Diversity of farm animal breeds and crop plants used in local agriculture is essential to their food supply and ensures productivity as well as adaptability to diseases or changing environmental conditions. Intact ecosystems ensure the provision of environmental services, for example, to produce clean drinking water, nutrient-rich soils and oxygen as well as to pollinate crop plants. They form the basis for all human life. Forests and other natural ecosystems offer the possibility to gather wild plants and hunt animals, thereby providing many rural inhabitants with a major supplementary food source, in particular when crop harvests are poor. They deliver firewood and construction materials as well as natural medicines – frequently the only medicines available to these local populations. Furthermore, the spiritual or religious as well as other cultural relationships that local inhabitants and visitors have with nature, traditional plant varieties, local animal species or the landscape represent values that are gaining importance in the international debate on resource conservation. The much hallowed "magical dimension" of nature conservation areas can also include the recreational value they hold for visitors from outside the region.

Poverty frequently implies a direct dependency on the use of natural resources. Degradation of natural resources is in many cases the result, thereby worsening rural poverty and hunger even further. The cycle created by destroying nature, reducing diversity and increasing poverty can only be broken when the central importance of conservation and sustainable use of biological diversity as an economic, social and cultural basis for human existence is understood and appropriate action taken. This point of leverage is therefore extremely important to development cooperation. In addition to this anthropocentric justification, many conservationists and environmentalists also propound biocentric and ethical arguments in support of biodiversity conservation, such as the intrinsic value of nature, "maintaining the integrity of creation", or enabling the advancement of evolutionary processes.

Protection of natural resources and the environment in German Development Cooperation

Maintenance and recovery of an intact environment and sustainable management of natural resources constitute core tasks of German Development Cooperation. By ratifying the Convention on Biological Diversity, Germany is committed to the guiding principle of sustainability. Development cooperation calls for efforts to support partner countries towards considering and treating the environment and development as one: conservation and sustainable use of natural resources must form an integral component of planning combined with economic progress and social and political development.

Green development policy contributes at various levels as an integral part of global structural and peace policy:

- At the international level, German Development Cooperation helps shape negotiations on natural resource issues with the aim of resolving

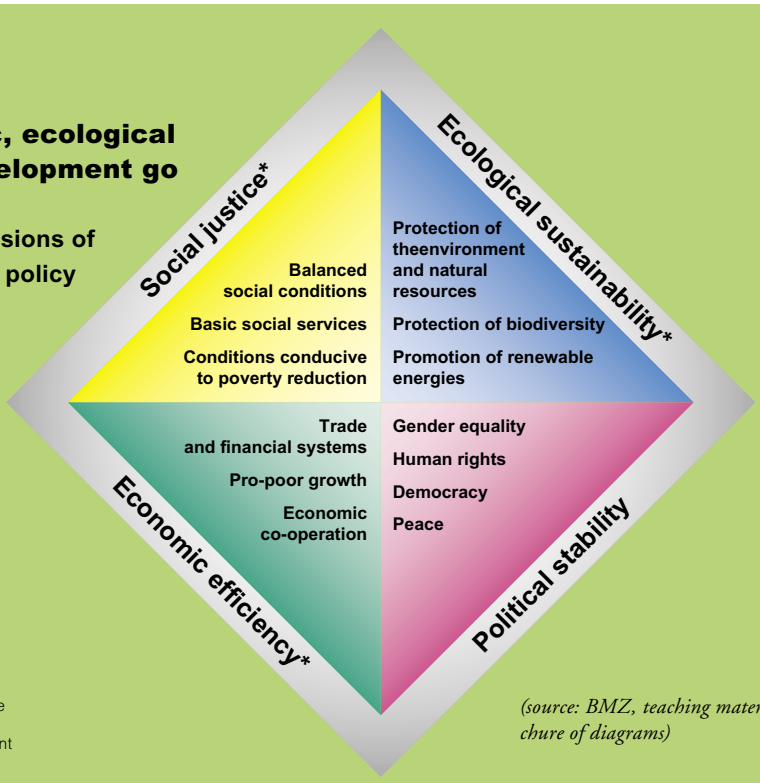
Development policy as an element of global structural policy

The three focuses of global structural policy are:

(source: BMZ, teaching materials: brochure of diagrams)

Social, economic, ecological and political development go together

The four target dimensions of German development policy



* These three dimensions form the sustainability triangle of Rio, i.e. the UN Conference on Environment and Development

(source: BMZ, teaching materials: brochure of diagrams)

worldwide ecological problems. It advocates participation of developing countries in such negotiations as equal, competent partners. It seeks to ensure compliance with international agreements, conventions and treaties governing resource conservation.

- At the national level, it advises the governments of partner countries on issues concerning their environmental and resource policies. These aspects are also integrated into all other areas of policy-making: for example, economic policy, infrastructure development and the legal bases of a country are harmonised with nature and resource conservation.
- At the local level, development work fosters concrete projects that target protection of natural resources as well as business and economic practices that go hand in hand with such efforts while at the same time reducing poverty and ensuring livelihoods.

Further information:

- BMZ: Umwelt, Armut und nachhaltige Entwicklung: Themenblätter zu Umwelt und nachhaltiger Ressourcennutzung in der Entwicklungszusammenarbeit. Themenblatt 03: Umwelt & Armutsbekämpfung. [BMZ: Environment, Poverty and Sustainable Development: issue papers on the environment and sustainable resource use in development cooperation. Issue paper 03: The Environment and Poverty Reduction.]

- BMZ (2002): Umwelt - Entwicklung - Nachhaltigkeit: Entwicklungspolitik und Ökologie. [BMZ (2002): Environment - Development - Sustainability: Development Policy and Ecology.]

On the annually held GEO Day of Biological Diversity, participants set out to record all the species present in a certain area over the entire 24-hour time period. In doing so, not only is knowledge about the diversity present in your own back garden important, but also the awareness that ensues as a result among participants: for, in the long term, you will only protect that which you know. The GEO Day of Biological Diversity has been taking place in Germany since 1999, and since 2001, with the support of GTZ, in a selected developing country as well, such as here in Mali in 2005. It serves to promote the public education and awareness called for worldwide under Article 13 of the CBD.

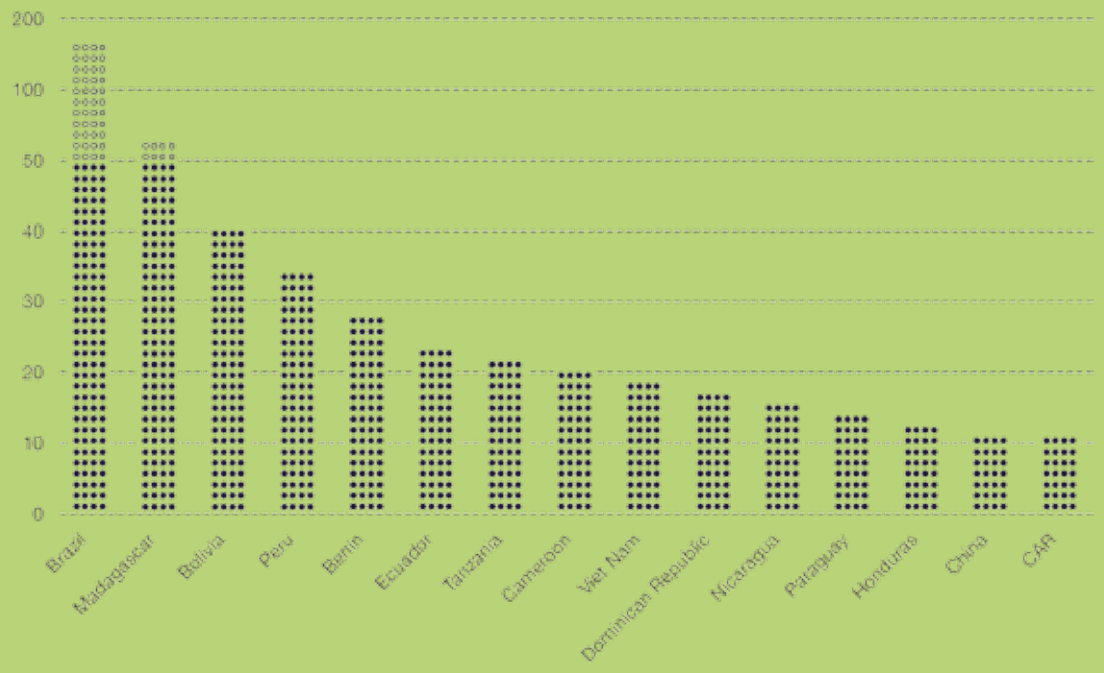
Further information on the GEO Day of Biological Diversity: www.geo.de/GEO/natur/oekologie/tag_der_artenvielfalt

www.gtz.de/biodiversity

Every year, German Development Cooperation provides financial support amounting to over EUR 70 million for measures targeting the conservation and sustainable use of biological diversity. Some 10 to 15 new projects in this field are added each year, with a majority of the new projects being carried out in Asia.

Projects in the field of conservation and sustainable use of biodiversity

German assistance pledged within the framework of bilateral development cooperation in millions of EUR.



source: GTZ 2006: p. 13

- In Germany, it promotes public awareness on issues relevant to developing countries, and sensitises people to the mutual dependence of societies and natural resources in "the North" and in "the South".

Since the mid-1980s, German Development Cooperation has supported some 450 projects for conservation and sustainable use of biological diversity that primarily addressed the fields of nature conservation, rural development, fisheries and forestry. For such initiatives with the partner countries, funding has been continually provided from the budget of the German Federal Ministry for Economic Cooperation and Development (BMZ): every year, the Federal Republic of Germany finances action in these fields within the scope of worldwide Technical and Financial Cooperation, providing more than EUR 70 million in funding. In addition to such bilateral collaboration, Germany is the third largest donor to the Global Environment Facility (GEF), providing approximately 12% of the GEF budget (over EUR 900 million in total since 1991). GEF projects are carried out primarily by the United Nations and the World Bank, and constitute the most important source of funding for projects fostering nature conservation and sustainable resource use in developing countries.

To date, Latin America has seen the largest share of support from German Development Cooperation in this field: as of the end of 2005, 43% of the projects and some 48% of the funding volume for Technical and Financial Cooperation in the field of biodiversity conservation addressed issues in this region, followed by sub-Saharan Africa with 25% and Asia with 23%. Ten to 15 new projects in this field are added every year, with a majority of the new projects currently being planned for Asia. In addition to programmes specifically targeting the conservation and sustainable use of biodiversity, the subject of biodiversity also plays an important role as a cross-sectional task in many other development projects.

Further information:
GTZ (2006): Biodiversity in German Development Cooperation.

Part 3
The Biodiversity Convention (CBD)

"... Conscious of the intrinsic value of biological diversity and the ecological, genetic, social, economic, scientific, education, cultural, recreational and aesthetic values of biological diversity and its components, ...

... Recognizing the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, ...

... and recognizing the desirability of sharing equitable benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components, ...

... Acknowledging further that special provision is required to meet the needs of the developing countries, ...

... Recognizing that economic and social development and poverty eradication are the first and overriding priorities of developing countries, ...

... Aware that conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the growing world population, for which purpose access to and sharing of both genetic resources and technologies are essential, ..."

(Excerpts from the Preamble to the Convention on Biological Diversity)

The Preamble to the Convention on Biological Diversity (CBD) defines the motives and rationale that prompted the international community to adopt this binding agreement at the Earth Summit in Rio de Janeiro in 1992. Against the backdrop of the concerns and goals of German Development Cooperation presented here, the fundamental and comprehensive importance the convention has for project design and implementation becomes abundantly clear.

An increasing awareness in the 1970s and 1980s of the inadequacy of state approaches in the face of worsening environmental problems and growing challenges led to a strengthening of political effort and will to reach global agreements on the issues at hand. Leading scientific bodies such as the Club of Rome and farsighted political leaders like Norwegian Prime Minister Gro Harlem Brundtland set in motion a dialogue on sustainable global development that to this day remains path-breaking. Starting in the early 1970s, important events marked the onset of an innovative process of cooperation:

1971: Representatives of leading nations meeting in the Iranian city of Ramsar on the southern shore of the Caspian Sea signed the first global intergovernmental treaty on issues of nature conservation and the use of natural resources for the purpose of protecting, in this way, wetlands of exceptional importance to birds. Dubbed the Ramsar Convention, this agreement has lost none of its topicality and importance, and serves its 138 signatory nations as a guideline for sustainable resource use and development in almost 1,300 recognised areas worldwide.

1972: The United Nations Conference on the Human Environment took place in Stockholm. The concluding Declaration makes reference for the first time to the mutual dependence of human environment on the one hand and economic and social development on the other. The most important outcome of the conference was the founding of the United Nations Environment Programme (UNEP), with headquarters in Nairobi, Kenya, that was given the mandate to collect all data relevant to the environment, observe developments

and prepare suggestions for appropriate action.

1973: Signing of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention, introduced an effective instrument for preventing international trafficking in threatened species.

1980: UNEP published its "World Strategy for the Conservation of Nature" in collaboration with The World Conservation Union (IUCN) and the World Wide Fund for Nature (WWF). This strategy speaks for the first time of "sustainable development" as a goal for the international community. Mechanisms to be developed for international sharing of benefits and burdens arising from nature conservation are also addressed.

1985: The World Commission on Environment and Development (WCED) was founded, which four years later under the direction of its Chairperson Gro Harlem Brundtland presented its final report, "Our Common Future". Known as the Brundtland Report, it deepened the arguments in favour of a "world strategy" with respect to the global mutual dependence between economics, development and the environment.

1992: The first "Earth Summit" took place in Rio de Janeiro. Political leaders and representatives from all major environmental organisations took part in the United Nations Conference on Environment and Development (UNCED). This, the largest and best known conference on environmental issues to be held up to then and even now, attracting over 30,000 participants from 178 nations, set the course for major environmental and development policies with its agreement to pursue the guiding principle of sustainable development. For the first time ever, efforts were dedicated in a comprehensive approach to finding common paths to solutions for all nations to conserve biodiversity. Participating heads of state identified the priority issues for international cooperation to be global climate change and preservation of the stratospheric ozone layer, combating desertification and conservation of the world's biological diversity.
The Rio Summit also served as a springboard for a number of other world conferences that focussed on the many-faceted aspects of environmental policy and sustainable development such as human rights (1993 in Vienna, Austria), health, education and poverty reduction (1995 in Copenhagen, Denmark), racism (2001 in Durban, South Africa) and development financing (2002 in Monterrey, Mexico).

Following the model of the Rio conference, intergovernmental negotiations began opening more and more to the participation of non-state actors such as non-governmental organisations, labour unions and private industry who meanwhile have become recognised players on the stage of UN conferences.

Thus, since the Rio conference, biodiversity conservation is the object of an international treaty to which its contracting parties are bound by international law: the Convention on Biological Diversity (CBD). To date, 187 countries and the European Community have signed this accord.

In addition to the Convention on Biological Diversity, further international agreements have been enacted that supplement this accord on other essential issues of global environmental management, such as the UN Convention to Combat Desertification, the UN Framework Convention on Climate Change, and the International Treaty on Plant Genetic Resources for Food and Agriculture.

A broad number of conventions, statutory regimes and negotiation processes are intended to promote conservation of biological and associated cultural diversity.

Further information:
- CBD website: www.cbd.int
- Excerpts from the CBD and the Rio Declaration on Environment and Development of 1992 in the Background information presented under Part 5.

The timeline at the end of Part 3 lists milestones in the international negotiation processes.

See also the box presented on the next page.

Further information:

• Website of the United Nations Convention to Combat Desertification: www.unccd.int
• GTZ: Implementation of international agreements on the environment. [GTZ (2003): Umsetzung internationaler Umweltkonventionen.]

Convention to Combat Desertification (CCD)

Desertification as a result of overuse of natural resources (soil, vegetation and water) by human activity leads to malnourishment, poverty, conflicts and refugee movements. Desertification is a problem of global dimension: it affects arid, semi-arid and dry sub-humid areas, i.e. some 40% of the Earth's ice-free land area. What is more, this scope does not include hyper-arid regions, i.e. actual deserts. Without sustainable resource management, desertification processes in affected areas will continue to increase in intensity, causing growing poverty in rural areas of developing countries. With the ratification of the United Nations Convention to Combat Desertification (UNCCD), the 190 parties to the convention have declared their binding obligation by international law to implement measures to combat desertification. Industrialised nations have given their commitment to support developing and transition countries in this process. Germany assumes particular responsibility in this regard as host country to the UNCCD Secretariat.

• Website of the United Nations Framework Convention on Climate Change: http://unfccc.int

Framework Convention on Climate Change

Originally signed in Rio in 1992, a total of 186 nations have joined this international treaty so far. Their goal is to stabilise greenhouse gas concentrations in the atmosphere at a level that prevents "dangerous" anthropogenic interference with the climate system. For development cooperation, this Framework Convention on Climate Change along with its 1997 Kyoto Protocol - in which binding targets for reducing greenhouse gases such as carbon dioxide (CO_2) are specified for the world's industrial nations - are an important means of ensuring sustainable achievement of development goals over the long term. Current and future impacts of climate change (e.g. rising sea levels, increasing occurrence of natural disasters and extreme weather events such as storms and floods) could ruin the benefits wrought by development efforts of recent decades. Implementation of climate protection measures also helps to promote sustainable economic development in project countries and to combat regional environmental problems such as air pollution.

• Attached issue paper: "The International Treaty on Plant Genetic Resources for Food and Agriculture"
• Website pages of the Food and Agriculture Organization of the United Nations (FAO): www.fao.org/ag/cgrfa

International Treaty on Plant Genetic Resources for Food and Agriculture

The genetic resources of crop plants constitute the fundamental source of the world's food supply and the basis for all breeding efforts. Free exchange of genetic material is an essential prerequisite to adapting crops to changing environmental conditions and market requirements. As most crop plants today are spread throughout the world, there is tremendous global interdependence with respect to these resources. All nations depend on having secured access to suitable genetic material. Today, most of this material is no longer found "in situ" in its natural surroundings in the southern nations, rather it is stored in gene banks (ex situ). Worldwide, an estimated 95% of the known and agriculturally used plant varieties have been stored in this manner. After seven years of negotiations, the International Treaty on Plant Genetic Resources for Food and Agriculture (known by its abridged abbreviation "IT") was adopted in Rome in November 2001. The broad goal of this treaty is to create a legally binding framework regulating the protection and sustainable use of all plant genetic resources for agriculture and food. The principal elements making up this accord are:

- Recognition of the achievements and rights of farmers (Farmers' Rights)
- Facilitated and secured access to crop genetic resources, in particular to seed
- A fair and equitable sharing of benefits arising from the commercial use of these resources.

International agreements and processes for preservation of the human environment

1971	Ramsar Convention (Convention on Wetlands of International Importance, especially as Waterfowl Habitat)
1972	United Nations Conference on the Human Environment in Stockholm - including founding of the United Nations Environment Programme (UNEP) as the central UN body for environmental affairs
1973	CITES – Washington Convention (Convention on International Trade in Endangered Species of Wild Fauna and Flora)
1987	Montreal Protocol on Substances that Deplete the Ozone Layer
1992	UN Conference on Environment and Development (UNCED, also know as the Earth Summit) in Rio de Janeiro; sustainable development is declared a guiding principle, and the following agreements adopted: - Agenda 21 - Rio Declaration on Environment and Development - Statement of Forest Principles - Framework Convention on Climate Change (FCCC) - Convention on Biological Diversity (CBD)
1994	Convention to Combat Desertification (CCD)
1996	World Food Summit in Rome, Italy
1997	Kyoto Protocol, supplementary to and bringing forward the FCCC
2000	UN Millennium Summit in New York: adoption of the Millennium Development Goals for the international community
2000	Cartagena Protocol on Biosafety (supplementary to the CBD): regulates transboundary movement of living genetically modified organisms (GMOs) with the goal of protecting the world's biological diversity against possible hazards (entered into force in 2003)
2001	International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR)
2002	World Summit on Sustainable Development in Johannesburg (Rio + 10)
2002	International Conference on Financing for Development in Monterrey, Mexico
2005	"Millennium + 5" Summit in New York
2005–2014	United Nations Decade of Education for Sustainable Development

The three objectives of the Convention on Biological Diversity

Biological diversity – or "biodiversity" for short – is understood to mean the multitude of varieties of life forms on the planet, ranging from the wealth of genetic material to the varieties of species and the diversity of ecosystems. The definition given under Use of Terms in the CBD furthermore states, that "For the purposes of this Convention: 'Biological diversity' means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (CBD, Article 2).

The Convention on Biological Diversity has three basic objectives conceived as the supporting pillars of the convention, i.e. all three issues being of equal importance:

- Conservation of biological diversity,
- The sustainable use of its components, and
- The fair and equitable sharing of benefits arising from the utilisation of genetic resources.

These three pillars are closely interwoven and mutually dependent; no one objective can be pursued isolated from the others. Within German Development Cooperation, people and poverty reduction take centre stage – there can therefore be no project oriented exclusively to nature conservation. Consequently, projects focus on the conservation and sustainable use of biodiversity in order to improve the living conditions for human society.

Part 4
Implementing the CBD: Examples of development cooperation

By signing the Convention on Biological Diversity (CBD), the world's industrial nations have committed themselves to conserve biodiversity in their own countries as well as to cooperate at the international level and support developing countries in their efforts to implement the convention's provisions (CBD, Article 18: Technical and Scientific Cooperation; Article 20: Financial Resources; Article 21: Financial Mechanism).

The six examples presented in the following sections demonstrate just what such support can actually do within the framework of development cooperation. Each spotlights one of the three objectives, i.e. "pillars", of the convention, while at the same time demonstrating the links to the other two pillars.

Objective 1 of the CBD: Preserving the diversity of life

Protecting species and sites is key to the first pillar of the convention. Site protection and conservation of resources in their natural surroundings is defined in the convention as "in-situ conservation", as follows: "the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties" (CBD, Article 2, Use of Terms). Supporting activities in this field encompass:

- Selection, establishment and management of protected areas

The propagating material of agriculturally cultivated plants is carefully stored in gene and seed banks. This form of ex-situ conservation (CBD, Article 9) contributes to the survival of old cultivars.

High expectations are being placed on the development and use of genetically modified organisms (GMOs) – such as pest-resistant seed – to feed the world's population. However, GMOs also pose risks to the environment and human health. They can furthermore increase economic dependence, in particular of small farmers who, rather than being able as before to produce seed themselves, are forced to buy it. Article 8g of the Convention on Biological Diversity therefore calls on the contracting states to ensure "biosafety": such processes or products must not be allowed to pose hazards to biological diversity.

- Conservation of biological resources outside of protected areas
- Promotion of sustainable development in sites adjacent to protected areas
- Restoration of degraded habitats and recovery of threatened populations
- Development of legislation and other regulatory provisions for the protection of species and habitats.

For all of these aspects there are examples of German Development Cooperation that contribute to conservation goals within the broader setting of rural development.

The term "ex-situ conservation" used in the convention means "the conservation of components of biological diversity outside their natural habitats" (CBD, Article 2, Use of Terms). Ex-situ measures should serve solely to complement in-situ measures – and by no means to replace them. Wherever possible, such measures should be implemented in the country of origin of the resources. They serve conservation as well as research purposes, and also target recovery of threatened species. Supporting activities can encompass, for example:

- Establishment and management of gene and seed banks
- Promotion of traditional markets for exchange of seed and/or breeding animals
- Establishment and maintenance of scientific collections, such as herbaria
- Establishment of animal parks and zoos that specialise in conservation of endangered species in the countries of their natural habitat.

GTZ has long been a supporter of gene and seed banks that ensure long-term conservation of crop diversity, promoting for example facilities in Ethiopia, the Philippines and Costa Rica. It also fosters decentralised initiatives by farmers to ensure the

survival of endangered, traditionally used animal breeds and plant varieties such as in southern India, Costa Rica or southern Africa.

In addition to aspects of site and species conservation, the first pillar of the convention also explicitly addresses the issue of biosafety (CBD, Article 8g). The impacts of organisms that have been altered in their genetic makeup by means of modern biotechnology (genetically modified organisms, or GMOs) are to be regulated and the risks that GMOs pose controlled. The parties to the convention are called upon to ensure that processes and products of genetic engineering – e.g. agricultural raw materials containing genetically modified organisms – do not pose any risk to natural biodiversity. The Cartagena Protocol to the CBD, that came into force in 2003, allows any individual party to impose national restrictions or bans on certain imports even if there is no conclusive scientific evidence of potential hazards (in accordance with precautionary principle).

The importance of the traditional knowledge of indigenous and local communities to the conservation and sustainable use of biological diversity is underlined in Article 8j of the convention. The contracting states shall make every effort possible to preserve and promote traditional knowledge, implement appropriate measures and provide legal instruments for approval by and involvement of the holders of this knowledge.

People, Forests, Development: A photo exhibition

Conservation and sustainable use of biological diversity are issues closely interwoven with German Development Cooperation: using six examples, the photo exhibition "People, Forests, Development: Protecting tropical rainforests in Africa" illustrates how local partners are supported in their management of protected areas in West Africa. These efforts explicitly seek not only to conserve nature, but also to preserve the livelihoods of the people living there:

- In the Congo's Kahuzi-Biéga National Park, conservation of the world renowned gorilla habitat is linked with sustainable use for (photo) tourism.
- In Tai National Park in Côte d'Ivoire, site protection is likewise linked with tourism.
- In Cameroon's Korup National Park, site protection is accompanied by sustainable agricultural use.
- In the Mount Cameroon Forest Reserve of Cameroon, site protection is combined with tourism.
- In Cameroon's Lobeke National Park, site protection is ensured by the profits arising from sustainable hunting.
- In the Dzanga-Sangha Tropical Forest Reserve in the Central African Republic, site protection is linked with gorilla photo tourism as well as sustainable hunting.

Indigenous peoples and local communities often possess extensive knowledge of the habitat in which they live. Article 8j of the Biodiversity Convention underlines the importance of traditional knowledge to conservation and sustainable use of biological diversity. Time-honoured knowledge about forms of cultivation and breeding methods as well as hunting and gathering techniques is often passed from one generation to the next in the form of stories, songs or ritual, and constitutes an essential component of cultural heritage.

Further information can be found in the following attachments:
- Issue paper "Farmers as Bankers – Community seed banks"
- Issue paper "Biosafety: Implementation of the Cartagena Protocol"
- Issue paper "Traditional knowledge relating to the conservation and sustainable use of biological diversity"

In the photo exhibition "People, Forests, Development: Protecting tropical rainforests in Africa" and its accompanying information materials, six examples from West Africa are presented to show how management of protected tropical rainforest areas not only promotes nature conservation, but also improves the basis for the livelihoods of the people living there.

The conservation of biodiversity is an issue of global significance: the predominant proportion of the Earth's biological diversity is found in developing countries, i.e. in areas of the world marked by instability and poverty. The often poor inhabitants of these regions are incapable of bearing the burden of sole responsibility for ensuring conservation efforts. Many developing countries that have declared large portions of their national territory to be protected areas are likewise not able alone to provide sufficient funding to ensure conservation in the long term. Only a very small number of national parks and other protected areas are capable of raising enough income on their own to maintain their existence, such as from tourism. The principle of "conservation through use" propagated by development cooperation recognises what experience has shown: In the long term, humans will only protect what they know and what brings them direct benefit.

Resources to be considered useful can be more easily defended in the long term against other interests. Therefore, the desire to maintain nature conservation areas also requires, in part, that paths be taken which at first appear difficult to understand, such as promoting hunting tourism or trade in wild animals. Successful concepts in the field of nature conservation involve cross-sector interaction and interdependencies, and put the main focus on human society: for it is only by thoroughly and consistently integrating local inhabitants that long-term contributions to conservation of biological diversity can be achieved. This is why German Development Cooperation involves not only nature conservation advocates and the local populace in its activities, but also representatives from other sectors such as forestry, fisheries and agriculture as well as trade, politics and economic promotion.

The Congo: Conservation and sustainable use in Kahuzi-Biéga National Park

Kahuzi-Biéga National Park encompasses areas of highland as well as lowland rainforest. It was already inscribed as a UNESCO "World Heritage Site" in 1980. The park is home to 11,000 different plants, more than 1,080 bird species and 409 species of mammals, including chimpanzees and the now rare eastern lowland gorilla, which is found only in this region.

In Kahuzi-Biéga National Park in the Congo, conservation of the world renowned gorilla habitat is linked with sustainable use for (photo) tourism.

Before the region was enveloped in the devastating civil war at the end of the 1990s, the gorilla population numbered some 8,000 – today, only 1000 remain, at most. Even these surviving numbers remain in danger: where previously gorillas and elephants lived, thousands of mining prospectors are now digging for gold and coltan, an ore whose price has risen in just a short time from US$ 75 to 400 per kilogramme. Modern industry needs coltan to manufacture computers and mobile telephones. Gold miners and mining prospectors destroy animal habitats and the livelihoods of the short-statured people indigenous to this rainforest region, the pygmies, thereby continuing the destruction begun by warring conflict. Despite recurring flare-ups of the civil war, nature conservation work continued in a small portion of the park with the support of GTZ. In the meantime, there are now two tame gorilla families again that tourists can observe, and which represent a glimmer of hope for nature conservation authorities and local inhabitants that paying visitors may soon return to the park.

Park managers declare that the poaching that many refugee families were forced to commit during the conflict simply in order to survive ceased in the year 2000 and is no longer a critical issue. The crises of the past ten years had created increased pressure from illegal logging, mineral prospecting, poaching and prohibited agricultural use of land inside the national park. The Congolese Institute for Nature Conservation (Institut Congolais de Conservation de la Nature, ICCN) and local staff are proud of the fact that they have succeeded in maintaining and conserving the national park through all periods of crisis with the aid of German support, which has been ongoing since 1985. With its programme "Conservation of Biodiversity and Sustainable Forest Management", GTZ advises the nature conservation authority ICCN at a central level as well as on the specific issue of managing the Kahuzi-Biéga National Park. Not only is it important to these efforts that the protected area's administration works efficiently, but also that it collaborates with local inhabitants to protect the park jointly and ensure sustainable management. The pygmy people play an important role in these efforts, as they are particularly dependent on the natural resources of the rainforest. They, as well as sedentary hunters and poachers, are offered the opportunity to train as tourist guides and park rangers. The goals of this integrated approach are to:

Improve park conservation

e.g. by

- Increasing the populations of major animal species (hopes are for 10% more gorillas and elephants)
- Decreasing illegal activities in the park
- Increasing financial income

Increase participation of local inhabitants in park management

e.g. by

- Training local inhabitants to become park rangers and providing them with continuing education
- Implementing environmental education measures
- Preparing a joint management board with shared responsibility

Improve the living conditions of local people

e.g. by

- Ensuring access to drinking water
- Promoting health services
- Providing seed
- Earning (additional) income through sustainable use of natural resources

Accompanying Materials

Photo exhibition

The photo exhibition "People, Forests, Development: Protecting tropical rainforests in Africa" comprises 45 large-format photographs (125x200cm) that can be loaned together with other exhibit materials. Logistical details and further information can be found in the annex to this brochure.

DVD

The DVD of "People, Forests, Development: Protecting tropical rainforests in Africa" that you find attached to the inside back cover of this brochure presents a compilation of various photographs from GTZ projects. It lends itself well to large-screen projection. The images, accompanied by sounds and informative texts with voiceover, invite the viewer to a virtual stroll through the tropical rainforest of West Africa. The 17-minute presentation can be played in German, English or French. Structuring of the presentation in 6 chapters facilitates finding specific sections and enables viewers to select from the topics presented:

- **Impressions**
  Introduction: invitation to a stroll through the tropical rainforests of West Africa.
- **Tropical rainforest**
  At home in the tropical rainforest: gorillas, mandrills, bongos and forest elephants live in the African rainforest, the second largest in the world.
- **Kahuzi-Biéga National Park**
  Gorillas face extermination: their meat is coveted, their habitat continually shrinking – Africa's large apes are threatened by extinction.
- **Traditional hunting**
  Hunting rules of traditional forest inhabitants: pygmies have always known hunting seasons and bans on hunting individual animal species. Nature conservation authorities and development cooperation support the reintroduction of these ecologically, economically and culturally sound regulatory mechanisms.
- **Prunus africana**
  Sustainable use of trees: from illegal harvesting and the felling of trees to a new awareness and intergenerational responsibility.
- **Fruits of the rainforest**
  Forest products: the rainforest offers a widely varied range of "products" – spinach from liana plants, rattan for simple furniture, wooden sticks for cattle herders, wood with aseptic properties used as toothbrushes, spice and medical plants for the local market.

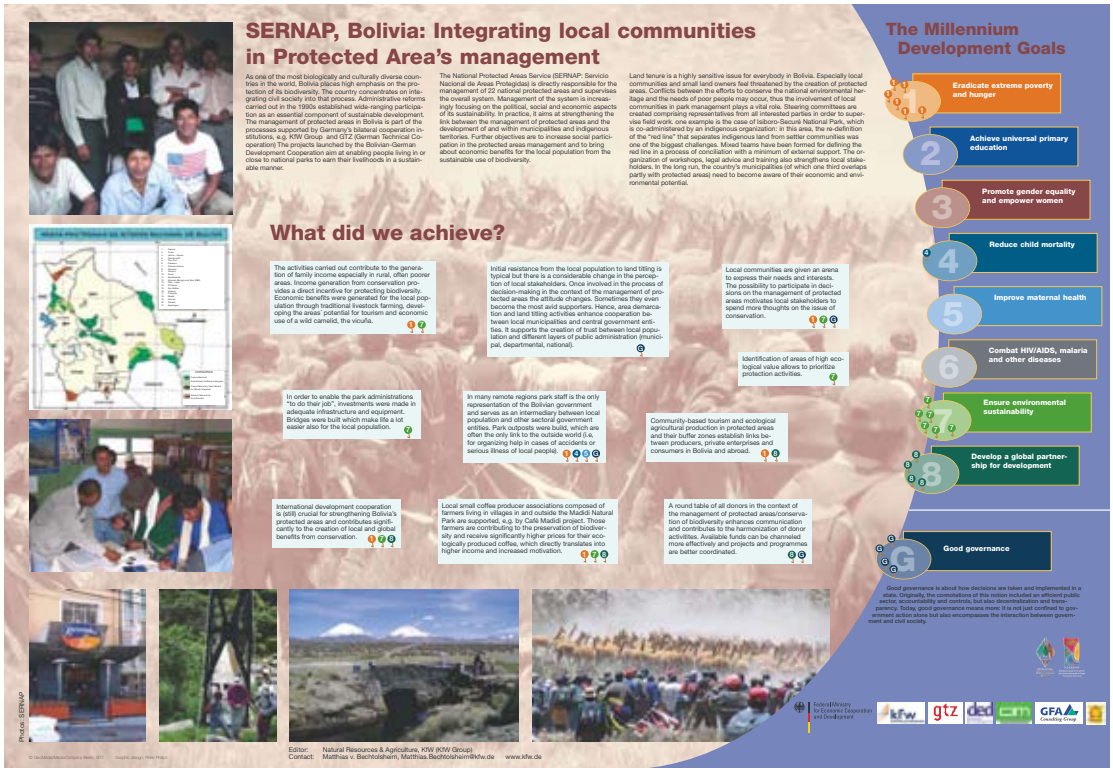
In the accompanying brochure to the exhibition (PDF-file on the attached CD), six protected areas in West Africa are presented. Texts and photographs provide insights and impressions of these regions in the Congo, Cameroon, Côte d'Ivoire and the Central African Republic. They show the basic approaches of how conservation and sustainable use of these rainforests are being supported by development cooperation.

Bolivia: Integrating local communities in protected area management

Bolivia, a country rich in biological and cultural diversity, places great value on conserving the natural beauty found within its borders. More than 17% of the nation's territory has been designated as conservation areas. One of the major focal points of work by Bolivia's nature conservation authority is to encourage co-determination of the rural population: since the mid-1990s, numerous reforms have been introduced to ensure far-reaching participation of the inhabitants in the making of important decisions that affect them, including management of conservation areas. German Cooperation Development supports this process. The most important aim of these efforts is to empower people living in or adjacent to such protected areas to be able to pursue their livelihoods through sustainable forms of resource use.

The national nature conservation authority in Bolivia (Servicio Nacional de Areas Protegidas, SERNAP) is responsible for managing 22 national parks. In its conceptual orientation, SERNAP always focuses not only on the "traditional" ecological issues, but also on political, economic and social aspects of sustainability. In practice, this means in particular that protected areas are integrated in the development planning of the municipalities and indigenous territories surrounding those areas. The economic benefits arising from sustainable management of the biodiversity is likewise an important objective. To this end, appropriate training and continuing education must be provided to the staff of the state authority as well as other actors among the local farmers, municipal councils and teachers, all the way up to ministerial officials. They must all become part of the process of change. Support for a national foundation for the promotion of the protected area system (FUNDESNAP) serves to cover the running costs of continuing training and management of the protected areas, provide long-term administration of existing funds and develop new sources of funding.

Land tenure in Bolivia is a thorny and sensitive issue; local communities and small landowners often feel threatened by expulsion from protected areas and the entailed restrictions of use. To prevent conflicts between nature conservation efforts and the needs of local inhabitants and find



Facing major development problems, the international community joined together at the turn of the new millennium to agree on eight goals, the Millennium Development Goals. The poster illustrates project contributions made in Bolivia towards achieving these goals.

The wool from vicunas living in the Bolivian highlands is an excellent, highly marketable product arising from sustainable management of protected areas by local inhabitants.

common solutions, it is decisively important that civil society be given its voice and vote. To this end, for example, committees are formed with representatives of the various stakeholder groups who then monitor and facilitate implementation of agreements reached.

One example of such cooperative efforts can be found in Isiboro Securé National Park, located in the tropical lowlands of Bolivia. For some years now, the park is being managed jointly by SERNAP and an indigenous organisation. Within the protected area, the greatest challenge facing them was to redefine the "red line" that separates the traditional, indigenous communities from the municipalities of more recent settlers. Mixed teams were formed to enable an agreement process aimed at reaching an amicable arrangement with a minimum of external involvement. The support provided by German Development Cooperation in preparing and implementing this process, including information events and national legal advisory services, helped build capacity among local people. However, a long road still lies ahead for all participants before the necessary changes in awareness and attitudes can be achieved. Prospects for success rest on recognising the great economic and ecological potential of the region, and negotiating forms of use that are beneficial to nature and people alike.

Accompanying materials

MDG Posters

GTZ designed a poster series aimed at enabling assessment and presentation of the contributions made by development cooperation projects towards achieving the UN Millennium Development Goals at the local level. Using tangible examples, the posters explain how conservation and sustainable use of natural resources help reduce poverty. On the occasion of the "Millennium + 5" Summit held in New York in September 2005, representatives from these projects – indigenous peoples and local communities from Algeria, Benin, the Dominican Republic, Ecuador, the Philippines and South Africa – presented their results. To date, posters presenting twelve projects of German Development Cooperation have been issued.

In preparation to making these posters, each project answered the following five questions:

- What are the core components of the project?
- What impacts has it made – including any impacts beyond the scope of the project's direct objectives?
- What has been achieved, and what has not?
- Where do these impacts stand with respect to the individual Millennium Development Goals?
- What sort of networks have been established with other fields relevant to development?

Detailed information on the poster series and numerous examples can be found in the MDG Poster Book, available in German and English at: www.gtz.de/en/themen/umwelt-infrastruktur/umweltpolitik/14936.htm

Suggestions for further work

"Pillar 1": Nature conservation

The Convention on Biological Diversity is based on three main objectives, considered three "pillars" of equal importance: conservation of nature, sustainable resource use, and fair and equitable sharing of economic benefits arising worldwide out of the utilisation of genetic resources. The greatest proportion of biological diversity is found in the so-called developing countries. However, it is in these very countries that many people depend on a direct use of natural resources. The functionality of ecosystems and conservation of the diversity of genetic resources – and thereby the safeguarding of the life-support systems for nature and humankind – must be ensured by establishing protected areas and implementing other nature conservation measures. Many questions arise in the face of this aspiration to protect nature and conserve resources. Political leaders, project managers and other decision-makers must think through the issues that concern conservation as a whole as well as individual cases, and take considered decisions that meet the needs of the specific situation and context.

- **Who is responsible for the conservation of nature?**
  - The local inhabitants?
    Nature conservation organisations?
    The governments of each individual country?
    The international community? The United Nations?
  - Should rich industrial nations support developing countries in conserving biological diversity?
    - Why?
    - If yes, what kind of support, and how should it be implemented?
      e.g. in the form of technical advice, direct financial benefits or other mechanisms?
    - How could it be ensured that funding is directed to those purposes for which it is intended?

- **How can protected areas be established and safeguarded over the long term in regions of great poverty?**
  - Where do potential problems and conflicts lie between local inhabitants and nature conservation advocates?
    - Put yourself in the place of a small farmer whose land lies in the immediate vicinity of a planned national park. Put together arguments representing the farmer's viewpoint and that of the national park authority – this can also be done in the form of a role-playing game.
  - Why is it important to involve the local inhabitants in decision-making on management of protected areas?
    - Identify opportunities and risks arising from local inhabitants participating in management of protected areas.
    - What experience was gained in Bolivia with such inclusion?
    - Do you know of other examples in your or any other country?
  - In what way can funding and management of protected areas be ensured?
    - Discuss: what mechanisms are morally justifiable for this purpose?
      e.g. should a lack of funding be allowed to adversely affect nature, or should it be people and their development that get short-funded?
      Are these two goals mutually exclusive?
    - Is tourism a viable and acceptable option as a source of income?
      Under what conditions would you answer yes, and when is it better not considered an option?
      (e.g. photo tourism or hunting tourism, with all related implications at the cultural, economic

and ecological levels, in economically weakly developed regions)
  - Is sponsoring by business interests, entailing advertising restrictions under certain circumstances, a viable solution?
    What particular aspects would sponsoring have to observe or bear in mind?

- **What importance do protected areas have in times of crisis or even war?**
  - Discuss this issue, giving thought e.g. to areas where animals will retreat to and potential food and living space for starving people, as well as to hazards threatening the protected areas (destruction through acts of war, poaching, etc.). Many such areas become points on which hopes are pinned for times of peace due to the potential they possess for an economic restart, e.g. through tourism; think of some examples you know of.
  - How would you decide as a regional political leader: should people be allowed to use the animals and plants in protected areas in times of crisis? Under what conditions?
    What arguments would you present as representative of an international nature conservation organisation?
    What roles, in your opinion, should other countries play in such a situation?

- **In-situ and ex-situ conservation**
  - If it is not or no longer possible to protect certain animal and plant species in their native surroundings, what alternative solutions are there?
  - What forms of "ex-situ" conservation are available?
    What advantages and/or disadvantages do such options offer in comparison to "in-situ" conservation?
    Should we provide support from Germany to promote this form of nature and resource conservation?
    If yes, what form of support?

- **Traditional knowledge**

  Indigenous peoples and other local inhabitants often possess centuries-old knowledge on how best to use natural resources and sustainably conserve them over the long term.
  - How can traditional knowledge promote conservation of biological diversity?
    What threatens the transmission of traditional knowledge?
    What possibilities exist for preserving and promoting such knowledge?
  - Do you know of any examples for use of traditional knowledge from your immediate vicinity?
    - Who possesses this knowledge? How is it used? What do other people in the vicinity think about the significance and use of this knowledge?

- **Genetically modified animal and plant organisms (GMOs)**

  GMOs offer possible means for feeding the world's continually growing population as well as for combating diseases and providing therapy for the sick – but they also harbour many risks.
  - What risks does the use of GMOs pose for conservation of endangered animal and plant species?
  - What impact can establishment of test fields have under certain circumstances on protected area management?
  - How could we ensure that natural diversity is not endangered by genetically modified organisms?
  - Research and discuss: what measures has/have your country and/or other countries or regions implemented with respect to GMOs? What other measures are conceivable?

Objective 2 of the CBD: Sustainable use of biological diversity

The second pillar, i.e. objective, of the Biodiversity Convention is the sustainable use of biological diversity. It is an issue to be integrated into all political decision-making processes. Traditional, sustainable forms of use recognised by the international community as worthy for protection should be specially promoted. Local communities should likewise be supported in their efforts to restore degraded areas.

Sustainable resource use is an important topic in development cooperation. It safeguards life-support systems and people's livelihoods, in particular of rural populations, and can provide additional income while at the same time protecting the environment. Besides direct support of local inhabitants in their efforts to conserve adapted forms of use and promote ecologically compatible alternative uses, another important aspect of this work is to provide advisory services for developing legislation and other regulatory provisions for environmentally sound and socially equitable utilisation.

In addition to the various forms of "consumptive" use of resources in agriculture, fishing or hunting, cooperation efforts employ advisory approaches that also promote "non-consumptive" resource use. These include in particular the valorisation (i.e. capturing the value) of rural potential through tourism. Well conceived and implemented agrotourism and ecotourism can enable long-term utilisation of areas and in this way not only protect biological diversity, but also offer the local population a source of economic livelihood.

The photo exhibition and brochure "People,

Further information can be found in the following attachments:

- Issue paper "Sustainable Tourism: Tourism and sustainable development"
- Issue paper: "Agrotourism and agricultural diversity".

Hopes are frequently pinned on (eco)tourism as a springboard for economic development of isolated regions, in particular in developing countries. Activities conceived in a way that give equal consideration to social, ecological and economic aspects can be a sensible form of sustainable use. In Ethiopia, GTZ is supporting a tourism project that takes all these criteria into account.

Forests, Development" presents various projects in Africa that make use of this opportunity. One of these examples has already been described above, where a national park in the Congo offers photo tourism in its protected gorilla habitats.

Conservation of the diversity of genetic resources, known as agrobiodiversity, plays a significant role in agriculture and feeding the world's peoples. Cultivated plants and domesticated farm animals as well as their wild relatives form the basis for safeguarding the worldwide food supply, today and in the future. By providing construction materials, fuel, clothing, medicine and transportation, they contribute in countless ways towards sustaining life and safeguarding human habitat.

Plant and animal genetic resources constitute the key raw material for further development of cultivated plants and domestic animal breeds by breeders and farmers. When changes occur to the environment, ecosystems or requirements governing food and diet are modified, these resources ensure the nature potential for adaptation. Small farmers in the countries of Africa, Asia and Latin America are especially dependent on these genetic resources. Here, it is women in particular who are responsible for securing the major share of the food supply. Great diversity of plant varieties and locally adapted animal breeds ensure their survival even under difficult climatic conditions and on marginal soils.

Where nature and culture meet: A photo exhibition

The photo exhibition "Where nature and culture meet: People, food and biodiversity" and accompanying brochure present the correlation between diversity and food security. The principle of conservation through use is particularly clear and relevant in terms of the biological diversity in agriculture: domesticated, cultivated plants and animal breeds could hardly survive in the wild. They therefore depend on use by humans who specifically bred, grew and nurtured them. In such cases, a simple rule applies: that which is not grown or processed, nor is in demand, eaten or otherwise used, will be lost.

The work of small farmers and livestock owners in developing countries in the conservation and further development of agrobiodiversity should receive greater recognition than it does: although they are often poor (as usually perceived in Germany), they are also proud creators and guardians of a wealth of agricultural biological diversity that is immensely important to us all.

Based on various projects, the brochure shows how German Development Cooperation supports its partners in promoting methods for sustainable use. These images are likewise always relevant to the other two components of the convention,

Further information can be found in the following attachment:
- Issue paper "Agrobiodiversity: Genetic resources for food and agriculture"
- www.gtz.de/biodiversity

The photo exhibition and accompanying brochure "Where nature and culture meet: People, food and biodiversity" presents the correlation between diversity and food security, and illustrates the principle of conservation through use.

namely the conservation of biological diversity and fair and equitable benefit-sharing. Several examples presented in the brochure are:

- Sustainable production and marketing of wild coffee in Ethiopia
- Breeding of grasscutters (otherwise known as cane rats or agoutis) in Benin
- Horticultural diversity of home produce gardens cultivated by women smallholders in Niger
- Commercial and sustainable, adapted use of Nguni cattle in southern Africa
- Cultivating school gardens in Sri Lanka with traditional, nutritious and local varieties.

The principle of conservation through use is particularly relevant and clear in terms of agro-biodiversity: for example, if crop varieties are not grown, processed or in demand, they will be lost.

China: Using wild vegetables

Xishuangbanna in the extreme southwest corner of China on the border to Laos and Myanmar is a veritable treasure trove of nature. Here can still be found vast areas of contiguous tropical rainforest that house a unique wealth of animals and plants. Almost one-sixth of the plant species found in China grow here.

Wild vegetables are a permanent feature on the menu of the various ethnic groups that have been living in Xishuangbanna for generations. For the Dai people, for example, moss from the Lancang (Mekong) River is a culinary favourite. Some three hundred different wild-growing plants are regularly harvested and prepared in a myriad of ways – roasted, deep-fried, in soup or as marmalade, while many are eaten raw. Drying or fermenting wild vegetables keeps them good over long periods of time. For rural inhabitants, wild vegetables are also an important source of income. One fifth of all vegetables sold in the autonomous prefecture Xishuangbanna originate from the forests - and it goes without saying that the restaurants of the provincial capital Jinghong feature dishes with wild vegetables.

However, owing to the rapid modernisation and industrialisation of the Chinese economy, the last two decades have seen considerable loss of biodiversity. These developments have not left agriculture unscathed. The loss of diversity of cultivated varieties endangers the food security of the local populace in particular, and important

Accompanying Materials

The photo exhibition “Where nature and culture meet: People, food and biodiversity” comprises some 60 large-format photographs (125x200cm) that can be loaned together with other exhibit materials. Logistical details and further information can be found in the annex to this brochure.

The accompanying brochure (PDF-file on the attached CD) to the exhibition presents numerous vivid examples of how, within the framework of German Development Cooperation, conservation of biological diversity goes hand in hand with the promotion of varied and environmentally friendly agricultural use.

Biological diversity in agriculture is an aesthetically appealing expression of culture. The exhibition seeks to awaken interest and curiosity for other societies and their culture, including their food culture. It is also intended to stimulate us to reflect on patterns of consumption in our own society.

Wild vegetables are a regular feature on the menu of various ethnic groups that have been living in southwestern China for generations.

options for development of new varieties are being lost. Some 600 of the approximately 1,200 species of the world's cultivated plants are used in China. The dramatic decline in the numbers of wheat varieties grown and used, from 10,000 down to 1,000 within just 20 years, clearly demonstrates how severe the genetic erosion has already become.

Since 2005, GTZ is supporting a project in southwestern China for sustainable use of agrobiodiversity. "The focus is on conservation and use in natural surroundings (in situ) and the farmers' fields (on farm). A decisive advantage compared with gene banks, involving expensive ex-situ maintenance, is the fact that the farmers preserve and further develop not only the genetic materials, but the related knowledge as well" (brochure to the agrobiodiversity exhibition, p. 22). Home gardens as well as sustainable collection of wild vegetables are being promoted by way of studies and continuing education actions. It is envisaged that marketing of this produce, e.g. the sale to restaurants and hotels, and development of agricultural tourism will provide farmers with additional income. Advising the central government on the formulation of a statutory and political framework as well as information and publicity work are important components to the success of this project.

Southern Africa: Nguni cattle – promoting local breeds of farm animals

Nguni cattle are uniquely adapted to the harsh environmental conditions of southern Africa. Despite this fact, for a long period of time in the first half of the 20th century the Nguni were crossed with exotic breeds, so much so that pure-bred Nguni herds were severely reduced in numbers. The local breed was not considered very well-performing because valuable characteristics of these animals had been overlooked. On the contrary, the Nguni breed is not only resistant to ticks, it can also survive extreme heat and drought, feeds well on fodder of low quality and requires little in preventive veterinary care. The native peoples are particularly fond of its beautifully marked hide. Countless poems and myths have been spun around the Nguni cattle breed.

GTZ, in cooperation with the private sector, is making efforts to improve procedural sequences within the production chain. Planning envisages supporting small livestock owners in their organisation and herd management. Further issues to be addressed include marketing, the quality of meat, processing of skins when butchering, transport conditions and onward processing. Joints efforts are being made to locate sales markets for the high-quality leather and "organic" meat. Both products have good chances on niche markets. Even corporations such as Daimler Chrysler are showing interest in Nguni leather. This example demonstrates, however, that interest is so great that production at smallholder level is currently not capable of meeting such demand. Nevertheless, promotion of commercial use within the scope of development cooperation is intended to benefit the local small farmers in particular and to create incentive for sustainable use of this cattle breed.

Old breeds of farm animals are often well adapted to local environmental conditions and less susceptible than highly bred varieties. Their promotion and sustainable use can benefit particularly local farmers and livestock holders.

Further information can be found in the following attachment:
Issue paper: "'Under-utilised' species – Rich potential is being wasted"

Suggestions for further work

"Pillar 2": Sustainable use of natural resources

Sustainable, long-term conservation of natural resources is important in addition to capturing economic value – it is the only way to safeguard the life-support systems and livelihoods of human society. Next to conservation of natural resources, the sustainable use of biological diversity constitutes the second main objective and "pillar" of the Biodiversity Convention.

- **Why does the Biodiversity Convention view this second pillar of resource utilisation to be of equal importance alongside its first pillar of nature conservation?**
  - What role does the long-term usefulness of nature play for the people of the world?
  - What responsibility results from the diverse demands existing at the local, regional and international levels?

- **Why is diversity in plant and animal species important to agriculture?**
  - What significance do they have for ecology, economy and culture?

- **What does sustainable use mean in concrete terms? Name examples from your vicinity.**
  - Do you know about old animal breeds or crop varieties in your vicinity that are threatened with extinction or which were re-introduced?
    - Research or ask locally: are these examples financially self-sustaining or do they require subsidising?
      By whom? In what form? Are there any restrictions or conditions? What do those persons receiving subsidies think of this subsidising and these regulations? Could they conceive of some other form of support?
    - Has use altered over the course of the last one hundred years?
      In what way?
      Why?

- **What wild plants are collected in your vicinity?**
  - What are they used for? How are they subsequently processed?
    (think of salad leaves, vegetables, teas, salves, drops, "good luck charms", religious ceremonies and other uses).
  - Does anyone in your family know much about the properties of these plants?
    Do you sometimes go hunting for mushrooms, berries, mosses or other forest products?
    What does that mean to you and your family?

- **Research: What role do wild plants and animals play in the lives of the local inhabitants living in and near the protected areas of West Africa?**
  - What does the establishment of a nature conservation area mean for them under certain circumstances?
  - In your opinion, does the international community bear any responsibility for these local communities and preserving their way of life?

- **In your opinion, how conscious are people of the principle of sustainability?**
  - What do you suppose a member of a local community in West Africa would say to you in answer to this question?
  - What do you, yourself, think?
    Are you also prepared to accept personal burdens or restrictions to achieve these ends?
  - How do people in your vicinity view this issue?

- **How does consumption behaviour in developed countries relate to the use of natural resources in development countries?**

- **How could supply and demand for products arising from sustainable use be promoted?**
  - Does it make sense to provide subsidies for such products?
  - Should there be worldwide awareness campaigns promoting these issues?
    - Who should take charge of organising such efforts?
      Nature conservation organisations? consumer associations? governments? ministries of education? farmer associations? fair trade shops? others?
  - Which relation exists between the developing progress and the use of the natural resources in your land? How to bring economic, ecologic and social development in harmony?

- **In your opinion, what role can or should development cooperation play in promoting sustainable forms of use?**
  - in technical advisory services,
  - with respect to financial support,
  - in the development of legal mechanisms or economic instruments,
  - in international lobbying work,
  - in other fields.

In the Dzanga-Sangha Tropical Rainforest Reserve in the Central African Republic, area protection is also funded by gorilla photo tourism and sustainable hunting.

Objective 3 of the CBD: Fair and equitable benefit-sharing

"The Convention on Biological Diversity places biological resources under the national sovereignty of each state and demands, as one of its three goals, the equitable sharing of the benefits arising from profits arising from the utilisation of genetic resources. Genetic resources are used primarily in agriculture (crop and livestock breeding), the pharmaceutical industry (drugs based on raw materials taken from plants and animals) and the food industry (food additives, sugar substitutes, etc.). When searching for raw materials (bioprospecting), in many cases prospectors fall back on the traditional knowledge of indigenous and local communities. Benefit-sharing aims to preserve and ensure the sustainable utilisation of biodiversity. Non-compliance with these CBD requirements is generally considered as biopiracy." (MDG poster on the Philippines)

Indeed, this third pillar of the CBD is the one on which, so far, the least unity prevails with respect to how this objective is to be achieved. Given the fact that nearly 80% of the global biodiversity are located in developing countries, those countries in particular put pressure during the drafting of the convention to include this objective. They wanted to achieve compensation for the conservation goals requested by developed countries.

The individual contracting states to the convention pledge to enact national legislation in line with the convention's provisions. This, however, has not proven to be easy, and only a few countries have adopted such national guidelines so far. This is due in part to the fact that a number of questions need clarifying – at the national as well as international levels. Also, national regulations alone are inadequate to ensure fair sharing of benefits between states, as in most cases the value-adding of genetic and biological resources takes place outside the country of origin. Key questions and problems concern rights of ownership and possession, compensation payments, distribution of benefits and consultation processes.

The Philippines: Bioprospecting that benefits both nature and people

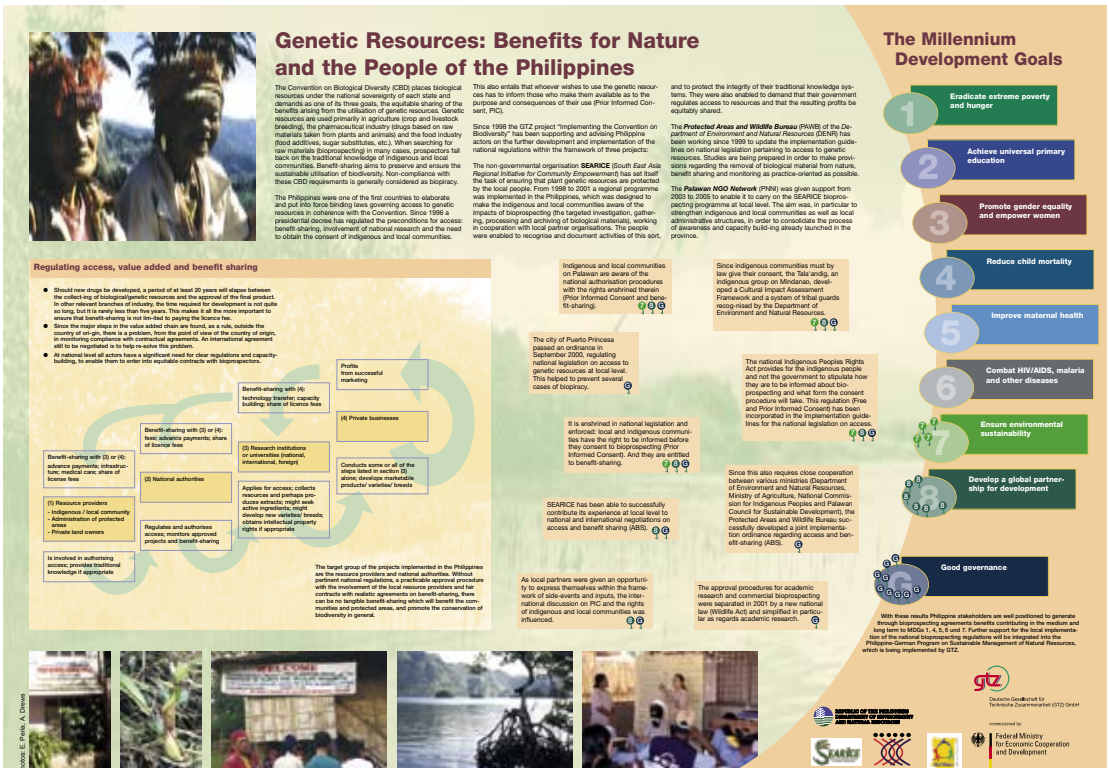
The Philippines was one of the first countries to prepare and enact legally binding rules of access governing genetic resources in line with the provisions of the convention. Since 1996, a presidential decree regulates prerequisites for access, benefit-sharing, participation of national research efforts and the necessity of approval by indigenous and local communities. These rules also stipulate that anyone wishing to use genetic resources must provide information to those persons who make the resources available on who wants to use the resources, for what purpose, and what the consequences and impacts of such use will be (in accordance with the principle of "prior informed consent", abbreviated PIC).

GTZ has been supporting and advising the Philippines since 1998 in its work to further develop and implement national regulations aim at enabling bioprospecting and fair sharing of the profits arising from such activities - to the benefit of nature, especially protected areas, as well as people, in particular indigenous peoples and local communities.

From 1998 to 2001, the non-governmental organisation (NGO) South East Asia Regional Initiative for Community Empowerment (SEARICE) conducted a regional programme in cooperation with local partner organisations intended to promote awareness among the indigenous and local communities of the consequences of "bioprospecting" – i.e. the targeted research, collection, conditioning and archiving of biological material. The programme enabled inhabitants to recognise and document such activities and preserve the integrity of their traditional knowledge systems. It furthermore empowered them to demand from their governments due application of the rules governing access to resources and fair sharing of the profits arising from such access. Building on the bioprospecting programme

For further information see the following attachment: Issue paper "Genetic resources: Access and equitable Benefit Sharing"

The poster illustrates contributions made by projects in the Philippines towards achieving the Millennium Development Goals.



launched by SEARICE, the Palawan NGO Network (PNNI) continued these efforts in the Palawan Province from 2003 to 2005 with an eye to strengthening the initiated process of awareness and capacity development in this autonomous region. Work there concentrated particularly on indigenous and local communities as well as the local administrative structures that enjoy extensive decision-making authority owing to the region's special autonomy status.

The Protected Areas and Wildlife Bureau (PAWB) of the Philippine Department of Environment and Natural Resources (DENR) worked from 1999 to 2005 preparing a revised version of the implementation guidelines to the national access regulations governing genetic resources, an update made necessary by the coming into force of the Wildlife Act in 2001. The Wildlife Act significantly simplified licensing and approval procedures for predominantly scientifically oriented research projects while simultaneously restructuring the scopes of responsibility of the governmental authorities concerned (DENR, the Department of Agriculture (including the fisheries authorities) and the provincial government of Palawan) with respect to commercially oriented bioprospecting projects. The rights of participation of the indigenous and local communities anchored in the presidential decree remain unaffected by these revisions. In order to ensure that provisions governing removal of biological material from nature, benefit-sharing and monitoring are oriented in their formulation as close as possible to actual practice, expert reports were prepared and workshops conducted with the groups affected (from science, companies and civil society) for consultation.

Regulating access, value added and benefit-sharing: what to watch out for

- "Should new drugs be developed, a period of least 20 years will elapse between collecting of the biological/genetic resources and the approval of the final product. In other relevant branches of industry, the time required for development is not quite so long, but it is rarely less than five years. This makes it all the more important to ensure that benefit-sharing is not limited to paying the license fee.
- Since the major steps in the value chain are found mostly outside the country of origin, there is a problem, from the point of view of the country of origin, in monitoring compliance with contractual agreements. An international agreement, still to be

negotiated, is supposed to help solve this problem.

- At the national level, all actors have a significant need for clear regulations and capacity building in order to enable them to enter into contacts with bioprospectors." (MDG poster on the Philippines)

Accompanying materials

The MDG poster illustrates important results that have been achieved thanks to the support provided to Philippine actors by the GTZ project "Implementing the Biodiversity Convention" in further developing and implementing pertinent national regulations. A brief explanation of the reasoning behind the creation and structure of the MDG posters can be found on page 27 of this brochure. Specific questions concerning the situation in the Philippines cannot be sensibly addressed without precise knowledge of the statutory regulations and the implementation provisions of the Wildlife Act. However, the poster is well suited for reviewing how several questions noted in the text have been regulated by Philippine legislation and the extent to which these regulations agree with the solutions proposed by students.

Ethiopia: The Teff Cereal – a short film

Teff, also known as lovegrass, is an important food grain in Ethiopia. Owing to its tiny seed grains (less than 1 mm in diameter), one handful of seed is enough to sow an entire field. This property makes teff particularly suited to semi-nomadic lifestyles. In Ethiopia, average crop yield is about 9 dt/ha, while the best varieties deliver almost 30 dt/ha. Teff has a high iron and calcium content, and is considered to have a pleasant taste. In Ethiopia, teff flour is the basis for the dough from which the Ethiopian national dish is made - injera, a soft flatbread.

Products made from teff contain no gluten. Teff is thus useful as a basic ingredient for gluten-free baked goods and is particularly well-suited for those suffering from the metabolic disorder coeliac disease or the skin disease dermatitis herpetiformis, also known as Duhring's Disease. Such persons must avoid gluten, a grain endosperm protein.

Scientists in the Netherlands have therefore been working on cultivation and further development of teff. The outcome of these years of research has now been registered by the Dutch enterprise Health and Performance Food International BV under the name Eragrain®. Eragrain teff is currently being cultivated as a crop plant in the Netherlands. In accordance with international guidelines, the company reached an agreement with the Ethiopian agricultural research organisation by which it is to pay ten euros for every hectare of land under cultivation of Eragrain plus five percent of the profits arising from the sale of Eragrain products (e.g. flour), as compensation for use of the teff varieties provided to the Dutch endeavour.

In October 2005, a training workshop supported by GTZ was held in Ethiopia on the subject of access and fair benefit-sharing for eastern and southern Africa. The event was hosted by the Institute of Biodiversity Conservation in Addis Ababa, an organisation that GTZ has been supporting for over 20 years in the field of

Accompanying materials

The two German documentary films produced for the 3sat television group's "nano" science series, "Regelungen für die Ressourcen der 'Dritten Welt'" and "Glutenfreies Getreide Teff nur aus den Niederlanden" are each about 5 to 6 minutes long. The English combined version of both films, entitled "The Teff Cereal", lasts ca. 11 minutes.

The documentary explains teff cultivation in Ethiopia and how it is prepared for the table. It presents the Dutch company that brought teff production to Holland along with the related agreement between the Netherlands and Ethiopia, and shows how this gluten-free grain and the products made from it are being marketed. In Holland alone, the number of teff flatbreads sold in supermarkets has climbed to 15,000 per week.

seed banks. There, a proposal emerged to make a film about the Ethiopian-Dutch bioprospecting project. This idea culminated in two short documentary films in German by Jana Lemme entitled "Regelungen für die Ressourcen der 'Dritten Welt'" and "Glutenfreies Getreide Teff nur aus den Niederlanden", produced by the German television group 3sat for its "nano" science and technology series on the occasion of the 8th meeting of the Conference of the Parties (COP 8) to the Convention on Biological Diversity held in Brazil March 20 to 30, 2006. GTZ arranged for the combined English overdubbed version of the films to enable their use as information material for public relations work.

Suggestions for further work

"Pillar 3":
Fair sharing of benefits

Many of the questions and problems currently under discussion by the contracting states to the Convention on Biological Diversity within the scope of international negotiations also lend themselves well as topics for debate for educational work in and outside of schools. Role-playing games let topical dialogues become lively debates, presenting arguments and the impacts of political decisions on those affected.

Role-Playing Game

Fictitious context: scientific studies prove that a plant found in the Ecuadorian rainforest contains active substances effective in AIDS therapy.

Representatives from the following groups are invited to take part in negotiations:

- An indigenous community that has long used the plant against infections
- The international pharmaceutical industry that seeks to process these active substances to produce medicines to bring to market
- The government that wishes to share in the profits and licenses arising from use of the plant
- An international nature conservation organisation that is concerned about protecting the medicinal plant that is threatened by extinction.
    - To whom do biological and genetic resources belong, i.e. who has the authority to grant approval to access them, and who must be included in such decision-making: the Ministry of Environment? the administration in charge of managing protected areas? the indigenous inhabitants of village XY?
    - From whom should permission be asked to make use of traditional knowledge concerning, for example, the application of plants for medicinal purposes, e.g. the Ministry of Health of India and/or Sri Lanka for use of Ayurvedic knowledge? a devotee within an indigenous community, or a village holy man? Who represents indigenous and local communities that often practice cross-boundary sharing of their knowledge?
    - With whom must benefit-sharing be negotiated, and who is to share in the fair distribution of profits – the national research institute from which the resources were possibly obtained (as in the noted example of the cereal teff), or all farmers in the country that developed and preserved the diversity of varieties over the course of generations?
    - What consequences and impacts can the "valorisation" (capturing the value) of genetic resources by external companies have? What can it mean for example for the food supply of the local population?
    - How can the continued use and possible onward transfer of genetic resources from their country of origin be controlled and monitored once those resources have left that country?
    - How can a national authority in a developing country ensure that profits earned by a foreign enterprise arising from the marketing of a product based on genetic resources originating from that developing country are shared in accordance with contractual agreements?

Analysis of the film

The film about teff presents an example of how natural resources and knowledge thereof from developing countries are used. However, this example represents one of the few cases in which an industrial nation is paying an agreed amount of money for such use to the country of origin of the resource and its related traditional knowledge.

- What precisely is the arrangement governing access and fair benefit-sharing in this case?
- Is this regulation in accordance with the third objective of the Convention on Biological Diversity?
- What significance do the agreed arrangements have for the traditional farmers and users of teff? How can it be contractually regulated that, for example, nomads may continue to use the grain without having to pay licensing fees?
- In this case, the contractual partner on the Ethiopian side is the "Institute of Biodiversity Conservation", which therefore is the recipient of the contractually agreed monetary payments from the Dutch company. However, what is the onward distribution arrangement from there? The actual benefit-sharing with the local population, the holders of knowledge on the use of teff, or the region from which such knowledge originates, has not yet been clarified. How could such sharing be implemented in this concrete case?
- Do you know of other products – that you use on a day-to-day basis or which you have heard of – that are manufactured on the basis of natural resources from developing countries?
- Which of these products are perhaps even advertised using slogans such as "The inhabitants of XY have been using resource X since ancient times to" for example "quell fever", "quench their thirst" or "still their hunger", etc.
    - Research: Do any regulations governing benefit-sharing exist? Or are there any other mechanisms, such as fair trade, by which these products are marketed?

Fair and equitable sharing of benefits arising from the use of genetic resources is one of the three basic demands called for by the Convention on Biological Diversity. The search for appropriate ways and mechanisms to achieve this goal is cause for extensive debate worldwide.

Part 5
Background information

Logistics for the travelling exhibitions

GTZ has compiled two photo exhibitions for educational purposes and public relations work that can be made available on loan:

- People, Forests, Development: Protecting tropical rainforests in Africa
- Where Nature und Culture Meet: People, food and biodiversity

These exhibitions have already been shown numerous times at venues around the world, for example at the German Federal Press and Information Office in Berlin, the World Congress of Protected Areas in South Africa, at the UN Headquarters building in New York, in Benin, at the Bavarian State Parliament in Munich, at the Daimler Chrysler enterprise in Stuttgart and Bonn's historic Stadthalle auditorium.

The photos making up the exhibitions can each be presented individually or in combinations, compiled in groupings as desired. GTZ can provide assistance in making such selections to find the right mix tailored to the given target groups and the fitting number of photos for the given exhibition space. Staff can also give design tips for achieving optimum photo placement and mounting or suggestions on how best to transport exhibition materials. GTZ can likewise provide Background information on these exhibitions (e.g. for opening addresses, etc.). Where needed, further project materials can be provided to supplement the photo exhibition.

Terms and conditions for loaning of photo exhibitions

The photographs making up these exhibitions created within the framework of German Development Cooperation are provided on loan free of charge. Experience has proven that an exhibition timeframe of one to three weeks works best. Longer running shows cannot be accommodated due to high demand, while shorter timeframes are not recommendable due to economic considerations.

A maximum quantity of 50 accompanying brochures can be provided free of charge. Addi-

Exhibition Materials

Item 001	large-format photo; 2 x 125 x 200 cm; German, English, French
Item 002	2 x lacquered wooden base for the large-format photo
Item 003	Display system iQ line 33; 225 x 225 cm (front and back sides) (1x)
Item 004	Display photo; 225 x 225 cm; German, English
Item 005	Display projection surface; 225 x 225 cm
Item 006	Display photo; 225 x 155 cm; German, English
Item 007	Display photo; 225 x 155 cm; German, English
Item 008	Flex display system; 120 x 200 cm (3x)
Item 009	Display photo; 120 x 200 cm; German, English, French
Item 010	Display photo; 120 x 200 cm; English
Item 011	Display photo; 120 x 200 cm; German, English
Item 012	Display photo; 120 x 200 cm; English
Item 013	Photos; 90 x 60 cm; laminated on Dibond sheet, with hanger track on back side
Item 014	Hangers, including Perlon cord, 70-80cm
Item 015	Double hangers, including Perlon cord, 20cm
Item 016	Adjustable aluminium hooks for movable walls
Item 017	Clamping lamp with 25-watt halogen light bulb
Item 018	3-outlet electrical power strips for lighting
Item 019	10m electric power cable for lighting
Item 020	Brochure: People, Forests, Development: Protecting Tropical Rain Forests in Africa
Item 021	Brochure: Where Nature and Culture Meet: People, Food and Biodiversity
Item 022/023	DVD/VHS video: People, Forests, Development
Item 024/025	VHS video films, ARTE/ARD selection

The travelling exhibitions made available on loan from GTZ give insight into the activities of German Development Cooperation. Large-format photographs, such as this one of a woman of the BaAka pygmy people of the Dzanga-Sangha Tropical Rainforest Reserve in the Central African Republic, inform viewers and sensitise them to the importance of conserving biological and cultural diversity.

tional copies are billed at a unit price of EUR 5.00 per brochure. Reproduction of photographs in various formats can be ordered for purchase from Media Production.

To prevent any damage to photographs during transport, only fully packed transport crates are shipped (containing 24 or 25 photos per crate), i.e. a minimum of 24 or 25 photos or any amount from twice to four times this quantity should be requested. Depending on the size of the exhibition, the cost for this service is either EUR 280.00 (for a small collection, including display equipment and large-format photographs) or EUR 415.00 (for a large collection, including display equipment and large-format photographs).

All ancillary costs (transport, including transport insurance, insurance during the exhibition, movable walls and lighting, etc.) shall be borne by the borrower. The borrower is liable for any damage to the exhibition materials incurred during transport, set-up or dismantling as well as during the exhibition. The ancillary costs for transport of an exhibition (comprising 25 photographs) to Chennai, India in 2005, for example, amounted to approximately EUR 2,000.00. Transport of an exhibition containing 50 photographs to Munich in the same year cost about EUR 500.00.

GTZ can offer related paid services – such as advisory services and individual compilation of photographs, support for setup and dismantling, organisation of transport and preparation of special publicity materials and flyers – provided by the subcontractor Media Production in Cologne.

GTZ retains all rights to the photographic materials. This shall be given due consideration in the event of any re-use. When preparing publicity materials, Media Production is obligated to integrate the logos of the German Federal Ministry for Cooperation and Development (BMZ) and GTZ as well as the One World logo.

Media Production levies a small surcharge for sale of photographs and brochures (unit price for photos: EUR 200.00 plus EUR 50.00 surcharge; unit price for brochures: EUR 3.80 plus EUR 1.20 EUR surcharge). These fees are intended to fund expansion of the range of exhibitions on offer to include other topics, thus also benefiting the educational work performed within the scope of the Decade of Education for Sustainable Development (2005 - 2014) launched by the United Nations.

Please do not hesitate to contact Ms. Annette von Lossau (at GTZ) or Mr. Guenay Ulutunçok (at Media Production) should you have any questions regarding the travelling exhibitions.

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Issue Papers

Compiled below are excerpts from issue papers prepared for two GTZ projects, "Implementing the Biodiversity Convention (BIODIV)" and "People and Biodiversity in Rural Areas", that address important aspects of the brochures published in this series.

These and other issue papers can be found on the attached CD as well as online at: www.gtz.de/biodiversity

Biosafety: Implementation of the Cartagena Protocol

Expectations are high that the possible application of genetic engineering in agriculture will help breed plants that are pest-resistant and less dependent on site-specific parameters as soil properties or climate, thus ensuring food for all. Similar expectations have been triggered by the development of drugs. Yet the genetically modified organisms (GMOs) generated by genetic engineering can have adverse effects on the environment, society and human and animal health. Against this background, the term "biosafety" is used to cover the entire range of instruments needed to analyse, manage, regulate and control these risks in the development, release and utilisation of GMOs. Before GMOs are introduced, the risks they entail must be assessed, in order to avoid adverse impacts or minimise these as far as possible.

The introduction of products and processes based on genetic engineering can have far-reaching ecological consequences, especially in developing countries: the uncontrolled dissemination of artificial genes in the natural gene pool is among the most serious effects. This is a particular problem in the centres of origin and diversity of food crops, since their wide variety of species and genes is vital for securing the food supply in the long term. Another negative impact is the possibly toxic impact of GMOs on other organisms (wild animals, insects, etc.).

The use of GMOs can also have socioeconomic and sociocultural consequences for the population. Their use entails more capital, e.g. because of the higher prices of genetically modified seed. Frequently, special knowledge is needed to use this seed in order to avoid resistance of

Biotechnology and Genetic Engineering

Biotechnology is the term used to designate all technical applications, which use biological systems, living organisms or products thereof to produce or change products or procedures for a specific purpose. Biotechnology thus embraces "classic" procedures such as brewing beer and producing yoghurt (fermentation) as well as microbiological procedures (e.g. synthesis of natural substances) and genetic engineering which aims to make specific changes to the DNA of an organism.

The term "modern biotechnology" as defined in the text of the protocol refers to the application of techniques that overcome natural reproductive or recombination barriers and that are not techniques used in traditional breeding and selection. GMOs, or "living modified organisms" as they are termed in the protocol, are defined as "any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology". And "living organisms" are in turn defined as "any biological entity capable of transferring or replicating genetic material".

weeds and pests. This can make the use of genetically modified seed a major economic risk, for small farmers in particular. The new technologies can even jeopardise the social structure of villages. There is for example a risk that women might be specially disadvantaged by the use of modern technologies, seen as a male domain in many cultures. Depending on the national legislation in place, the purchase of genetically modified seed can create new dependence as a result of "built-in" patents. Another risk is that natural substances such as cacao butter might be replaced by industrial GMO products: this can severely impact on rural producers in developing countries, leading to lower incomes for farmers and the loss of export earnings.

The Cartagena Protocol on Biosafety

In January 2000, under the Convention on Biological Diversity (CBD) the Cartagena Protocol on Biosafety was adopted, regulating the transboundary movement of genetically modified organisms. After the 50th ratification the protocol entered into force in September 2003.

One important element of the protocol is the anchoring of the precautionary principle, permitting Member States to impose import restrictions even if there is no conclusive evidence of possible dangers.

The transboundary movement of agricultural raw materials containing genetically modified organisms is to be regulated in future through the Biosafety Clearing-House (BCH), an internet-based information system. All genetically modified organisms that have been approved at national level as food or feed, and which are registered with the BCH, may be exported to other Member States, provided the importing country does not have sent in any restrictions. Regarding genetically modified organisms that are to be introduced into the environment, for instance in the form of seed, the advanced informed agreement procedure shall apply prior to the first import. According to this procedure, importing countries may, after a risk analysis, permit

Traditional Knowledge relating to the conservation and sustainable use of biodiversity

Indigenous peoples and traditional communities often have a deep understanding of their environment and its ecology. They know of numerous uses to which plants and animals can be put – as food, for example, or as medicines and dyestuffs. Differing cultivation-techniques have been developed for large numbers of plants. This knowledge forms an important basis for the conservation of global biodiversity and for its sustainable use.

Cultural and biological diversity are closely interlinked. When indigenous people have their environments destroyed, when they are uprooted and displaced and lose their identity, there is a danger that their vast fund of knowledge will be lost – both to the peoples themselves and to the whole of humanity. The UN Conference on Environment and Development in Rio de Janeiro in 1992 marked the first occasion on which the value of

What Is Traditional Knowledge?

The term 'traditional knowledge' is used to describe any knowledge, innovation, or custom of indigenous, tradition-based local communities that is of relevance in ensuring the conservation and sustainable use of biodiversity.

Knowledge developed over centuries is a collective good of the communities in question and is passed on from generation to generation in the form of stories, songs, cultural values, traditional laws, local languages, rituals, healing arts, and agricultural practices.

traditional knowledge was given broad recognition. Within the framework of the Convention on Biological Diversity (CBD), the contracting states have undertaken to respect and promote traditional knowledge and to make it generally accessible. Access to indigenous knowledge is to be based on the consent of the holders of the knowledge and their equitable participation in the benefits that result from the use of their knowledge. Biological resources and traditional knowledge are defined by indigenous peoples as a common good. This is in contrast to the practice of the WTO which through the TRIPS agreement (Trade Related Aspects of Intellectual Property Rights) is seeking to institute private and individual rights to knowledge and intellectual property. The contradiction between the CBD and TRIPS remains unresolved.

Traditional Knowledge in the Convention on Biodiversity

Reference is made to indigenous and local communities in the preamble to the CBD and in four of its articles. The most important section in this regard is Article 8 (j). It urges respect for, and the preservation and maintenance of, traditional knowledge of indigenous and local communities that is of relevance to the conservation and sustainable use of biodiversity. It also encourages application of this knowledge, with the approval of those holding it and on the understanding that they will share in the benefits arising from it.

At the Fourth Conference of the Parties (COP) in May 1998, an Ad Hoc Open-ended Intersessional Working Group was established. This meets at regular intervals and is attended by all interested parties. The task of the working group is to develop and implement suitable instruments for protecting indigenous knowledge. At the Fifth Conference of the Parties in May 2000, it was decided that there should be a Programme of Work on the Implementation of Article 8 (j), with indigenous representatives participating. The topic is a cross-sectoral one and therefore extends into many other CBD-implementation activities.

Sustainable Tourism: Tourism and sustainable development

For many countries, tourism is a facet of economic development that brings great hope with it. It is often a major source of foreign currency and jobs. But tourism also brings with it problems and dangers: tourist travel and tourist facilities place a strain on natural resources and the environment; in many of the countries visited the over-use of natural resources often results in loss of biological diversity; social and cultural structures may suffer from encounter with outside values and modes of behaviour; the traditional life-styles of indigenous peoples adapted to ecological conditions gradually disappear.

If it is to make a positive contribution to sustainable development, tourism must fulfil criteria of social, ecological, cultural, and economic sustainability. This means that in many areas sustainability can only be assured if tourism is controlled. But tourism can also play a part, for example in financing social facilities or nature-conservation. Many national parks and other protected areas could now no longer be financed without income from visitors: non-sustainable uses, such as intensive agriculture or overfelling, would have

What is 'sustainable tourism'?

'Sustainable tourism' is tourism that satisfies criteria of social, cultural, ecological and economic sustainability. It is socially just, culturally appropriate, ecologically sustainable, and economically rational and productive.

Ecotourism is sustainable tourism to biological diversity – its conservation, use and benefit sharing.

won through, on the basis of short-term economic interest. With careful management, tourism can create income for the local population and can help raise awareness both amongst tourists and amongst the indigenous population.

The GTZ supports partners all over the world via large numbers of projects in which development of the tourist economy plays a part. These projects are aimed, in particular, at regional development, the promotion of small and medium-sized businesses, environmental planning and the management of resources.

Tourism and the Convention on Biological Diversity

The international Convention on Biological Diversity requires its signatories to ensure both the protection and the sustainable use of biodiversity. Tourism can be just such a use. Within the framework of the convention efforts are being made to establish guidelines for sustainable, ecologically and socially acceptable tourism. The fifth Conference of the Parties in May 2000 requested the United Nations Commission on Sustainable Development to investigate the links between tourism and biodiversity and to incorporate its findings into an international work-programme on the development of sustainable tourism.

Agrotourism and agricultural diversity

Cultural landscapes with tourist appeal

On every continent, farmers have developed a wealth of crop-plant species and varieties as well as livestock breeds. They have adapted plants and animals to meet ever-changing breeding objectives - for new sites and climatic conditions, for different purposes, and to suit individual preferences. This has resulted in a suitable variety or breed for just about any terrain. Small-scale, diverse cultural landscapes emerged, hand in hand with the many distinct forms of management. In the last 150 years, this trend has been reversed: throughout this time, diversity has been diminishing while specialized agriculture is dominated by monocultures and uniformity.

But in this process, valuable genetic characteristics are lost, for example high fertility or robustness, disease or pest resistance. The most effective way to put a stop to the genetic erosion process is to keep old varieties and breeds in use. However, farmers must be given incentives for in situ conservation: agrotourism is a way of doing so.

An advantage of this approach is that rural areas are popular destinations for holidays and excursions, particularly cultural landscapes which still give a glimpse of how past generations lived and worked. Typical regional crops and local breeds become a particular attraction for tourists. This generates additional income for farmers and contributes to the conservation and development of the whole region.

What is agrotourism?

Agrotourism is the form of tourism which capitalizes on rural culture as a tourist attraction. It is similar to ecotourism except that its primary appeal is not the natural landscape but a cultural landscape. If the attractions on offer to tourists contribute to improving the income of the regional population, agrotourism can promote regional development. To ensure that it also helps to conserve diversity, the rural population itself must have recognized agrobiodiversity as valuable and worthy of protection.

There are a range of other forms of rural tourism which are not necessarily a part of agrotourism in the strict sense - e.g. ethnotourism, project tourism, health tourism, historical tourism, cultural tourism or adventure tourism. The term 'agro-ecotourism' is generally synonymous with 'agrotourism'.

Symbiotic communities, old and new

The Lüneburg heathlands (Lüneburger Heide) are just one example.

Located between the three cities of Hamburg, Bremen and Hanover in Northern Germany, the heathlands are a popular day-trip for city-dwellers, not least because of the heidschnuck sheep, which have been a feature of the landscape for centuries. Although sheep farming here has long since become unprofitable, the animals still graze on the heathland hills - they keep the forest at bay. If the sheep go, the heath will go too, and the tourists along with it. Today they come not only to enjoy the landscape, but also the local heathland honey, buckwheat cake and heidschnuck roasts. Agrotourism is an important economic cornerstone for the whole region.

In past centuries, too, when heathland farmers toiled to eke out an existence from the sparse sandy soils, survival of the local population depended on their symbiotic relationship with the heath and the heidschnuck sheep. This extremely hardy breed of sheep was the only one that could cope with the meagre grazing. For a long time, no attempt was made to improve the breed because there was no prospect of better feed.

The heathland flora and fauna first became a tourist attraction as fashions changed and travellers began to appreciate the landscape. In fact, until well into the 19th century people tended to fear the heath as a 'wild' and 'barren' place.

Early days

In developing countries, there are only a few examples of local livestock breeds or plant varieties becoming an attraction for tourists. In Costa Rica, the Criollo horses are a special local breed and a feature of the riding holidays offered in the region. In southern Africa, visitors can ride the Lesotho ponies. The 'seed markets' - ferias de semillas - held in the highlands of Peru und Bolivia, where women offer their own varieties of potatoes and other crop plants for sale, also attract tourists.

Using a region's particular agrobiodiversity to attract tourists is usually just one component of the projects set up there. In the oases of the Maghreb, for instance, efforts are being made to conserve the diversity of date palms through participatory use and the conservation of plant genetic resources. This Global Environment Facility (GEF) project is aiming particularly at the opening up of new markets - including in the tourist regions of Morocco and Tunisia.

Agrotourism elements are also found in adventure or culture parks. In Malaysia, an 'agricultural park' measuring over 1,000 hectares has been opened, showing visitors how Malaysian agriculture has developed. There is an arboretum with native fruit varieties. Small demonstration plots are reserved for the cultivation of traditional plant species and varieties. A large part of the park is used for agroforestry.

Large-scale conservation areas, designated first and foremost for the conservation of wild plants, animals and ecosystems, are another setting in which cultural landscapes and their diversity can be conserved. Biosphere reserves in particular represent a conservation strategy that expressly includes people and sustainable, often traditional, methods of husbandry. They contribute to the in situ conservation of typical regional agricultural diversity of varieties and breeds. Products from these environmentally benign production systems can be sold as unprocessed or processed goods at markets, to restaurants and hotels or directly to tourists.

Getting started

A number of conditions must be met in order to allow the development of (agro) tourism. These include:

A largely authentic natural or small-scale, richly structured cultural landscape. The attractions of large-scale monocultures are rather limited.

In addition to the beauty of the landscape itself, it is important to have other cultural, historical or natural attractions.

Good transport links, because even attractive regions can be almost impossible to market for tourism if they are not easily accessible from the population centres.

A certain level of infrastructure must be in place: e.g. transport, accommodation and catering facilities.

Stable political conditions: this is essential for marketing even major tourist attractions.

Acceptance among the population: local people must be in favour of tourism.

A region – a concept

The diversity and genetic traits found in agriculture are worth protecting in their own right, and not just because they will be needed for future breeding programmes. The wealth of crop plants and livestock breeds is also a valuable part of the cultural heritage. When a region is conscious of this, it can use typical regional breeds and varieties alongside other cultural assets and tourist attractions to promote itself. Even if plants and animals are only a subsidiary attraction, they still help create or reinforce regional identity.

The more unusual the breed or variety, the more suitable it will be for promotional use. But less spectacular examples of agricultural diversity can also make their mark on a region's traditional cuisine. Local restaurants and hotels can put these specialities on their menus. Diversity is particularly interesting to tourists when it appears in its socio-cultural context. In other words, products are not simply on sale, but the visitors' experience is enriched by seeing old production processes, traditional crafts or special festivities in action. All this must be integrated into the region's overall marketing concept.

Identify appealing aspects of diversity

Carefully planned agrotourism can make a contribution to insitu conservation of animal and plant genetic resources. Greater efforts are therefore needed to identify interesting animal breeds and plant varieties and explore their potential for agrotourism in developing countries and countries with economies in transition. At the same time, traditional knowledge must be gathered on the management and use of these breeds and varieties. This not only helps to raise the population's awareness of the value of agrobiodiversity, but it is also indispensable for the long-term conservation of diversity.

Genetic Resources: Access and Equitable Benefit-Sharing

For thousands of years, plants and animals have been transported from country to country and from continent to continent to be used outside their region of origin – as cultivated plants, for example, or for improving seed and domesticated animal-breeds, or as medicinal plants. The modern methods associated with biochemistry, molecular biology, and, above all, gene technology, have brought a rapid growth in the demand for genetic information for the various fields of application. It is often the countries of the South, with their huge wealth of biodiversity, who supply genetic information. The vast majority of plants, animals, and micro-organisms still remain essen-

What Are Genetic Resources?

Genetic resources are any materials of plant, animal, microbial, or other origin that contain functional units of heredity and are of actual or potential use.

They include: animals and plants, or parts of these; seed; seedlings; fungi; bacteria and other single-celled organisms; cell cultures; chromosomes; and DNA (deoxyribonucleic acid).

What Is Biotechnology?

Biotechnology is any technological application that uses biological systems, living organisms, or derivatives of these, to make or modify products or processes for specific use. The scope of biotechnology thus ranges from ‘classical’ processes such as the brewing of beer and the making of yoghurt (fermentation), through microbiological processes such as the synthesis of natural materials, right up to genetic modification.

tially unexplored as far as their potential for use is concerned. At the same time, their habitats are in danger and many species are threatened with extinction. The traditional knowledge of indigenous peoples and local communities about the possible uses of the biological diversity that surrounds them is an important resource, particularly in the search for new medicines.

As an incentive to the countries of the world to preserve their biodiversity, the Convention on Biological Diversity proposes an international access and benefit-sharing regime for genetic resources. The aim is to ensure that countries of origin get a fair share in the benefits and technologies resulting from the biotechnological exploitation of genetic resources and of the traditional knowledge associated with them, in return preserving these resources – as far as possible in their natural locations. Such benefits include the kind of transfer of biotechnology and know-how that is so urgently needed by developing countries, and their participation in research into genetic resources.

Access to Genetic Resources in the Biodiversity Convention

The Biodiversity Convention lays down the framework for an international access and benefit-sharing regime for genetic resources. Access may only be granted:

- subject to prior informed consent
- on mutually agreed terms
- for sustainable uses
- on the basis of a fair and equitable distribution of the benefits derived from the use of the genetic resources in question

The contracting states are called upon to create the appropriate legal framework, either by adopting new legislation or by modifying existing provisions. In October 1999, a Panel of Experts established by the Fourth Conference of the Parties (COP) issued guidelines on national and international implementation; and in May 2000, an Open-ended Working Group was set up by the fifth COP, to draft international guidelines. It will meet for the first time in October 2001 in Bonn.

Agrobiodiversity: Genetic resources for food and agriculture

Agrobiodiversity is the outcome of thousands of years of effort by farmers in selection and breeding, and in developing appropriate production systems and methods. Plant and animal genetic resources are the source material for the further development of crop varieties and animal breeds by farmers and breeders. The small farmers of Africa, Asia and Latin America – and above all the women, who are responsible for the greater part of food production in these countries – are particularly dependent upon the diversity of genetic resources. A rich diversity of native plant varieties and locally adapted animal breeds secures these farmers' survival in the face of dif-

Agrobiodiversity

Agricultural biological diversity – or agrobiodiversity for short – includes all components of biological diversity of relevance to food and agriculture and all components of biological diversity that contribute to sustaining the key functions of agro-ecosystems. It follows that agrobiodiversity has two levels:
(1) Genetic resources for food and agriculture: vThis encompasses all cultivated and domesticated species, including their wild relatives and managed stocks of wild animals and plants. (2) Components of agrobiodiversity that provide ecological services: This includes, for instance, beneficial organisms that control pests, soil organisms that process nutrients for crop plants, pollinators, and plants that contribute to controlling erosion or stabilizing the water balance.

ficult climatic conditions and marginal locations, e.g. in arid or upland regions. Traditional genetic resources can be utilized with minimum agricultural input, have quality characteristics that correspond to needs and, in addition, often play an important role in the culture of the rural population. Greater genetic diversity also contributes to reducing climatic and disease-related risks.

Despite its benefits, agriculturally utilized biodiversity is declining rapidly in developing countries. This has many causes. More than 2,000 farm animal breeds are threatened with extinction. It is thought that the diversity of crop varieties has declined by 75 percent since the middle of the 19th century. This poses a considerable threat to future global food supply.

International recognition of the importance of agrobiodiversity

Since 1992, Agenda 21 and the Convention on Biological Diversity (CBD) have set the social and legal framework for the sustainable use and conservation of biological diversity. Within the CBD process, the topic of agrobiodiversity was addressed for the first time at the 3rd session of the Conference of the Parties to the Convention (COP3) in 1996. It was then specified within a work programme further developed at COP5. Here the focus is placed upon the ecological services of agrobiodiversity and the impacts of agricultural cropping systems and methods upon biological diversity.

For the main food and fodder crops worldwide, the issues of access to and exchange of plant genetic resources for food and agriculture and of the associated benefit-sharing will be regulated by the International Treaty on Plant Genetic Resources for Food and Agriculture, adopted by the FAO Conference in November 2001. It is a result of an intensive effort to revise the International Undertaking on Plant Genetic Resources (IU), a FAO agreement of 1983 and to harmonize it with the CBD. The key element will be a multilateral system that – supplementing CBD provisions – regulates the access to and exchange of plant genetic resources for food and agriculture.

Where animal genetic resources are concerned, the debate on regulating access and exchange is only just beginning. To address the key issues of conservation and sustainable use, the FAO adopted in 1998 a Global Strategy for Animal Genetic Resources. This is being implemented within the context of an international programme.

The WTO Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement prescribes in Article 27.3b that member states must introduce patent rights or other intellectual property rights to plant varieties. The option of introducing sui generis systems under TRIPS makes it possible to adopt variety protection pursuant to UPOV (International Union for the Protection of New Varieties) or to design individual systems of protection. Such systems could, for instance, permit farmers explicitly to re-sow protected seed on their fields, or could give protection to traditional knowledge associated with the use of the resources. In the same way, sui generis systems can also be developed for the protection of farm and domestic animal breeds.

International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

Plant genetic resources for food and agriculture are the basis for the world supply of food and for all breeding efforts. Free movement of germplasm is an essential prerequisite for the adaptation of crops to changing environmental conditions and market requirements. As most crop plants today are spread throughout the world, there is tremendous global interdependence with regard to these resources. Every country is dependent on secure access to suitable breeding material. Most of this material these days is no longer found under in situ conditions in southern nations, but is stored in gene banks (ex situ). Up to 95% of the known cultivated species used in agriculture are

stored in gene banks worldwide. According to the Report on the State of the World's Plant Genetic Resources (FAO 1996), stored collections of e.g. wheat account for 95% of cultivated varieties and 60 % of wild varieties, with equivalent figures for maize of 95% and 15% and for potatoes of 95% and 40% respectively.

After seven years of negotiations, the International Treaty on Plant Genetic Resources for Food and Agriculture ("IT") was adopted in Rome in November 2001. The broad goal of the treaty is to create a legally binding framework for the protection and sustainable use of all plant genetic resources for food and agriculture. The multilateral approach taken in the IT to facilitating access to propagating material for the most important food crops and forages, including early cultivated varieties and wild crop relatives, is intended to ensure that transborder exchange is maintained.

IT – summary

Farmers' rights and contributions

For years, Farmers' Rights have been the focus of international dispute about plant genetic resources for food and agriculture. The recognition of Farmers' Rights at the international level acknowledges the contribution of farmers since the start of arable farming in creating and preserving the vast biological variety in agriculture. Farmers' Rights (Art. 9) are intended to ensure that farmers have access to good seed. Art. 9 explicitly notes that it is not intended to limit the rights of farmers to save, use, exchange and sell farm-saved seed or propagating material. Farmers' Rights are intended to provide a counterweight to the intellectual property rights which industry and the industrialised nations are now demanding for breeding products and other developments in green genetic engineering. The IT establishes Farmers' Rights for the first time in the context of a legally binding, international commitment. They are, however, only vaguely described, and the responsibility for their realisation rests with national governments.

Facilitated access to plant genetic resources: the multilateral system

The core of the IT is a so-called multilateral system, which is to be created in order to facilitate access to plant genetic resources for food and agriculture. While the general provisions of the IT create a legally binding framework for lasting conservation of all plant genetic resources for food and agriculture, the provisions governing facilitated access and fair distribution of benefits are limited to the plant genera and species listed in the annex to the treaty. To date, this list comprises 35 food crops and 29 forages. These were selected on the basis of their importance for food security, and together cover 80% of the calorie intake of the world's population. No agreement could be reached on other important species, e.g. soya, by the end of the negotiations. However, these could still be added to the list later. There is great international interdependence with respect to the crops included in the multilateral system. Most of them are spread worldwide today, and breeding is dependent on the availability of these resources.

From International Undertaking to International Treaty (IT)

The IT replaces the International Undertaking, a commitment to the conservation and use of plant genetic resources for food and agriculture which had existed since 1983 in non-binding form under the FAO umbrella, and whose provisions had to be revised after the adoption of the Convention on Biological Diversity (CBD). The IT now regulates a number of problem areas which have been controversial in recent years, including some omitted from the CBD drafting process as potential risks to its adoption. This specifically relates to Farmers' Rights and the use of the extensive ex situ collections of plant genetic resources of national and international institutions and research centres. The centrepiece of the IT is the creation of a multilateral system intended to facilitate access to a range of crop plant genera and species. In addition, the IT sets out to regulate the fair and equitable sharing of benefits arising out of the use of the plant genetic material made available. The treaty became binding in international law on 29 June 2004, 90 days after ratification by 40 states. The Governing Body, comprising representatives of all member states, generally meets every two years and is responsible for treaty implementation.

Farmers' Rights (Art. 9) in the IT relate to:

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

Facilitated access to the collections of the multilateral system shall be provided solely for research, breeding or training purposes serving food security in the broader sense of the term. Such access will not be provided for the purpose of chemical, pharmaceutical or other (industrial) uses.

Fair and equitable benefit sharing

Besides recognising the importance of the multilateral system and the benefits arising solely out of its creation, the IT provides the following mechanisms for fair benefit sharing: exchange of information, access to and transfer of technology, capacity building, and the sharing of monetary benefits arising from commercialisation. These benefits should flow primarily to the farmers in developing countries for their contributions in developing and conserving plant genetic resources.

Standardized material transfer rules now established

By ratifying the IT, the contracting parties agree to grant each other facilitated access to the crop resources within the multilateral system. Access to genetic resources within the system must be granted swiftly and at minimum cost. The terms of access were agreed in 2006 at the first session of the IT's Governing Body in the form of the standardized Material Transfer Agreement (MTA). Under the agreement, breeding companies will in future pay compensation if, through their use of certain genetic resources, they restrict - e.g. through patents - access for the purposes of research or further breeding. This compensation will amount to 1.1% of the turnover generated by the company from the product developed. The transfer agreement only applies in relations between the direct contracting parties. The con-

Provisions on benefit sharing (Art. 13)

- Exchange of information: The information made available under the multilateral system includes catalogues and inventories, nonconfidential information on technologies, the results of technical and socioeconomic research, and research into characterising and evaluating plant material.
- Access to and transfer of technology: The parties to the treaty undertake to provide or facilitate access to technologies for the conservation, characterisation, evaluation and use of plant genetic resources for food and agriculture which are under the multilateral system. This includes access to improved varieties and genetic material developed through the use of plant material obtained from the multilateral system. Technology transfer to developing countries will accordingly be promoted, although applicable intellectual property rights shall be recognised and effectively protected.
- Capacity building: Creation of institutional and personnel capacity for the conservation and sustainable use of plant genetic resources will be promoted through education and research programmes in developing countries.
- Sharing of monetary and other benefits of commercialisation: If improved varieties from plant material of the multilateral system are developed and commercialised in a way that limits further use for research and breeding, the treaty provides for mandatory payments. This applies primarily to the award of intellectual property rights, unless corresponding exceptions are made in the relevant national framework. In all other cases, commercial users are "encouraged" to make voluntary payments.

tracting parties are under no obligation to monitor what is done with the material accessed.

The major collections held by the International Agricultural Research Centres

The multilateral system covers all plant genetic resources that are (a) listed in the annex to the treaty, (b) under the management and control of the Contracting Parties, and (c) in the public domain. A central role in this is played by the plant collections maintained ex situ by the International Agricultural Research Centres (IARCs) and other international institutions.

The seed banks and plant collections of the Consultative Group for International Agricultural Research (CGIAR) contain the most important collections of germplasm for international plant breeding. To keep these freely accessible to interested parties, they were placed under the supervision of the FAO in the 90s. Access has since been granted on the basis of a specific material transfer agreement which requires the recipient of materials not to claim ownership over the material, nor to seek intellectual property rights over these resources.The IT recognises the outstanding importance of the ex situ collections held by the IARCs and calls on the centres to formulate agreements on access modalities with the Governing Body. This will be done by a differentiated system of material transfer agreements (cf. box).

Need for action in the context of international development cooperation

In the course of the impending formulation of the material transfer agreement and implementation of the IT it will be important to prevent provisions being undermined at the cost of the developing countries. This applies particularly to the interpretation of provisions which have so far been only vaguely expressed in the treaty. Resolution of the following questions is particularly urgent for the interests of the developing countries: When can IPR be awarded over improved varieties and genetic material? What genetic distance is required between the genetic material which is the subject of the IPR application and the initial material taken from the system? What payment modalities are required if commercialisation of newly developed products is associated with restrictions on third party research and breeding?

A key task of technical cooperation in the coming years will be to assist partner countries in the following areas:

- concretising and implementing Farmers' Rights;
- institutional and personnel capacity building, by promoting training programmes, strengthening facilities for conservation and sustainable use of plant genetic resources, and carrying out research projects in partner countries;
- developing policies and legislation for implementing the IT at national level. For this, interfaces must be formulated with other treaties, and specifically the Convention on Biological Diversity and WTO-TRIPS Agreement.

In addition, it should be considered to what extent the principles of the IT can be transferred to other areas of biological diversity, e.g. farm animal genetic resources. These are also very important for global food security.

Access to the IARC collections (Art. 15)

- Plant genetic resources listed in the IT annex and held by the IARCs shall be made available in accordance with the provisions of the multilateral system.
- Plant genetic resources for food and agriculture held in IARC collections other than those listed in the IT annex and collected before entry into force of the IT shall be made available in accordance with existing arrangements. These will be brought into closer correspondence with the IT provisions in due course by the Governing Body.
- Plant genetic resources other than those listed in the IT annex and collected after the coming into force of the IT shall be accessible under conditions agreed between the recipient IARC and the country of origin of the resources or the country which has acquired the resources in accordance with the Convention on Biological Diversity or some other applicable law.

‘Underutilized’ species: Rich potential is being wasted

Trend towards uniformity

Until the beginning of the 20th century, a wide range of locally- adapted crop varieties and livestock breeds were available to farmers. This diversity contributed to the security of the food supply and helped to safeguard people's livelihoods. Nowadays, the bulk of the world's food is derived from just a few species. For example, the three major cereals – wheat, rice and maize – supply more than half of the global protein and calorie intake. Relatively few modern varieties are planted on every continent, accounting for almost three-quarters of the land under cultivation, where they have supplanted the diversity that once existed. Farm animals have been affected by a similar trend. The success of Holstein-Friesian cattle seemingly knows no bounds. This highly productive breed is now dominant, making up 60% of European and 90% of North American dairy cattle. Many developing countries are becoming increasingly reliant on industrial dairy production, and are supporting cross-breeding programmes using Holstein- Friesian and other exotic high-performance breeds.

But it will take more than a handful of species to feed the world population and secure its income in the long term. It is important to retain a broad genetic base of our major crops and farm animals, so as to allow for breeding activities to adapt plants and animals to changing environmental conditions, market requirements or new pests and diseases. At the same time, increasing the number of species in agricultural systems helps to raise their all-important buffer capacity.

The 1996 Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources makes specific reference to promoting development and commercialization of under utilized crops and species. The same goals were adopted by the World Food Summit (Rome, 1996), because underutilized species make an essential contribution to food security and poverty reduction. If a proportion of the major food crops in production were replaced or supplemented with underutilized plants and breeds, this would not only increase the number of species in production but would also result in a healthier and more diverse nutritional base.

Setting a good example

A range of initiatives are already in hand to investigate potentially profitable uses of underutilized plants and animals. These activities are taking place both nationally and internationally, in some cases involving cooperation between the private and the public sectors.

Adding value to local breeds – Nguni cattle in Southern Africa

The Nguni breed of cattle is uniquely adapted to the harsh Southern African environment. Nevertheless, during the first half of the 20th century, it was crossed with exotic breeds over an extended period, causing the original Nguni cattle population to decline substantially. The local breed was deemed unproductive, but in fact the animals possessed valuable traits which had been overlooked. Not only is the Nguni breed resistant to ticks, it is also extremely tolerant of heat and drought, and relatively undemanding in terms of feed quality or veterinary care. Its hides are highly prized among the local population for their attractive markings. For all these reasons, Nguni cattle have become the stuff of numerous poems and myths.

In cooperation with the private sector, GTZ is seeking to improve processes within the production chain. It envisages supporting the organization of local smallholders and their herd management practices. Additional issues are marketing, meat quality, hide treatment at the time of slaughter, transportation conditions and secondary processing. Joint efforts will be made to seek new markets for the high quality leather and the 'organic' meat produced. Both can be expected to do well in niche markets.

El Salvador's balsam trees – Conservation through use

The balsam trees of Myroxylon balsamum var. Pereirae only grow in the western part of El Salvador. Long ago, the Mayan people knew of the

What are 'Underutilized' species ?

The term underutilized species – referring to animals, crop plants, wild or semi-wild plants – applies to those species which appear to have considerable potential for use yet whose potential is barely exploited, if not totally neglected, in agricultural production. For example, there are numerous plants which are particularly well adapted to specific sites and agricultural production systems. This category includes crops like yams, the 'Inca wheat' quinoa, and many species of tropical fruits and vegetables.

The reasons for the underutilization of such species vary: it may be that their useful traits are not well known; perhaps there is little processing or marketing capacity, or a lack of interest on the part of agricultural research. 'Taro', the tuberous root of Colocasia esculenta is an example of a species overlooked by science. Although it is one of the staple foods in Africa, Asia and Latin America, there has been less research on taro than on asparagus.

Instead of 'underutilized' species, the related terms 'minor', 'local', 'neglected', or 'orphan' species are also used in literature. These terms all focus on certain aspects which restrict a wider use, for example the fact that they have been 'neglected' by scientific institutions, or that they are of 'minor' economic importance. Other authors have suggested the terms 'alternative' or 'promising' species to highlight their potential.

tree's resin, which can be used for medicinal purposes, for cosmetics, and as an aromatic ingredient. During the colonial era, balsam was shipped to Spain via the port of Calao in Peru, which is why the name 'Peru balsam' is still in widespread use today. With the emergence of synthetic substitutes, balsam production has become less and less profitable over the years and balsam forests have increasingly been destroyed. In collaboration with local partners and the Centre for the Promotion of Imports from Developing Countries (CBI) in the Netherlands, GTZ is now working to strengthen El Salvador's balsam sector.

A sector strategy will be formulated and the production process of the natural product will be better documented. Other planned support measures include the establishment of a central quality control system and the development of a marketing concept. Furthermore, the project will explore how far an integrated 'balsam tourism project' is likely to help to improve the economic and social situation of the people living in the balsam production region, who are the guardians of this unique tropical forest.

Creation of a global hub

In order to promote international exchange on species with high potential and to strengthen existing initiatives and networks, a dedicated global hub – the Global Facilitation Unit for Underutilized Species, GFU – was created in 2002. The project, which was initiated by the Global Forum for Agricultural Research (GFAR), is being financed by the German Federal Ministry for Economic Cooperation and Development (BMZ) and is based at the International Plant Genetic Resources Institute IPGRI in Rome. Its main function apart from providing information is to offer a forum for discussion, of support concepts for the sustainable use of underutilized species, for instance. Initially the GFU will confine itself to the sphere of plant species.

What underutilized species can offer

Greater food security

Local crops and animal breeds can increase food security, particularly if they are adapted to specific marginal agricultural conditions. Diversification is a means of risk reduction.

Healthy nutrition

Many underutilized crops have important nutritional qualities, such as a high fat content, high quality proteins (essential amino acids), a high level of minerals (such as iron), vitamins, or other valuable nutrients which have not yet been described satisfactorily. They are therefore a significant complement to the 'major' cereals and serve to prevent or combat the hidden hunger – a diet deficient in vitamins, minerals and trace elements – which is prevalent in developing countries.

Income generation

Underutilized species are capable of supplying both foodstuffs and industrial raw materials,

which will offer new opportunities for income generation if their market potential is successfully recognized and developed.

Poverty reduction

Many underutilized plant species and breeds require few, if any, external inputs for production. This is an incalculable advantage, especially for poor sections of the population. For example, local cattle breeds can thrive without fodder supplements and preventative veterinary treatments. While they may be less productive, their performance remains consistent when conditions are less than ideal. Local crops produce lower but stable yields even on marginal land and without additional inputs of mineral fertilizers and pesticides. If the land in question does not belong to the farmers, it may still be possible to use wild or semi-cultivated species (such as medicinal herbs, dyes, etc.).

Sustainable use of natural resources

Locally adapted crops and animal breeds offer potential for the sustainable use of more challenging sites, such as semi-arid or mountain regions.

A well-known example is that local cattle breeds are often less destructive to the vegetation cover on slope land than (heavier) high performance breeds. Local crop species and varieties fit easily into traditional sustainable farming systems geared towards maintaining or restoring soil fertility, like mixed cropping and agroforestry.

Indigenous knowledge and cultural identity

Many smallholders possess very specific knowledge of cultivation and processing techniques for underutilized species and their diverse uses. It is not unusual for certain plant or animal species to be of great spiritual importance for the people and their cultural identity.

What are the limitations on use?

Lack of market infrastructure

Many underutilized crops and animal products are used almost exclusively for the farmers' own subsistence, even where the potential exists to market them more extensively. This is due to the lack of infrastructure for marketing products of suitable quality and in appropriate quantities to potential customers.

Lack of technologies

Traditionally, underutilized plant and animal products have been processed manually on farms, often using labour-intensive and time-consuming methods. To expand the scale of production, efficient technologies must be developed for manufacturing, storage and processing, to ensure that quality standards can be met.

Lack of knowledge and erosion of cultural diversity

Often, neither scientists nor consumers are aware of the nutritional value, medicinal properties or other special characteristics of these products. Indeed, fundamentally negative attitudes may prevail towards local traditions. In extreme cases, indigenous culinary traditions and local specialities may be dismissed as 'old-fashioned' or 'paupers' food'.

Lack of political support

The food security programmes in many developing countries are based on agricultural policies which favour the 'green revolution crops' and focus exclusively on maize, wheat or rice, and export crops. In animal production, the emphasis has long been on promoting the use of high-performance breeds, even though they only produce high yields in ideal production conditions. Incentives, subsidies and loan programmes for this type of agricultural production distort the market, to the detriment of traditional crop varieties and animal breeds. Complicated authorization procedures can also be an obstacle to accessing new international markets. One example is the Novel Food Regulation of the European Union, which requires extensive safety-testing of novel foodstuffs on public health grounds before they can be introduced to the European market.

In addition to the reasons mentioned, there are certainly other causes of underutilization which are not so easily remedied, at least not in the short term; for example, low yields, unpalatable flavours or poor keeping qualities.

New strategies to promote use

Before strategies can be developed to promote use of a species, careful analysis is needed of its potential and the factors constraining its use. Essentially, two different approaches are possible:

The commodity chain approach aims to develop the market potential of a particular species or product by strengthening weak points in the value chain.

The livelihood approach is an effort to

exploit the full livelihood potential. It seeks to find better uses for the species in relation to the producers' life situation, e.g. for their nutrition, for their health, to strengthen their cultural identity, and to conserve natural resources.

Both approaches can combine various strategic steps to promote their product: optimizing production and storage methods, improving quality standards, processing and marketing, strengthening organizational structures, lobbying, awarenessraising and public relations work.

Essentially, promoting the use of underutilized species is most successful when it does not concentrate on one product in isolation but forms part of a regional development concept. Of course, the technologies and social structures deployed within the project must be sustainable. In the case of export products, it often makes sense to team up with Fair Trade and organic initiatives.

In the long term, the promotion of underutilized species must be mainstreamed into regional and national development strategies, and research and advisory work must take up the cause of species with high potential. The main point is not to carry out isolated projects, but to make a lasting impact by reversing the loss of agricultural diversity.

Win-win solutions are possible

In recent years, a growing interest in exotic foods has been noticed among consumers in the northern hemisphere. Products made from underutilized species could satisfy this desire for variety, encouraging greater agricultural diversity and benefiting producers in the South – as long as those who have developed the previously neglected species into lucrative ones are not forced out of the market later by more powerful producers.

The promotion of high-potential species will only result in higher agrobiodiversity if their increasing commercial use does not simply displace other crops or breeds from production. Hence it is necessary to monitor and document the precise impacts of export-oriented promotion on agrobiodiversity, on opportunities for income generation, and on social structures.

Farmers as bankers: Community seed banks

We reap what we sow

For some 10,000 years, breeding and production of seed was the sole preserve of farmers. They produced the rich diversity of crop species and varieties that exist today, and maintained them in cultivation. It was only about 100 years ago, when the laws of heredity were deciphered, published and generally accepted, that scientific plant breeding began.

Gene banks were initially set up as 'working collections' for specialized breeding programmes. They are repositories holding samples of the most important crop plants from every continent ex situ, i.e. outside their natural context. Later, gene banks were given an additional mandate: the conservation of locally grown crop varieties. The increasingly widespread use of modern plant varieties led to the gradual replacement of traditional varieties, which meant that their genetic characteristics were also lost to farming. Thus, scientific plant breeding deprived itself of the raw material which was the very basis of its work.

Farmers have great difficulty in accessing the material in ex situ collections. Gene banks tend to be located a long distance away from villages. In addition, they can only respond to a restricted number of requests and distribute small volumes of seeds or planting material. So, for a farmer who may want to restock with seed of traditional local varieties, that are lost or degenerated, ex situ collections are not very useful. Likewise, seed programmes initiated by state or non-governmental organizations rarely distribute traditional local varieties, because their goal is usually to diffuse new breeding products.

This is why farmers are often interested in community seed banks and other community conservation schemes which give them access to important planting material.

What is the point of community seed banks and gardens?

Community seed banks are local institutions that conserve and maintain access to locally adapted seed and planting materials for farmers. Typically they rely on a community storage structure where the seed can be processed, selected and stored, in order to have sufficient quantities available even when normal supplies fail. Usually there is a community seed bank committee that oversees activities and decides what can be stored, and how and when seed can be used. In many cases, the seed stores built can provide storage conditions which are better than those on farms, and sometimes they also have an office and meeting room. Keeping the seed in a secure building administered by a committee is more likely to prevent farmers from selling off or consuming the seed in times of food scarcity. Thus seed banks contribute to the security of the seed supply. Seeds for the village store are procured from farmers who are recognized to be good seed producers. While the initial seed lots are often purchased by a project, a regulated process for withdrawing and depositing seed is necessary to ensure the subsequent conservation of seed stocks.

Farmers who have borrowed seed are required to return a similar quantity to the seed bank after harvest. For crops which are not propagated from seed, alternative structures must be developed for conservation and propagation at community level, e.g. by setting up conservation gardens.

Sufficient supplies to withstand the drought

In Zimbabwe's marginal rural areas, recurrent droughts make it very difficult for farmers to save seed until the next sowing season. Community seed banks have helped to remedy this problem. In cooperation with the national gene bank, two non-governmental organizations (NGOs) – the Community Technology and Development Trust (CTDT) and the Intermediate Technology Development Group (ITDG) – have launched projects on community seed banking.

In Ethiopia, community seed banks build on the farmers' cultural and religious traditions, whereby seed is donated to those who have fallen into poverty. NGOs and the Biodiversity Conservation & Research Institute (BCRI) operate community seed banks with a dual purpose: firstly, they aim to ensure that sufficient seed stocks are available in the regions for the most important crop species and local varieties, and that farmers have access to them; secondly, given the Institute's limited capacity and budget, BCRI relies on community seed banks to conserve, regenerate and distribute seeds of local varieties as a complement to the conservation work which comes under its mandate. The BCRI recognizes the importance of co-evolution of varieties maintained on-farm, and the farmers' knowledge pertaining to the growth and use of these varieties. Participating farmers who maintain local varieties rather than high yielding varieties onfarm receive compensation for the foregone yield, usually in the form of agricultural tools.

The GREEN Foundation, which works in India with women's farming groups, has been supporting the establishment of a network of 31 community seed banks in Karnataka Province. This has increased the number of women farmers involved in conserving the seed of traditional crops from 10 to over 1,500. For this innovative scheme which contributes to the conservation of biodiversity and to poverty reduction, the United Nations Development Programme (UNDP) awarded the GREEN Foundation the 2004 Equator Prize. The Equator Initiative is also supported by the German Federal Ministry for Economic Cooperation and Development (BMZ).

Gardens full of tubers

Conservation gardens in Ecuador demonstrate how conservation and evaluation goals can be combined in a communitybased approach. The National Department of Plant Genetic Resources and Biotechnology (DENAREF) in Ecuador maintains a large collection of Andean root and tuber plants. These include mashua (Tropaeolum tuberosum), oca (Oxalis tuberosa), melloco (Ullucus tuberosus), arracacha (Arracacia xanthorrhiza), jicama (Smallanthus sonchifolia), achira (Canna edulis) and miso (Mirabilis expansa), which are conserved ex situ using both tissue culture and field-planted material.

A study was conducted in 1999 in the region of Las Huaconas, home to many local Indian communities, on the crop species and varieties in use. It was found that many of the native varieties of Andean tuber crops collected by DENAREF in 1980 were no longer to be found in the communities. This circumstance motivated DENAREF to produce planting material in what they called conservation gardens. 'Jardines de Conservación' are experimental plots planted on communal land. They not only proved to be ideal propagation sites but also lent themselves to collaborative evaluation of crops by farmers and researchers. Out of 30 samples of different tuber crops distributed to farmers in six different communities, 30 percent were still in production three years later.

At present, DENAREF, with support from GTZ, is coordinating the setting up of a community garden for tropical root and tuber crops in the village of Gualaquiza. Gualaquiza lies in the Amazon Basin and is home to the Shuar-Achuar Bilingual Institute (IPIBSHA). Collections of cocoyam (Xanthosoma spp. and Colocasia spp.), yam (Dioscora spp.), sweet potato (Ipomea batatas) and cassava (Manihot esculenta) are maintained in the Institute's garden. Students will maintain, develop and study the collection as part of their training programme.

Fruitful contacts

The impetus to organize a community seed bank usually comes from outside the community, in response to the realization that it is affected by seed shortages. In many countries, the initiative is taken by NGOs, development organizations or gene banks and their programmes for the conservation of plant genetic resources. They have the possibility of bringing communities into contact with organizations which maintain ex situ collections, such as the BCRI in Ethiopia or DENAREF in Ecuador. Once such contacts are established, there is a chance that old local varieties or other interesting material can be reintroduced into the villages by means of community seed banks or other activities like seed fairs. It is vital that gene banks recognize the potential which lies in the linkage of ex situ and on-farm conservation. The reintroduction of lost species and varieties makes a critical contribution to the farmers' well-being and to the conservation of agricultural diversity.

As interest grows, so does knowledge

For a community, the establishment of a community seed bank can be an entry point for developing village organizational structures. Among farmers, a community seed store can awaken interest in improved seed quality. In Ecuador, the community seed bank stimulated community activity on demonstration plots using old and new varieties, culminating in participatory evaluation of that material.

Because it is often the case that the returned seed may be of lower quality than that obtained from the seed bank, it can be useful to link activities surrounding the seed bank with training courses in seed production and selection, as was done in Ethiopia.

When a seed bank is founded and seed stocks are acquired, the use to which funds are put must be absolutely transparent. Before the seed bank becomes operational, the policy on who has access to seed, when, and under what conditions must be clearly defined. The less well-off farmers in the community, who may be most in need of the seed, may be unintentionally excluded if they cannot afford to comply with the conditions for returning seed. Training in seed production and management for seed producers opens up new sources of income, which should not remain the sole preserve of the better-off. A successful seed bank has the potential to develop into a small local seed company.

Community seed banks are a good complement to community seed fairs. Both promote the conservation of agricultural diversity. In order to assess whether a seed bank will be sustainable without project funding, an understanding of the local seed production system is required, including such key questions as: when are farmers unable to save seed, which farmers are most under threat from seed insecurity, and what quality deficiencies does the seed exhibit? Transfer of the necessary knowhow may take place via training programmes on seed production and selection.

In order to make a more thorough assessment of the effect of community seed banks on the conservation and sustainable use of agrobiodiversity, however, further studies will be necessary.

Rio Declaration on Environment and Development (1992)

The United Nations Conference on Environment and Development, Having met at Rio de Janeiro from 3 to 14 June 1992, Reaffirming the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972, and seeking to build upon it, With the goal of establishing a new and equitable global partnership through the creation of new levels of cooperation among States, key sectors of societies and people, Working towards international agreements which respect the interests of all and protect the integrity of the global environmental and developmental system, Recognizing the integral and interdependent nature of the Earth, our home, Proclaims that:

Principle 1
Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 2
States have, in accordance with the Charter of the United Nations and the Principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Principle 3
The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

Principle 4
In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 5
All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

Principle 6
The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

Principle 7
States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit to sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Principle 8
To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

Principle 9
States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

Principle 10
Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning

the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 11
States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and development context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

Principle 12
States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

Principle 13
States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

Principle 14
States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

Principle 15
In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Principle 16
National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in Principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

Principle 17
Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

Principle 18
States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

Principle 19
States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

Principle 20
Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

Principle 21
The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

Principle 22
Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

Principle 23
The environment and natural resources of people under oppression, domination and occupation shall be protected.

Principle 24
Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

Principle 25
Peace, development and environmental protection are interdependent and indivisible.

Principle 26
States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

Principle 27
States and people shall cooperate in good faith and in a spirit of partnership in the fulfilment of the Principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

Excerpts from the Convention on Biological Diversity (CBD)

Preamble

The Contracting Parties,

- Conscious of the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components,
- Conscious also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere,
- Affirming that the conservation of biological diversity is a common concern of humankind,
- Reaffirming that States have sovereign rights over their own biological resources,
- Reaffirming also that States are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner,
- Concerned that biological diversity is being significantly reduced by certain human activities,
- Aware of the general lack of information and knowledge regarding biological diversity and of the urgent need to develop scientific, technical and institutional capacities to provide the basic understanding upon which to plan and implement appropriate measures,
- Noting that it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source,
- Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat,
- Noting further that the fundamental requirement for the conservation of biological diversity is the in-situ conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings,
- Noting further that ex-situ measures, preferably in the country of origin, also have an important role to play,
- Recognizing the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components,
- Recognizing also the vital role that women play in the conservation and sustainable use of biological diversity and affirming the need for the full participation of women at all levels of policy-making and implementation for biological diversity conservation,
- Stressing the importance of, and the need to promote, international, regional and global cooperation among States and intergovernmental organizations and the non-governmental sector for the conservation of biological diversity and the sustainable use of its components,
- Acknowledging that the provision of new and additional financial resources and appropriate access to relevant technologies can be expected to make a substantial difference in the world's ability to address the loss of biological diversity,
- Acknowledging further that special provision is required to meet the needs of developing countries, including the provision of new and additional financial resources and appropriate access to relevant technologies,
- Noting in this regard the special conditions of the least developed countries and small island States,
- Acknowledging that substantial investments are required to conserve biological diversity and that there is the expectation of a broad range of environmental, economic and social benefits from those investments,
- Recognizing that economic and social development and poverty eradication are the first and overriding priorities of developing countries,
- Aware that conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the growing world population, for which purpose access to and sharing of both genetic

resources and technologies are essential,

- Noting that, ultimately, the conservation and sustainable use of biological diversity will strengthen friendly relations among States and contribute to peace for humankind,
- Desiring to enhance and complement existing international arrangements for the conservation of biological diversity and sustainable use of its components, and
- Determined to conserve and sustainably use biological diversity for the benefit of present and future generations,

Have agreed as follows:

Article 1

Objectives

The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

Article 2

Use of Terms

For the purposes of this Convention:

"Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

"Biological resources" includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

"Biotechnology" means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.

"Country of origin of genetic resources" means the country which possesses those genetic resources in in-situ conditions.

"Country providing genetic resources" means the country supplying genetic resources collected from in-situ sources, including populations of both wild and domesticated species, or taken from ex-situ sources, which may or may not have originated in that country.

"Domesticated or cultivated species" means species in which the evolutionary process has been influenced by humans to meet their needs.

"Ecosystem" means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

"Ex-situ conservation" means the conservation of components of biological diversity outside their natural habitats.

"Genetic material" means any material of plant, animal, microbial or other origin containing functional units of heredity.

"Genetic resources" means genetic material of actual or potential value.

"Habitat" means the place or type of site where an organism or population naturally occurs.

"In-situ conditions" means conditions where genetic resources exist within ecosystems and natural habitats, and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

"In-situ conservation" means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

"Protected area" means a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives.

"Regional economic integration organization" means an organization constituted by sovereign States of a given region, to which its member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to it.

"Sustainable use" means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

"Technology" includes biotechnology.

Article 3

Principle

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Article 4

Jurisdictional Scope

Subject to the rights of other States, and except as otherwise expressly provided in this Convention, the provisions of this Convention apply, in relation to each Contracting Party:

- **a** In the case of components of biological diversity, in areas within the limits of its national jurisdiction; and
- **b** In the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction.

Article 5

Cooperation

Each Contracting Party shall, as far as possible and as appropriate, cooperate with other Contracting Parties, directly or, where appropriate, through competent international organizations, in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological diversity.

Article 6

General Measures for Conservation and Sustainable Use

Each Contracting Party shall, in accordance with its particular conditions and capabilities:

- **a** Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned; and
- **b** Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

Article 7

Identification and Monitoring

Each Contracting Party shall, as far as possible and as appropriate, in particular for the purposes of Articles 8 to 10:

- **a** Identify components of biological diversity important for its conservation and sustainable use having regard to the indicative list of categories set down in Annex I;
- **b** Monitor, through sampling and other techniques, the components of biological diversity identified pursuant to subparagraph (a) above, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use;
- **c** Identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques; and
- **d** Maintain and organize, by any mechanism data, derived from identification and monitoring activities pursuant to subparagraphs (a), (b) and (c) above.

Article 8

In-situ Conservation

Each Contracting Party shall, as far as possible and as appropriate:

- **a** Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;
- **b** Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity;
- **c** Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;
- **d** Promote the protection of ecosystems, natural habitats and the maintenance of viable popu-

lations of species in natural surroundings;

e Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas;

f Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies;

g Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health;

h Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species;

i Endeavour to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components;

j Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;

k Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations;

l Where a significant adverse effect on biological diversity has been determined pursuant to Article 7, regulate or manage the relevant processes and categories of activities; and

m Cooperate in providing financial and other support for in-situ conservation outlined in subparagraphs (a) to (l) above, particularly to developing countries.

Article 9

Ex-situ Conservation

Each Contracting Party shall, as far as possible and as appropriate, and predominantly for the purpose of complementing in-situ measures:

a Adopt measures for the ex-situ conservation of components of biological diversity, preferably in the country of origin of such components;

b Establish and maintain facilities for ex-situ conservation of and research on plants, animals and micro- organisms, preferably in the country of origin of genetic resources;

c Adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions;

d Regulate and manage collection of biological resources from natural habitats for ex-situ conservation purposes so as not to threaten ecosystems and in-situ populations of species, except where special temporary ex-situ measures are required under subparagraph (c) above; and

e Cooperate in providing financial and other support for ex-situ conservation outlined in subparagraphs (a) to (d) above and in the establishment and maintenance of ex- situ conservation facilities in developing countries.

Article 10

Sustainable Use of Components of Biological Diversity

Each Contracting Party shall, as far as possible and as appropriate:

a Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;

b Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;

c Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements;

d Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and

e Encourage cooperation between its govern-

mental authorities and its private sector in developing methods for sustainable use of biological resources.

Article 11

Incentive Measures

Each Contracting Party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.

Article 12

Research and Training

The Contracting Parties, taking into account the special needs of developing countries, shall:

a Establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and its components and provide support for such education and training for the specific needs of developing countries;

b Promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries, inter alia, in accordance with decisions of the Conference of the Parties taken in consequence of recommendations of the Subsidiary Body on Scientific, Technical and Technological Advice; and

c In keeping with the provisions of Articles 16, 18 and 20, promote and cooperate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources.

Article 13

Public Education and Awareness

The Contracting Parties shall:

a Promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programmes; and

b Cooperate, as appropriate, with other States and international organizations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity.

Article 14

Impact Assessment and Minimizing Adverse Impacts

1 Each Contracting Party, as far as possible and as appropriate, shall:

a Introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures;

b Introduce appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account;

c Promote, on the basis of reciprocity, notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction, by encouraging the conclusion of bilateral, regional or multilateral arrangements, as appropriate;

d In the case of imminent or grave danger or damage, originating under its jurisdiction or control, to biological diversity within the area under jurisdiction of other States or in areas beyond the limits of national jurisdiction, notify immediately the potentially affected States of such danger or damage, as well as initiate action to prevent or minimize such danger or damage; and

e Promote national arrangements for emergency responses to activities or events, whether caused naturally or otherwise, which present a grave and imminent danger to biological diversity and encourage international cooperation to supplement such national efforts and, where appropriate and agreed by the States or regional economic integration organizations concerned, to establish joint contingency plans.

2 The Conference of the Parties shall examine, on the basis of studies to be carried out, the

issue of liability and redress, including restoration and compensation, for damage to biological diversity, except where such liability is a purely internal matter.

Article 15

Access to Genetic Resources

1 Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

2 Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.

3 For the purpose of this Convention, the genetic resources being provided by a Contracting Party, as referred to in this Article andArticles 16 and 19, are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.

4 Access, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.

5 Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.

6 Each Contracting Party shall endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties.

7 Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.

Article 16

Access to and Transfer of technology

1 Each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provisions of this Article to provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.

2 Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed, and, where necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights. The application of this paragraph shall be consistent with paragraphs 3, 4 and 5 below.

3 Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that Contracting Parties, in particular those that are developing countries, which provide genetic resources are provided access to and transfer of technology which makes use of those resources, on mutually agreed terms, including technology protected by patents and other intellectual property rights, where necessary, through the provisions of Articles 20 and 21 and in accordance with international law and consistent with paragraphs 4 and 5 below.

4 Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that the private sector facilitates access to, joint development and

transfer of technology referred to in paragraph 1 above for the benefit of both governmental institutions and the private sector of developing countries and in this regard shall abide by the obligations included in paragraphs 1, 2 and 3 above.

5 The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.

Article 17

Exchange of Information

1 The Contracting Parties shall facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries.

2 Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge as such and in combination with the technologies referred to in Article 16, paragraph 1. It shall also, where feasible, include repatriation of information.

Article 18

Technical and Scientific Cooperation

1 The Contracting Parties shall promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity, where necessary, through the appropriate international and national institutions.

2 Each Contracting Party shall promote technical and scientific cooperation with other Contracting Parties, in particular developing countries, in implementing this Convention, inter alia, through the development and implementation of national policies. In promoting such cooperation, special attention should be given to the development and strengthening of national capabilities, by means of human resources development and institution building.

3 The Conference of the Parties, at its first meeting, shall determine how to establish a clearing-house mechanism to promote and facilitate technical and scientific cooperation.

4 The Contracting Parties shall, in accordance with national legislation and policies, encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies, in pursuance of the objectives of this Convention. For this purpose, the Contracting Parties shall also promote cooperation in the training of personnel and exchange of experts.

5 The Contracting Parties shall, subject to mutual agreement, promote the establishment of joint research programmes and joint ventures for the development of technologies relevant to the objectives of this Convention.

Article 19

Handling of Biotechnology and Distribution of its Benefits

1 Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, to provide for the effective participation in biotechnological research activities by those Contracting Parties, especially developing countries, which provide the genetic resources for such research, and where feasible in such Contracting Parties.

2 Each Contracting Party shall take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties, especially developing countries, to the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties. Such access shall be on mutually agreed terms.

3 The Parties shall consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity.

4 Each Contracting Party shall, directly or by requiring any natural or legal person under its jurisdiction providing the organisms referred to in paragraph 3 above, provide any available information about the use and safety regulations required by that Contracting Party in handling such organisms, as well as any available information on the potential adverse impact of the specific organisms concerned to the Contracting Party into which those organisms are to be introduced.

Article 20

Financial Resources

1 Each Contracting Party undertakes to provide, in accordance with its capabilities, financial support and incentives in respect of those national activities which are intended to achieve the objectives of this Convention, in accordance with its national plans, priorities and programmes.

2 The developed country Parties shall provide new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs to them of implementing measures which fulfil the obligations of this Convention and to benefit from its provisions and which costs are agreed between a developing country Party and the institutional structure referred to in Article 21, in accordance with policy, strategy, programme priorities and eligibility criteria and an indicative list of incremental costs established by the Conference of the Parties. Other Parties, including countries undergoing the process of transition to a market economy, may voluntarily assume the obligations of the developed country Parties. For the purpose of this Article, the Conference of the Parties, shall at its first meeting establish a list of developed country Parties and other Parties which voluntarily assume the obligations of the developed country Parties. The Conference of the Parties shall periodically review and if necessary amend the list. Contributions from other countries and sources on a voluntary basis would also be encouraged. The implementation of these commitments shall take into account the need for adequacy, predictability and timely flow of funds and the importance of burden-sharing among the contributing Parties included in the list.

3 The developed country Parties may also provide, and developing country Parties avail themselves of, financial resources related to the implementation of this Convention through bilateral, regional and other multilateral channels.

4 The extent to which developing country Parties will effectively implement their commitments under this Convention will depend on the effective implementation by developed country Parties of their commitments under this Convention related to financial resources and transfer of technology and will take fully into account the fact that economic and social development and eradication of poverty are the first and overriding priorities of the developing country Parties.

5 The Parties shall take full account of the specific needs and special situation of least developed countries in their actions with regard to funding and transfer of technology.

6 The Contracting Parties shall also take into consideration the special conditions resulting from the dependence on, distribution and location of, biological diversity within developing country Parties, in particular small island States.

7 Consideration shall also be given to the special situation of developing countries, including those that are most environmentally vulnerable, such as those with arid and semi- arid zones, coastal and mountainous areas.

Article 21

Financial Mechanism

1 There shall be a mechanism for the provision of financial resources to developing country Parties for purposes of this Convention on a grant or concessional basis the essential elements of which are described in this Article. The mechanism shall function under the authority and guidance of, and be accountable to, the Conference of the Parties for purposes of this Convention. The operations of the mechanism shall be carried out by such institutional structure as may be decided upon by the Conference of the Parties at its first meeting. For purposes of this Convention,

the Conference of the Parties shall determine the policy, strategy, programme priorities and eligibility criteria relating to the access to and utilization of such resources. The contributions shall be such as to take into account the need for predictability, adequacy and timely flow of funds referred to in Article 20 in accordance with the amount of resources needed to be decided periodically by the Conference of the Parties and the importance of burden-sharing among the contributing Parties included in the list referred to in Article 20, paragraph 2. Voluntary contributions may also be made by the developed country Parties and by other countries and sources. The mechanism shall operate within a democratic and transparent system of governance.

2 Pursuant to the objectives of this Convention, the Conference of the Parties shall at its first meeting determine the policy, strategy and programme priorities, as well as detailed criteria and guidelines for eligibility for access to and utilization of the financial resources including monitoring and evaluation on a regular basis of such utilization. The Conference of the Parties shall decide on the arrangements to give effect to paragraph 1 above after consultation with the institutional structure entrusted with the operation of the financial mechanism.

3 The Conference of the Parties shall review the effectiveness of the mechanism established under this Article, including the criteria and guidelines referred to in paragraph 2 above, not less than two years after the entry into force of this Convention and thereafter on a regular basis. Based on such review, it shall take appropriate action to improve the effectiveness of the mechanism if necessary.

4 The Contracting Parties shall consider strengthening existing financial institutions to provide financial resources for the conservation and sustainable use of biological diversity.

Article 22

Relationship with Other International Conventions

1 The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.

2 Contracting Parties shall implement this Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea.

Concluded at Rio de Janeiro on 5 June 1992

The rainforest in the Central African Republic is the home of the pygmy people. Just those tribes living in the Congo's Kahuzi-Biéga National Park alone use some 250 different species of wild plants for their daily needs. The national park enables the pygmies to retain their traditional lifestyle. For only if the rainforests survive will the peoples of the forest have a chance of survival, and still be able to feed themselves tomorrow from that which nature provides them.

Glossary

Access and Benefit Sharing (ABS)
Access to genetic resources and fair and equitable sharing of the benefits arising from genetic resources (known in short as access and benefit sharing)

Biodiversity
The term "biological diversity" or "biodiversity" refers to the variety of life on Earth, which encompasses genetic diversity, species diversity and ecosystem diversity.

Biopiracy
The term "biopiracy" was first coined in the early 1990s by the North-American non-governmental organisation ETC Group. According to this meaning, "biopiracy" is the usurpation of genetic resources and knowledge of indigenous peoples and local communities, especially in developing countries, on the part of private, usually transnational enterprises and/or public institutions that mostly originate from the countries of the North. In doing so, resources that for countless years were accessible to the general public and available to the entire community are privatised in the hands of corporate enterprises. Enterprises use intellectual property rights in order to lay claim to exclusive rights to these resources and to secure ownership for themselves by legal means. The term is also often applied to illegal accessing of generic resources, i.e. accessing in a form that does no comply with the principles of Article 15 of the Convention on Biological Diversity (CBD).

Bioprospecting
The search for and use of components of biodiversity with potential commercial value, for example for the pharmaceutical, agricultural or cosmetic industry.

Biotechnology
Any technological application that uses biological systems, living organisms or derivatives thereof to make or modify products or processes for specific use.

BMZ
Germany's Federal Ministry for Economic Cooperation and Development (BMZ) is responsible for planning and implementing the German Government's development policy. It commissions various independent organisations to implement concrete projects and programmes of German Development Cooperation, or provides financial contributions to enable these measures to be carried out.
www.bmz.de/en

Convention on Biological Diversity (CBD)
Adopted in Rio de Janeiro in 1992, the CBD combines the conservation of biological diversity with the sustainable use of its components and the fair and equitable sharing of the benefits arising out of this utilisation. Since then, 188 states have become Party to the Convention. By signing and ratifying the Convention, Germany has undertaken not only to protect biodiversity within its own borders, but also to support the developing countries in implementing the steps they need to take in order to achieve the Convention's objectives.
www.cbd.int

Ex-situ conservation
The conservation of components of biological diversity outside their natural habitats (for example in gene banks, botanical gardens and zoos).

Financial Cooperation (FC)
FC is implemented through the federally-owned KfW Entwicklungsbank. In selected priority regions and countries it promotes investment and delivers project-based advisory services for social and economic infrastructure development, industrial development and environmentally sound natural resource management.
www.kfw.de/EN_Home

Genetic material
Any material of plant, animal, microbial or other origin containing functional units of heredity.

Genetic resources
Any genetic material of actual or potential economic value.

Global Environment Facility (GEF)
An international financing mechanism supporting implementation of the Convention on Biological Diversity (CBD) and the Framework Convention on Climate Change (UNFCCC) in developing countries.

GTZ
The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH is a private enterprise wholly owned by the Federal Republic of Germany. It implements development cooperation projects primarily on behalf of BMZ, transfers technical, organisational and economic expertise, and acts as a mediator in conflicts of interest within societies.
www.gtz.de/en

In-situ conservation
The conservation of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

KfW Entwicklungsbank (development bank)
Kreditanstalt für Wiederaufbau: The KfW is responsible for Financial Cooperation with governmental institutions. It provides financial and advisory inputs in selected priority regions and countries, in order to promote social and economic infrastructure development, industrial development and environmentally sound natural resource management.

Multilateral development cooperation
Development cooperation implemented by international institutions such as organisations and programmes of the United Nations, regional development banks or the World Bank. Germany contributes to these efforts.

Protected areas
An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal and other effective means. (EUROPARC / IUCN 2000)

Sustainable development
Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (Gro Harlem Brundtland, 1987)
www.nachhaltigkeitsrat.de

Sustainability
Also termed "sustainable development": meeting the needs of the present in such a way that does not compromise the ability of future generations to meet their own needs. Sustainability should be the basis for all political decision-making concerning the management of natural, social and technical resources. Since the UN Conference on Environment and Development in Rio in 1992, sustainable development has been accepted as a guiding vision for global action. Agenda 21, which was adopted at Rio, is the programme of action to implement this vision. (BMZ)
www.bmz.de/en

Technical Cooperation
TC transfers technical, economic and organisational knowledge and skills in order to strengthen the performance capacity of people and organisations in partner countries. These inputs, which are usually delivered through GTZ, are a contribution to our partners' own projects and complement the inputs made by those partners. (BMZ, website)

Acronyms and abbreviations

BMZ	German Federal Ministry for Economic Cooperation and Development
CBD	(United Nations) Convention on Biological Diversity
CCD	(United Nations) Convention to Combat Desertification
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora – also known as the Washington Convention
FAO	Food and Agriculture Organization of the United Nations
FCCC	(United Nations) Framework Convention on Climate Change
FUNDESNAP	a Bolivian foundation for development of protected area systems
FC	Financial Cooperation
GEF	Global Environment Facility
GMO	genetically modified organism
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
IT	International Treaty on Plant Genetic Resources for Food and Agriculture
IU	International Undertaking on Plant Genetic Resources
ITPGR	International Treaty on Plant Genetic Resources for Food and Agriculture of the FAO
ITWG-AnGR	Intergovernmental Technical Working Group on Animal Genetic Resources
IUCN	World Conservation Union (formerly the International Union for the Conservation of Nature)
KfW	Kreditanstalt für Wiederaufbau
MDG	Millennium Development Goal
NGO	non-governmental organisation
PAWB	Protected Areas and Wildlife Bureau of the Philippine Department for Environment and Natural Resources (DENR)
PIC	prior informed consent
PINNI	Palawan NGO Network, the Philippines
RAMSAR	the Convention on Wetlands: convention for the protection and use of wetlands of international importance
SEARICE	South East Asia Regional Initiative for Community Empowerment – NGO in the Philippines
SERNAP	Servicio Nacional de Áreas Protegidas – national protected areas system of Bolivia
TC	Technical Cooperation
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNCED	United Nations Conference on Environment and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UN	United Nations
WCDE	World Commission on Environment and Development
WWF	World Wide Fund for Nature

Links and literature

Development cooperation and sustainable development

Ambler, John
Attacking Poverty While Improving the Environment: Toward Win-Win Policy Options.
http://stone.undp.org/divs/seed/peifomm/ACF889.PDF

The Equator Initiative
www.undp.org/equatorinitiative

The German Federal Agency for Nature Conservation (BfN)
www.bfn.de (select language: English)
- Information platform Clearing-House-Mechnismus (CHM) Germany
www.biodiv-chm.de (select language: English)

Bigg, Tom & David Satterthwaite (eds.)
How to make Poverty History: The central rule of local organizations in meeting the MDGs. International Institute for Environment and Development (iied). London.
www.iied.org/Gov/mdgs/documents/mdg3/11000IIED.pdf

Educational server for school children in North-Rhine/Westphalia (NRW)
www.learn-line.nrw.de/start.html (German)
- Materials on various topics of sustainable development and the global Agenda 21
www.learn-line.nrw.de/angebote/agenda21/doku/global.htm
- Materials on various topics of environmental education
www.learn-line.nrw.de/angebote/agenda21/medien/umwelt.htm#UM

BMU
German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
www.bmu.de/english

BMZ
German Federal Ministry for Economic Cooperation and Development
www.bmz.de/en
- Aims and Principles
www.bmz.de/en/principles
- Millennium Declaration (MDG)
www.bmz.de/en/issues/MDG
- Programme of Action 2015
www.bmz.de/en/principles/aims/programme2015
- BMZ (2005): Germany's Contribution to Achieving the Millennium Development Goals. Topics 141, 60 pages.
www.bmz.de/en/service/infothek/fach/materialien/materialie141.pdf
- BMZ (2001): Poverty Reduction - a Global Responsibility. Program of Action 2015. The German Government's Contribution Towards Halving Extreme Poverty Worldwide. Topics 108, 39 pages.
www.bmz.de/en/service/infothek/fach/materialien/materialie108.pdf
- BMZ (2002): Umwelt - Entwicklung - Nachhaltigkeit: Entwicklungspolitik und Ökologie. [BMZ (2002): Environment - Development - Sustainability: Development Policy and Ecology.]
www.bmz.de/de/service/infothek/buerger/oekobroschuere.pdf
- BMZ: Teaching Materials. Brochure of diagrams
www.bmz.de/en/service/infothek/unterricht
- BMZ: Umwelt, Armut und nachhaltige Entwicklung: Themenblätter zu Umwelt und nachhaltiger Ressourcennutzung in der Entwicklungszusammenarbeit. Themenblatt 03: Umwelt & Armutsbekämpfung. [BMZ: Environment, Poverty and Sustainable Development: issue papers on the environment and sustainable resource use in development cooperation. Issue paper 03: The Environment and Poverty Reduction.]

CBD
Convention on Biological Diversity (website of the convention)
www.cbd.int
- Convention on Biological Diversity: text of English version
- The Clearing-House Mechanism – an Information System:
www.cbd.int/chm

CITES
Convention on International Trade in Endangered Species of Wild Fauna and Flora – also known as the Washington Convention
- Website of the convention
www.cites.org
- Additional information on the website of the Federal Agency for Nature Conservation
www.cites-online.de (German)

Also available as a PDF file on the CD "Sustainability Has Many Faces" attached to this brochure.

Club of Rome
www.clubofrome.org
DFID
Department for International Development
Biodiversity – a crucial issue for the world's poorest. UK.
www.dfid.gov.uk/pubs/files/biodiversity.pdf
DFID, EC, UNDP and the World Bank
(2002) Linking Poverty Reduction and Environmental Management.
http://ec.europa.eu/comm/development/body/publications/docs/brochure_linking_poverty_en.pdf#zoom=100
ECEAT
European Centre for Eco Agro Tourism
www.eceat.nl
FAO
www.fao.org
- Commission on Genetic Resources for Food and Agriculture
  www.fao.org/ag/cgrfa

GTZ
Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH
www.gtz.de/en
- General information about the organisation
  www.gtz.de/en/unternehmen/689.htm
- GTZ (2003): Umsetzung internationaler Umweltkonventionen. [Implementation of International Environmental Conventions.]
- Project: "Implementing the Biodiversity Convention"
  www.gtz.de/en/themen/umwelt-infrastruktur/18459.htm
  - Publications page of the Convention Project BIODIV, presenting general Background information on various topics (such as sustainable tourism, traditional knowledge, agrobiodiversity and genetic resources)
    www.gtz.de/en/themen/umwelt-infrastruktur/19340.htm
  - List of hyperlinks dealing with topics addressed by the Convention on Biological Diversity
    www.gtz.de/en/themen/umwelt-infrastruktur/20181.htm
  - Text of the Biodiversity Convention, with explanations
    www.cbd.int/convention/about.shtml
- GTZ (2006): Biodiversity in German Development Cooperation. 6th revised edition. Eschborn.
- Information on the project's MDG poster series
  www.gtz.de/en/themen/umwelt-infrastruktur/umweltpolitik/14936.htm
- GTZ cross-sectoral theme page on Poverty
  www.gtz.de/en/themen/uebergreifende-themen/armut/902.htm
- Environmental impact assessment (EIA) of GTZ projects
  www2.gtz.de/uvp/english
- Global environmental policy: From Rio to Johannesburg. Akzente special
  www2.gtz.de/dokumente/AKZ/eng/AKZ_2002_Rio_plus_10/Akzente_Sonder_e.pdf

GTZ & BfN
Naturschutz in Entwicklungsländern (2000). Neue Ansätze für den Erhalt der biologischen Vielfalt. Heidelberg, 294 pages. (Conserving nature in developing countries. New avenues for biodiversity conservation.)
IUCN
The World Conservation Union
www.iucn.org
InWEnt
www.inwent.org/index.en.shtml
- Country information pages with a compilation of country-specific hyperlinks
  www.inwent.org/v-ez/lk/laender.htm (German)
- Development policy learning programme on the Global Campus 21 (log-on using the user name "guest" and password "guest")
  www.gc21.de/ibt/modules/gc21/ol-epol/start.html (German)

Koziell, Izabella & Charles I. McNeill
Building on Hidden Opportunities to Achieve the Millennium Development Goals (2002): Poverty Reduction through Conservation and Sustainable Use of Biodiversity. World Summit on Sustainable Development 2002. UNDP. Equator Initiative. IIED.
www.ring-alliance.org/ring_pdf/bp_povreduc.pdf
National Parks Worldwide
(collection of hyperlinks to websites on protected areas and national parks around the world)
www.hum.amu.edu.pl/~zbzw/ph/pnp/swiat.htm
Nohlen, D & F. Nuscheler
Handbuch der Dritten Welt (a handbook of the third world, with regular edition updates). Bonn
Nohlen, D.
Lexikon Dritte Welt (a third world encyclopedia, with regular edition updates). Hamburg

Online dictionary of terms related to sustainability (German)
www.nachhaltigkeit.aachener-stiftung.de/1000/Veranlassung.htm

German Council for Sustainable Development
www.nachhaltigkeitsrat.de/english

SAVE Foundation
(Safeguard for Agricultural Varieties in Europe)
www.save-foundation.net

TRAFFIC
The Wildlife Trade Monitoring network
www.traffic.org
- Special information on medicinal plants
  www.traffic.org/about/priority_medicinal_trade.html

UN
United Nations
www.un.org
- Millennium Development Goals
  www.un.org/millenniumgoals
- About the Millennium Project
  www.unmillenniumproject.org
- Text of Agenda 21
  www.un.org/esa/sustdev/agenda21text.htm
- Comission on Sustainable Development
  www.un.org/esa/sustdev
- UN Platform for Women and the Environment
  www.un.org/womenwatch/daw/beijing/platform/environ.htm

UNCCD
United Nations Convention to Combat Desertification
www.unccd.int

UNFCC
United Nations Framework Convention on Climate Change
http://unfccc.int

UNDP
United Nations Development Programme
www.undp.org
- UNDP (2005): Assessing Environment's Contribution to Poverty Reduction
  www.undp.org/pei/pdfs/AssessingEnvironmentsRoleinPovertyReduction.pdf

UNEP
United Nations Environmental Programme
www.unep.org
- Global Environmental Outlook 4
  www.unep.org/geo/geo4/media

WCMC
World Conservation Monitoring Centre
www.unep-wcmc.org
- Information on peace parks
  www.unep-wcmc.org/protected_areas/transboundary

World Bank
www.worldbank.org
- Weltbank (2000): Voices of the Poor, Can Anyone Hear us?. Oxford Universtiy Press.
  www.worldbank.org/poverty/strategies/chapters/environment/environ.htm

World Database on Protected Areas
(joint website of UNEP and WCMC with a list of all protected areas worldwide, many maps and statistics, and links to other information)
http://sea.unep-wcmc.org/wdbpa

WHO
World Health Organization
www.who.int
- Information on Dr. Gro Harlem Brundtland
  www.who.int/dg/brundtland/en

WRI
World Resources Institute
www.wri.org
- Earth Trends – The Environmental Information Portal: http://earthtrends.wri.org

WWF
The Conservation Organization
www.panda.org
- Living Planet Report
  http://assets.panda.org/downloads/living_planet_report.pdf

Topic-specific links and references

Biosafety

Website of the Biosafety Protocol
www.cbd.int/biosafety/default.shtml

Homepage of the Biosafety Clearing House
http://bch.cbd.int

Third World Network Biosafety Info Centre
www.biosafety-info.net

International Centre for genetic Engineering and Biotechnology
www.icgeb.org/~bsafesrv

Biotechnology and Development Monitor
(critical journal focussed on socioeconomic risks)
www.biotech-monitor.nl

Traditional knowledge

Topic page of the Biodiversity Convention secretariat with additional links
www.cbd.int/traditional/default.shtml

CBIK
Center for Biodiverstiy and Indigenous Knowledge
www.cbik.org

WIPO
World Intellectual Property Organization Information on Traditional Knowledge
www.wipo.int/tk/en

Sustainable tourism

Aderhold, P., Laßberg, D. v., Stäbler, M. & A. Vielhaber
Tourismus in Entwicklungsländern(2000). Schriftenreihe für Tourismus und Entwicklung, Studienkreis Tourismus, Ammerland. 248 pages. ISBN 3-9804846-7-X. (Tourism in developing countries)

Ceballos-Lascurain, H.
Tourism, Ecotourism, and Protected Areas (1996). IUCN-The World Conservation Union, Protected Areas Programme. Gland & Cambridge.

CEU-ETC (1996)
Rural Tourism. A Solution for Employment, Local Development and Environment. World Tourism Organization, 106 pages.

Ellenberg, L., Scholz, M., Beier, B. (publishers)
Ökotourismus (1997): Reisen zwischen Ökonomie und Ökologie. Heidelberg. (Ecotourism: Crossing the divide between economy and ecology.)

ECEAT
European Centre for Eco Agro Tourism
www.eceat.nl

GTZ
information about tourism
www.gtz.de/en/themen/uebergreifende-themen/11013.htm

IPGRI
Adventures in Agrobiodiversity (2001): Ecotourism for Agrobiodiversity Conservation. A Feasibility Study. - IPGRI, Cali (Colombia).

Kepe, T., Ntsebeza, L., Pithers, L.
Agro-Tourism Spatial Development Initiatives in South Africa (2001): are they enhancing rural livelihoods? - ODI (Overseas Development Institute), Natural Resources Perspectives, London, 4 pages.

Payer, A.
Ausgewählte Problemfelder der Entwicklung (2001): Tourismus. Teil III. 14. Agrotourismus
www.payer.de/entwicklung/entw513.htm
(Selected issue areas: Tourism, agrotourism)

Rauschelbach, B. (publisher)
(Öko-)Tourismus (1998): Instrument für eine nachhaltige Entwicklung? Max Kasparek Verlag, Heidelberg, 144 pages. ISBN 3-925064-24-9. (Eco-)tourism: A tool for sustainable development?)

Steck, B., Strasdas, W. & E. Gustedt
Tourism in Technical Co-operation (1999). A guide to the conception, planning and implementation of project-accompanying measures in regional rural development and nature conservation. TZ Verlagsgesellschaft, Rossdorf, 151 pages. ISBN 3-933984-10-6.
www.gtz.de/de/dokumente/en-tourism-tc-guide.pdf

TÖB
Tropenökologisches Begleitprogramm, 1997. Nachhaltiger Tourismus und Entwicklungs-zusammenarbeit. Fallstudien zum Thema. Eschborn, 68 pages. (Sustainable tourism and development cooperation. Case studies)

WTO
World Tourism Organization (1998): Guide for Local Authorities on Developing Sustainable Tourism. Madrid. Internet

Equitable benefit-sharing

Topic page of the Biodiversity Convention secretariat
www.cbd.int/abs/default.shtml

Regional continuing education for eastern and southern Africa on the subject of Access and Benefit Sharing (ABS)
www.abs-africa.info

3sat/“nano” science and technology TV series
(Information on the two German-language films on "The Teff Cereal", in German.)

- Glutenfreies Getreide Teff nur aus den Niederlanden
  www.3sat.de/3sat.php?/nano/bstuecke/89815
- Regelungen für die Ressourcen der "Dritten Welt"
  www.3sat.de/3sat.php?/nano/bstuecke/89800

Agrobiodiversity

Agrobiodiversity in the CDB
www.cbd.int/agro/default.shtml
Information on the IT, IU and ITWG-AnGR
www.fao.org/ag/cgrfa/itpgr.htm (english)
www.genres.de/infos/itpgrfa_dt.pdf (german)
Information on the TRIPS
www.wto.org/english/tratop_e/trips_e/trips_e.htm
Critical commentary and information on the negotiation process for the IT, IU and TRIPS
with numerous links
www.ukabc.org/iu2.htm and www.grain.org

International Treaty on Plant Genetic Resources for Food and Agriculture

Text of treaty
www.fao.org/ag/cgrfa/itpgr.htm (english)
www.genres.de/infos/itpgrfa_dt.pdf (german)
UK Food Group
www.ukabc.org/iu2.htm
Fowler, C.
The Status of Public and Proprietary Germplasm and Information (2003): an assessment of recent developments at FAO, IP-strategy today No 7
www.biodevelopments.org/ip/ipst7.pdf
Girsberger, Martin
Keine Patente mehr auf Weizen und Co.? Die immaterialgüterrechtsrelevanten Bestimmungen des "Internationalen Vertrages über pflanzengenetische Ressourcen für Ernährung und Landwirtschaft der FAO, [No more patents for Wheat and Co? The provisions of the FAO] in: Zeitschrift für Immaterialgüter-, Informations- und Wettbewerbsrecht.

Underutilised species

GTZ
Protection by Utilisation – Economic Potential of Neglected Breeds and Crops in Rural Development. GTZ, Eschborn, Germany, 2002.
E. Thies
Promising and Underutilized Species, Crops and Breeds. GTZ, Eschborn, 2000.
S. Gündel, I. Höschle-Zeledon, B. Krause & K. Probst (eds.)
Under-utilized Plant Species and Poverty Alleviation. International Workshop , 6.–8. May 2003, Leipzig/Germany, 2004. InWEnt.
ILEIA
Valuing crop diversity (2004). LEISA Magazine 20 (1). (see www.leisa.info)
Global Facilitation Unit for Underutilized Species
www.underutilized-species.org
International Plant Genetic Resources Institute
www.ipgri.cgiar.org/Institute/fact_nus.htm

Seed banks

Catalán, R., & I. Perez
The conservation and use of biodiversity by Mapuche communities in Chile (2000). In: C. Almekinders & W. de Boef (Eds), Encouraging Diversity. The conservation and development of plant genetic diversity, page 60-66
Demissie, A.
In situ conservation: the Ethiopian experience (1999). LEISA Magazine 15 (3+4), p. 30-31.
www.leisa.info
Mujaju, C., F. Zinhanga & E. Rusike
Community Seed Banks for Semiarid Agriculture in Zimbabwe (2003). In: CIPUPWARD. Conservation and Sustainable Use of Agricultural Biodiversity. A Sourcebook (Vol. 2). International Potato Center – Users' Perspectives With Agricultural Research and Development. Los Banos, Laguna, Philippines. p. 294-301
www.eseap.cipotato.org/upward/Abstract/Agrobio-sourcebook.htm
Tapia, C., & A. Monteros
Conservación y gestión de la agrobiodiversidad en campos de agricultores indigenas (on farm) (2003). Document prepared for GTZ.
Tapia C.; Estrella, J.; Monteros A.; Valverde F.; Nieto M. & J. Córdova (in press)
Manejo y conservación de RTAs in situ en fincas de agricultores y ex situ en el banco de germoplasma del INIAP.
Teekens, K.
Local seed supply: the case of the seed banks in Tigre, Ethiopia (2000). In: C. Almekinders & W. de Boef (Eds), Encouraging Diversity. The conservation and development of plant genetic diversity, p. 240-244.
GREEN
Genetic Resource, Energy, Ecology and Nutrition Foundation, India
www.greenconserve.com

Contents of the DVD

Film “The Teff Cereal” (in English and German)

People, Forests, Development: Protecting tropical rainforests in Africa (in English, German and French)

Contents of the CD "Sustainability Has Many Faces"

Development Needs Diversity

- The brochure (PDF files, en/fr/es/de)
- Brochures on the photo exhibitions
  - People, Forests, Development: Protecting tropical rainforests in Africa (en/fr/de)
  - Where Nature and Culture Meet: People, food and biodiversity (en/de)
- Posters on the Millennium Development Goals
  - Philippines
  - Bolivia
  - The MDG Poster Book (en/de)
- Photo gallery
- Issue papers
- Selected documents

Nature Conservation Is Fun

- The brochure (PDF files, es/de)
- Other materials included
  - Tarjetas ecológicas (ecological playing cards) (PDF files)
    - Photos of animals and plants (face of the playing cards)
    - Texts for all the playing cards (reverse, es/de)
  - Tesoros del Parque Nacional Cerro Hoya (treasures of the Cerro Hoya National Park)
  - Booklets and posters in the treasures of the National Park series (PDF files)
    - Aves (birds)
    - Mamíferos (mammals)
    - Iguanas (iguanas)
- A PowerPoint presentation on the Cerro Hoya project
- Themed maps of Panama and the project region (PowerPoint)
- Photo gallery
- Selected documents

Use It or Lose It

- The brochure (PDF files, fr/de)
- Other materials included
  - Interview with the Director of the Pendjari on the origin of the name Pendjari (fr/de)
  - Poster on grasscutter breeding
  - Graphics from the teaching aids on grasscutter breeding
- Collection of themed maps of the Pendjari (PowerPoint)
- Photo gallery
- Selected documents

Land Rights Are Human Rights

- The brochure (PDF files, en/de)
- Makuleke poster on the Millennium Development Goals (PDF file, en/de)
- A PowerPoint presentation on the history of the Makuleke from their perspective (en)
- Photo gallery
- Selected documents (PDF files)

Exclusion of liability

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Development Needs Diversity
People, natural resources and international cooperation
Contributions from the countries of the south

Nature Conservation is Fun
Protected area management and environmental communication
Contributions from Panama

Use It or Lose It
Hunter tourism and game breeding for conservation and development
Contributions from Benin

Land Rights Are Human Rights
Win-win strategies for sustainable nature conservation
Contributions from South Africa

SUSTAINABILITY HAS MANY FACES

A brochure series with accompanying materials on development cooperation for the UN Decade of Education for Sustainable Development

Preserving biological and cultural diversity prepares the ground for human development. The examples included in this series present various "faces" of sustainability, offering ideas, contributions and suggestions on education for sustainable development both in and out of school (UN Decade 2005-2014). They show how people in countries with which we are less familiar find ways of improving their living conditions, while at the same time learning to protect their environment. In these settings, development cooperation means helping facilitate difficult economic and social change processes.

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