The CBD for Botanists:

An introduction to the Convention on Biological Diversity for people working with botanical collections

Version 2

Written by

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Contents

Foreword

The Convention on Biodiversity (CBD) is of central importance to all those working towards the conservation and sustainable utilization of species, ecosystems and landscapes. It is, however, a complex document and to be employed effectively it requires careful explanation and interpretation for specific users. 'The CBD for Botanists' does this most effectively for those working with botanical collections, both living and preserved, in botanic gardens, seed banks, culture collections, herbaria, specimen stores and museums. It embraces the whole of the CBD but emphasises those parts concerned with the practical implications of providing access to genetic resources and benefit sharing.

What has been produced is a manual, comprising a CD-ROM based PowerPoint presentation with accompanying hard copy notes including sheets suitable for photocopying for use with an overhead projector. This format was adopted following consultation with potential user groups around the world. English, Spanish and French language versions have been produced to facilitate the widest possible dissemination of the material.

A particularly attractive feature of the manual is its flexibility. Thus, it provides a basis for a series of presentations for teaching, training or informing practitioners that can be adapted and added to according to the needs and aspirations of individual presenters and recipients. Notably, illustration relating to local institutions can easily be incorporated.

Finally, for someone like myself who is totally baffled by the bewildering variety of technical terms, jargon words and acronyms that are thickly scattered through the Convention like currants in a fruit cake, it provides a much needed translation and guide.

Botanists are central to the implementation of the CBD. The authors are to be congratulated on producing for them an invaluable guide to the Convention that is attractive, accessible and authoritative. The Darwin Initiative is proud to have been associated with its production.

Professor David S Ingram OBE

Chairman, Darwin Initiative Advisory Committee

Introduction

This presentation pack is designed as an introduction to the Convention on Biological Diversity (CBD). It is primarily intended for people working with botanical collections: botanists, curators, horticulturalists and technicians in botanic gardens, herbaria, museums and seed banks. However, we hope the content will be of wider application to all those working with the CBD. The pack aims to provide basic information on all of the most relevant parts of the CBD for botanical institutions, but places particular focus on the Convention's provisions on 'access to genetic resources and benefit-sharing' and their practical implications.

The pack is designed to be a flexible resource. It should not be given as a single presentation, but instead used as a tool to develop a series of presentations according to your needs. The slides and accompanying speaker's notes can, and should, be adapted to suit a wide range of audiences and requirements. You can add your own slides, examples and images to increase its relevance to a particular region, country or sector. In particular, the slides on CBD-friendly institutional use and exchange should be tailored to describe your own institution's specific policies, internal procedures and staff responsibilities.

We hope that the pack will be a useful teaching tool, providing much needed increased training and awareness of the CBD, as well as suggesting some practical models that can be used by botanical collections, whatever their size**.**

A note on jargon: the CBD world is as jargon-rich as most other technical and professional walks of life. We aim to demystify the CBD by explaining these terms, uses and acronyms, rather than removing them. An important objective of this pack is to enable people to understand and feel comfortable with the language of the CBD as it is used in the Convention itself.

China Williams, Kate Davis and Phyllida Cheyne

Royal Botanic Gardens, Kew

January 2003

Introduction to Version 2

So much has happened in the last three years that it has been necessary to update the original presentation pack. This new version features modifications and updates to the many of the slides, covers new developments in the CBD, and includes an updated Resources section. Version 2 is available in CD-ROM and web download form only. We hope that this revised resource continues to be a useful source of information for all those working with botanical collections, and others interested in learning about the practical implications of the CBD for scientists and horticulturalists. We aim to produce further updates as the CBD continues to develop, and we look forward to hearing back from users about what they found helpful or otherwise, and suggestions for improvement.

China Williams, Kate Davis and Phyllida Cheyne

Royal Botanic Gardens, Kew

March 2006

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- This project was funded by the Darwin Initiative of the Department of Environment, Food and Rural Affairs, United Kingdom.

How to use this presentation pack

This pack consists of slides and speaker's notes for a presentation on the Convention on Biological Diversity (CBD). The presentation is divided into four separate topic areas that can be used and adapted according to the background, interests and needs of your audience:

- **Introduction** to the CBD
- **How the CBD operates**
- **Botanical institutions** and the CBD - Access and Benefit-Sharing
- Practical CBD **implementation** by botanical institutions

A fifth section of **additional slides** and speaker's notes provides detail on some extra topics that you can add to your presentation, as you think appropriate.

You will not want to give the full presentation as it appears here. In fact, if you do, audiences may suffer a severe case of information overload! Instead, we hope that this pack will provide a useful starting point from which you can tailor the slides, and accompanying speaker's notes, to reflect the specific needs of your audience, the length of the presentation and your own personal style. For example, you could illustrate some slides with examples from your own region or institution, or supplement the slides with extra images, such as cartoons, photographs, or newspaper cuttings. Such measures will undoubtedly increase the impact of an individual presentation. We need to personalise the CBD to help people understand its importance and relevance to their work.

The slides

The slides have been drafted in general terms with the hope that they will remain current, and therefore of use, for the foreseeable future. The slides can be printed as handouts from the PowerPoint file on the CD-ROM, and given out to an audience for information.

The speaker's notes

Suggested speaker's notes accompany each slide. These notes are more specific than the slides and reflect information current as at March 2006. We have written these for speakers to use verbatim, but key points are highlighted in bold typeface. Of course, all speakers are encouraged to express their personal style and to use notes as closely or as loosely as they feel comfortable!

References and additional information

Before giving a presentation, you will probably want to carry out additional research in order to ensure that the information in the speaker's notes is as up-to-date as possible. In this section we have included references to books, articles and websites that should help you keep up-to-date on a particular subject, as well as some more detailed information to accompany slides. It may also be useful to bring along some copies of the CBD text to hand out to the audience. You can request these from the CBD Secretariat (secretariat@biodiv.org) in English, French, Spanish, Arabic, Russian and Mandarin). You might also wish to show some examples of National Biodiversity Strategies and Action Plans from your county or region.

CD-ROM

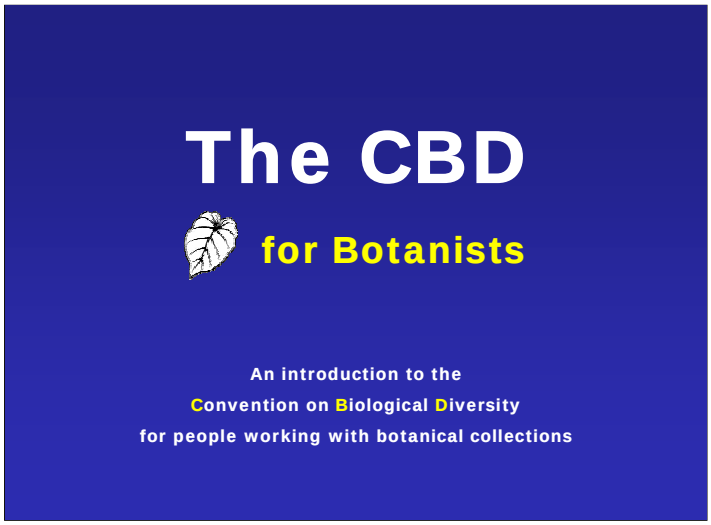
The CD-ROM contains a Microsoft PowerPoint presentation ("CBDbotanists.ppt") containing the slides and speaker's notes. You will need Microsoft PowerPoint 97 ® (or a more recent version) installed on your computer to view and customise this file. In addition, a complete copy of "The CBD for Botanists" in Adobe Acrobat® format is included on the CD ("CBDbotanists.doc.pdf"). This allows you to view the complete electronic document as well as print off part or all of the pack. You will need Adobe Acrobat Reader® installed on your computer to view this file (it can be downloaded from www.adobe.com).

Acronyms and abbreviations

ABS	Access and Benefit-Sharing
ASEAN	Association of South East Asian Nations
BGCI	Botanic Gardens Conservation International
CBD	Convention on Biological Diversity
CHM	Clearing House Mechanism
CITES	Convention on International Trade in Endangered Species
COP	Conference of the Parties
FAO	Food and Agriculture Organisation
GBIF	Global Biodiversity Information Facility
GEF	Global Environment Facility
GSPC	Global Strategy for Plant Conservation
GTI	Global Taxonomy Initiative
IP	Intellectual Property
IPR	Intellectual Property Rights
IT	International Treaty (on Plant Genetic Resources for Food and Agriculture)
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	The World Conservation Union
MAT	Mutually Agreed Terms
MOU	Memorandum of Understanding
MSA	Material Supply Agreement
MTA	Material Transfer Agreement
NGO	Non Governmental Organisation
OAU	Organisation of African Unity
PIC	Prior Informed Consent
SABONET	Southern African Botanical Diversity Network
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
TK	Traditional Knowledge
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WEHAB	Water and sanitation, Energy, Health, Agriculture and Biodiversity (Initiative of the 2002 World Summit)
WIPO	World Intellectual Property Organisation
WSSD	World Summit on Sustainable Development
WWF	World Wide Fund for Nature

Slide index

Additional Slides



The aim of this presentation is to give people working with botanical collections, such as botanists, curators, horticulturalists and technicians, an introduction to the 1992 Convention on Biological Diversity, more commonly known as the CBD.

This presentation will cover the following areas:

- First, an **introduction to the Convention on Biological Diversity;**
- secondly, we will look at **how the CBD actually operates** at a policy and administrative level;
- thirdly, we will focus on how the CBD is relevant to **botanical institutions**, looking particularly at its provisions on **access and benefit-sharing;** and
- finally, we will look at some **practical ways botanical institutions can implement the CBD**

[Note to speaker: This is just a guide. You will need to write your own index slide to reflect the order and content of your own talk].


Introduction

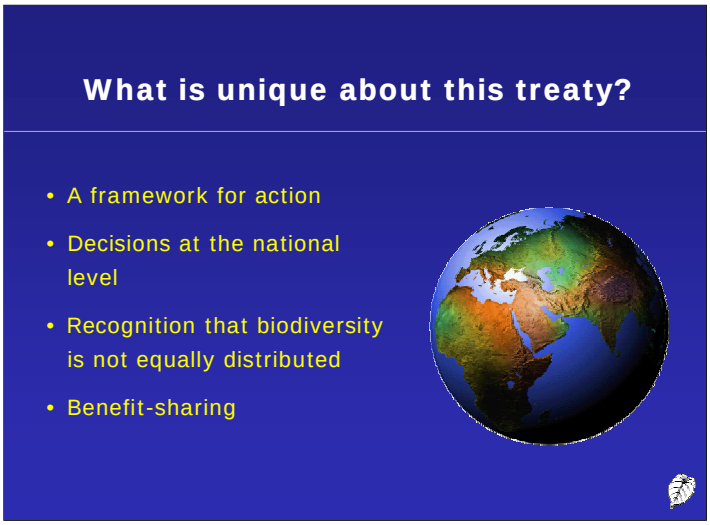
So, what is the Convention on Biological Diversity, or CBD?

The CBD is one of the two conventions signed by the international community during the Earth Summit, at Rio de Janeiro, Brazil, in 1992. The other convention is the Convention on Climate Change.

The CBD came into force on 29th December 1993, when it had gained enough international support.

The CBD has three objectives. These represent a commitment by the nations of the world to:

- **conserve biological diversity;**
- **use biological resources sustainably** - to ensure that we do not use up our resources faster than they can recover; and
- **share the benefits arising from the use of genetic resources fairly and equitably.**



So, what is unique about this treaty?

The CBD sets out a **framework for action**. Unlike many other international conventions, it does not lay down a particular work programme or a list of activities for members to carry out. The text takes the form of a series of 'Articles'. A read through these will show you that its provisions are expressed as overall goals rather than defined obligations.

Instead, **decision-making is placed at the national level**. Individual countries interpret the provisions of the CBD according to their own national or regional priorities, and implement them through the development of national strategies, plans or programmes.

The CBD **recognises that biodiversity is not equally distributed** and that conservation can place a heavier burden on developing countries that are often rich in biodiversity, but generally poor in financial resources.

So the CBD takes a practical approach in recognising that countries need money and incentives to be able to develop sustainably, and to conserve biological resources. It aims to '**share the benefits'** from the use of genetic resources - largely through the transfer of funds, opportunities and technologies from developed countries to developing countries.

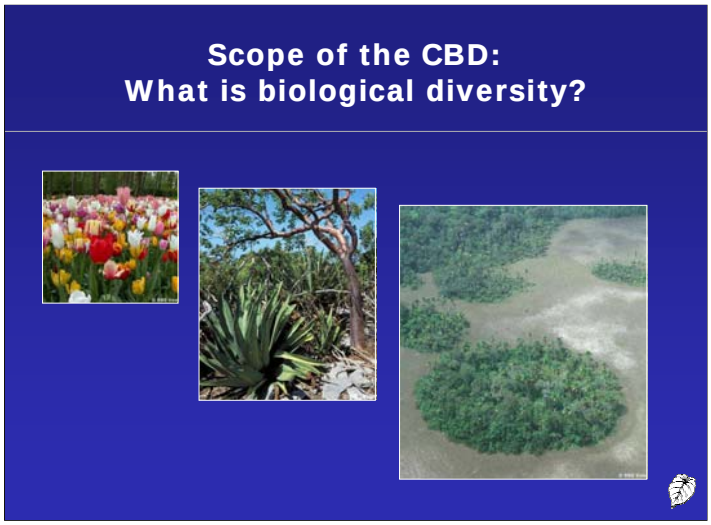
This map shows the Parties to the CBD as of March 2006.

A country becomes a Party to the CBD once it has made a formal declaration of its willingness to be legally bound by the CBD. This process is called ratification.

The CBD currently has 188 Parties - 187 countries and the European Union. In fact, only seven countries in the world are not yet a Party to the CBD.

The CBD has been ratified by more countries than any other international convention.

[Note to speaker: As at March 2006 only 7 countries have not ratified the CBD. These are: Andorra, Brunei, the Holy See, Iraq, Somalia, Timor Leste and The United States of America. Check latest number of Parties on www.biodiv.org before giving your presentation].



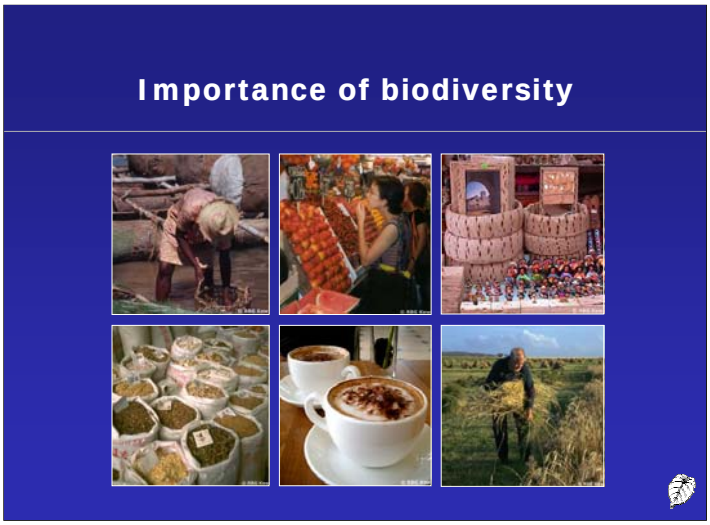
The CBD definition of biological diversity, or 'biodiversity', covers the variability:

- **within species** (such as species varieties);
- **between species;** and
- **of ecosystems.**

The CBD is ambitious and wide-ranging in its scope. It is the first international treaty **to try to protect all levels of diversity** and living organisms on Earth.

The CBD recognises that these three levels of diversity **cannot realistically be separated**, as each interacts with and influences the others. Long-term species conservation depends on the maintenance of viable populations and healthy ecosystems.

In this way, the CBD represents a **new style of international environmental treaty**, as past efforts have tended to focus on the protection of particular species and habitats, for instance the Ramsar Convention on Wetlands, and the Convention on International Trade in Endangered Species (CITES).



Why does biodiversity need to be protected?

Biodiversity provides goods for the most fundamental of our needs: food, fuel, fibres, medicine and shelter.

Ecosystems clean our air and water, provide pollinators for our crops and help control disease. Ecosystems also play a major role in stabilising our climate and protecting us from floods and droughts.

The variety of life on earth provides recreational, spiritual and cultural value to societies around the world.

Furthermore, there is the huge potential economic value of currently undescribed biodiversity.

Biodiversity is decreasing at an alarming rate, and for all these reasons it is vital we protect it.

Financial value of biodiversity (1)

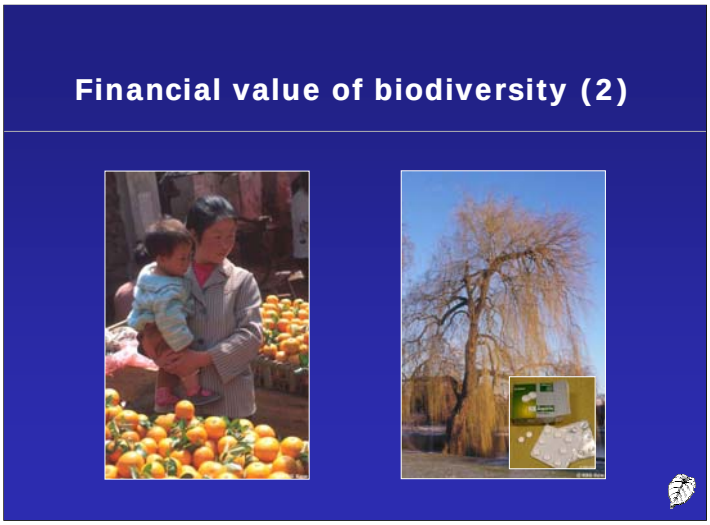
Estimates of annual markets for some products derived from genetic resources

Products	Annual Sales (billion US$)	
	Low	*High*
Pharmaceuticals	75	150
Botanical medicines	20	40
Agricultural produce	300+	450+
Ornamental horticulture	16	19
Crop protection	0.6	3
Biotech (except health & agriculture)	60	120
Personal care & cosmetics	2.8	2.8
ROUNDED TOTAL	**500**	**800**

Source: ten Kate K and Laird SA (1999), *The Commercial Use of Biodiversiy*, Earthscan Publications Ltd.

This slide shows **low and high estimates of the annual markets for some of the products derived from genetic resources**. The figures given are in billions of US dollars. You can see that the total market for these products is estimated to be between 500 and 800 billion US dollars per year.

By recognising the financial value of biodiversity, it may be possible to create economic incentives, and provide resources, for the conservation and sustainable use of biodiversity.



Let's have a look at two important examples of plants as a vital source of our basic needs: food and medicine.

First, food. Although about 7,000 species have been cultivated or collected by humans for food at one time or another, it is often stated that only 30 crops 'feed the world'. Wheat, rice and maize alone provide more than half of the global plant-derived intake.

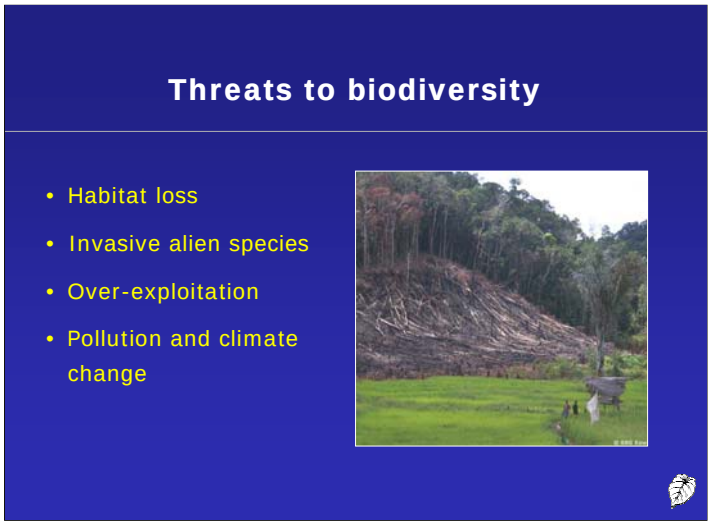
Given the importance of a relatively small number of crops for global food security, it is particularly important that the agricultural diversity within crops is conserved. This maintains their health, productivity and pest resistance.

Next, medicine. Around the world, many billions of people still use plants as their primary source of medicine. Much of this use is based on knowledge passed down through generations.

In addition, between 25-50% of new medicines are derived from natural products.
For example:

- Aspirin is made from an organic molecule derived from willow trees (*Salix* spp.)- see picture.
- Quinine, a treatment for malaria, is derived from the bark of the *Cinchona* tree.
- Rosy periwinkle, native to Madagascar, is the source of alkaloids used to treat childhood leukaemia and Hodgkin's disease.

Most biodiversity has yet to be tested for its potential medicinal properties. The cures for some of the world's most serious diseases, such as cancer or HIV/AIDS, could be derived from natural products.

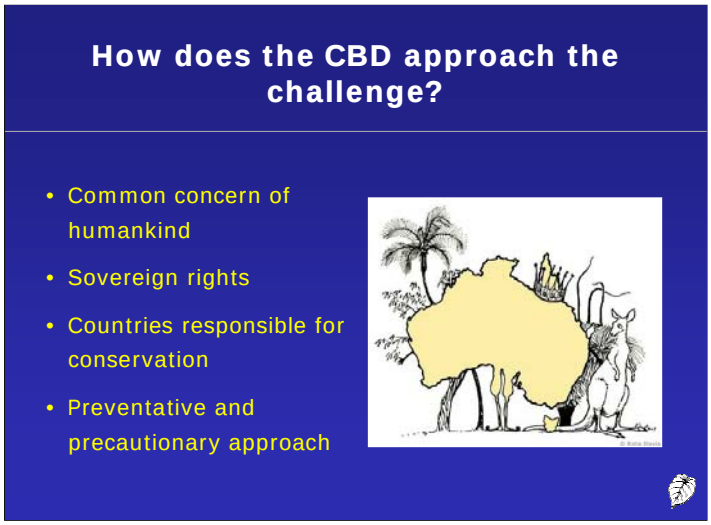


Biodiversity is under **considerable threat** from a variety of human-generated factors. Based on current trends, an estimated 34,000 plant and 5,200 animal species are threatened with extinction.

Some of the main threats to biodiversity are:

- **habitat loss, fragmentation and degradation;**
- **spread of invasive alien species;**
- **over-exploitation of species**; and
- **pollution and climate change.**

[Note to speaker: you can add your own examples to illustrate the above list, or use some of the examples in the Resources section for this slide]



It is clear that a huge international effort is needed to protect biodiversity. Now we need to look at the approach that the CBD uses to tackle the task.

First, the CBD asserts that conservation of biological diversity is a **'common concern of humankind'**. Even if the components of biodiversity exist within national borders, biodiversity is fundamental to all life on earth, and we must work together to ensure its conservation.

Secondly, the CBD reasserts that countries have **sovereign rights** over their biological resources. 'Sovereign rights' doesn't necessarily mean ownership; it is left to individual countries to decide who owns the resources, how they will regulate access to these resources, and how best to achieve the CBD's objectives.

Thirdly, sovereign rights bring responsibilities: countries are **responsible for conserving their biodiversity**, for using it sustainably, and for facilitating access to genetic resources for environmentally sound uses.

Fourthly, the CBD takes a **preventive approach**, calling for measures to anticipate and prevent the causes of biodiversity loss. It also takes a **precautionary approach** - measures to avoid or minimize threats to biodiversity should not be postponed because of scientific uncertainty.

In order to meet the objectives of the CBD, there must be positive action at all levels of society! Scientists, such as botanists, have a very important role to play in achieving these objectives.

The primary way that the CBD attempts to stem the tide of biodiversity loss is by promoting an '**ecosystem approach**'. This is a strategy for the integrated management of land, water and living resources, to promote conservation and sustainable use in an equitable way.

Therefore the CBD prioritises ***in situ* conservation -** the conservation of genes, species and ecosystems in their natural surroundings. Examples of *in situ* conservation measures include establishing protected areas and legislation to protect habitats.

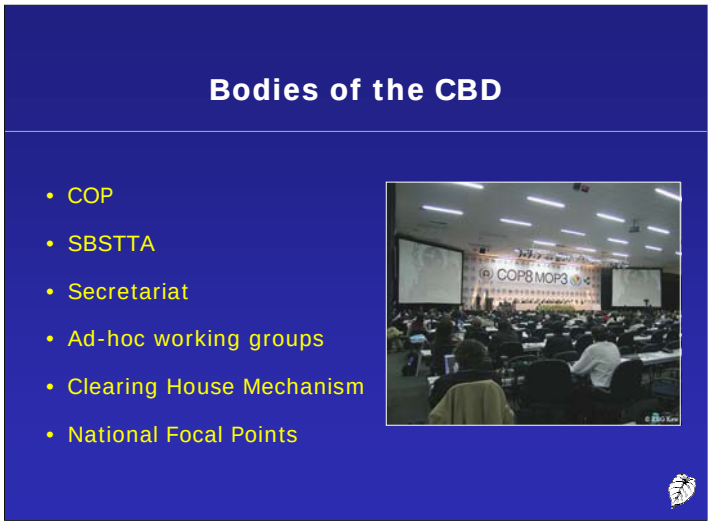
This is backed up by the use of ***ex situ* conservation** - the conservation of genes and species outside their natural habitats, in collections such as zoos, botanic gardens and gene banks.

In addition, the CBD calls for **initiatives to promote sustainable use** as a way of maintaining biodiversity in years to come. Examples of such initiatives include:

- locally-based projects on the management and use of forest resources;
- sustainable tourism;
- sustainable fishing and harvesting; and
- encouraging sustainability in areas such as trade and investment, and pharmaceutical drug development.

The CBD recognises that there must be a balance between our need to use biological material, and the need to conserve biodiversity for future generations.


How the CBD operates



Five bodies drive the work of the CBD:

1. The governing body of the CBD is the **Conference of the Parties, or COP** (pronounced 'cop'). Countries that have ratified the CBD (Parties) meet every two years and take decisions to steer its development and to review implementation. It is a huge event, attracting several thousand delegates. As well as representatives of all the Parties, it is attended by a wide range of observers: intergovernmental organisations, non-governmental organisations, researchers, the private sector, Indigenous Peoples and their representatives, and countries that have not yet become Parties. Botanical institutions can apply to attend as observers as well.

2. Decisions of the COP are guided and informed by **the Subsidiary Body on Scientific, Technical and Technological Advice, or SBSTTA** (pronounced 'substa'). This body is made up of experts from member countries, and meets between the main COPs.

3. **The Secretariat**, based in Montreal, Canada, provides all the administrative support.

4. The COP has set up a number of **Ad Hoc Working Groups** to tackle specific issues such as access and benefit-sharing, and traditional knowledge.

5. The **Clearing House Mechanism** (CHM) promotes technical and scientific co-operation between Parties, and encourages the exchange of information on biodiversity. At the moment this is an internet based network.

6. Each country is expected to set up a CBD **National Focal Point** through which information on national CBD implementation can be obtained.

Another important way to bring cohesion to the vast body of work of the CBD is through **co-operation and Co-ordination** with other relevant international treaties, such as CITES and Ramsar.

The CBD website has information on the working of the CBD, an up-to-date list of Parties, Decisions of the COP, reports from Working Groups, and links to the CHM. It can be found at www.biodiv.org.

So, where does all the money come from?

In particular, how can **developing countries** afford to implement the provisions of the CBD?

When the CBD was being negotiated, developing countries were keen to stress that their ability to take the necessary national action would depend, in part, on receiving adequate financial and technical assistance.

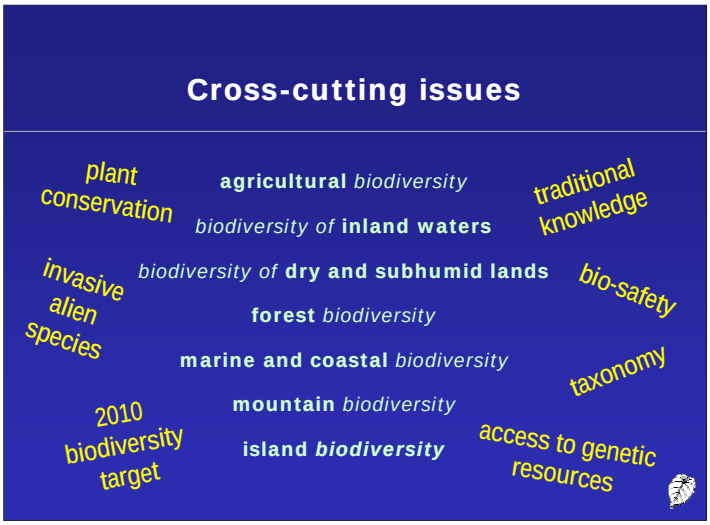
Consequently, the COP is using the pre-existing **Global Environmental Facility (GEF)** as its interim financial mechanism.

Its resources include many billions of US dollars pledged by donor countries, which are made available mainly to the governments of developing countries to fund projects and support programmes that protect the global environment.

The task of implementing the CBD's three objectives is huge. The Conference of the Parties has therefore established **seven thematic work programmes**, covering the Earth's major biomes. These are:

- **agricultural** biodiversity;
- the biodiversity of **inland water**s;
- biodiversity of **dry and sub-humid lands**;
- **forest** biodiversity;
- **marine and coastal** biodiversity;
- **mountain** biodiversity; and
- **island** biodiversity.

The thematic work programmes **provide a forum for Parties to share ideas** on best practices and policies in that area. More information on these programmes and their progress can be found on the CBD website.



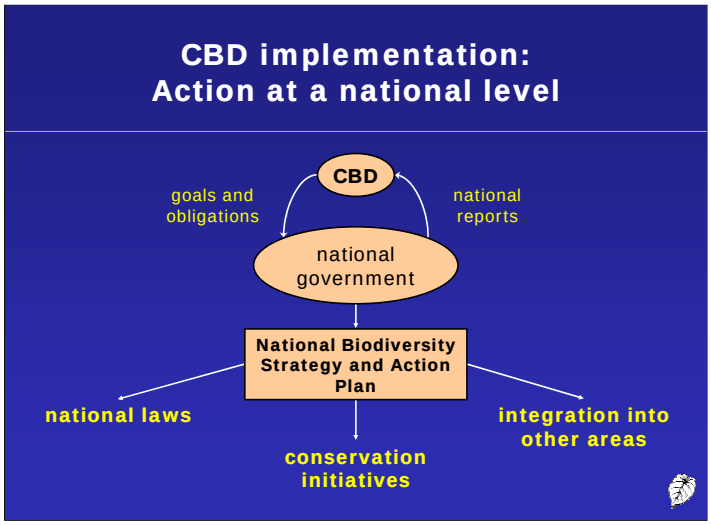
The COP has also identified a growing number of **cross-cutting issues.** The idea is that these issues will provide links between the various work programmes just discussed.

The cross-cutting issues include:

- **access to genetic resources and benefit-sharing;**
- **traditional knowledge, innovations and practices;**
- **taxonomy;**
- **plant conservation;**
- **invasive alien species**;
- **biosafety;**
- **2010 biodiversity target.**

Again, more information on these specific subjects is available via the CBD website.

[Note to speaker: you will need to research up-to-date information on these issues prior to giving your talk, especially on topics your audience will be particularly interested in. See the Resources section.]



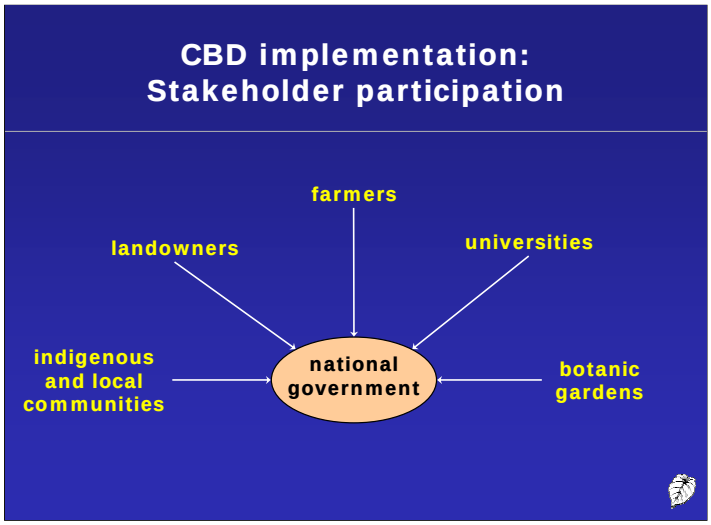
This diagram illustrates how work is carried out at a national level to implement the goals and obligations of the CBD. Governments are asked to set up CBD National Focal Points to manage this process.

A good starting point is for **governments** to **develop National Biodiversity Strategies and Action Plans** (sometimes called NBSAPs!). Ideally these should be based on comprehensive surveys of biodiversity, and should establish targets for action. Well-researched NBSAPs provide the planning framework within which **laws** and other **conservation initiatives** are developed, so that a country's response to the CBD is well-planned and suited to its needs.

One way to put an NBSAP into practice is through **national laws and regulations**. For instance, many countries are enacting national or regional legislation to control access to their genetic resources and traditional knowledge, and to ensure that benefits are shared fairly and equitably in return.

Countries are also expected to **integrate biodiversity conservation** into other areas of national decision-making that impact on the environment. For example: forestry, agriculture, fisheries, energy, transport and urban planning.

Finally, each country is required to report back to the COP on their efforts to implement the CBD. These **National Reports** are one of the main tools for tracking the progress of the CBD.



In some countries where clear national laws or strategies have not yet been developed, individual stakeholders have been pro-active in developing their own responses to the CBD. Often these initiatives have been very influential in shaping later national legislation.

A **'stakeholder'** is someone with an active interest in the outcomes of a particular process. In this case, many different types of **users and providers of genetic resources** may be stakeholders. For instance, indigenous and local communities, farmers, botanical institutions, landowners, scientists and private companies.

Examples of stakeholder initiatives include:

- voluntary institutional policies, ethical guidelines and codes of conduct;
- declarations by local and Indigenous communities; and
- work by non-governmental organisations (NGOs) to connect stakeholders and governments.

[Note to speaker: the Resources section of this slide gives examples of stakeholder initiatives. You may also be able to find some of your own more up-to-date local or regional examples].


Botanical institutions

We have had a brief introduction to the CBD and how it functions. Now we can move on to look in more detail at some of the ways the CBD may affect our work in botanical institutions.

These pictures show some of the many ways in which botanical institutions are already implementing the CBD!

(From left to right)
This researcher is working on the artificial propagation of endangered plants.
These botanists are collecting seeds for *ex situ* conservation.
These wildlife inspectors are learning about threatened plants.

Here are some of the main Articles of the CBD. We can see how the work going on in botanical institutions, such as botanic gardens and herbaria, provides crucial support for CBD implementation.

- **Identification and monitoring** – ecological and taxonomic fieldwork; production of floras, checklists and field guides.

- ***In-situ* conservation** – habitat restoration and re-creation; species recovery and reintroduction.

- ***Ex-situ* conservation** – controlled safeguarding of germplasm in seed banks; micropropagation of rare species; maintenance of living collections and genetic management of species for reintroduction.

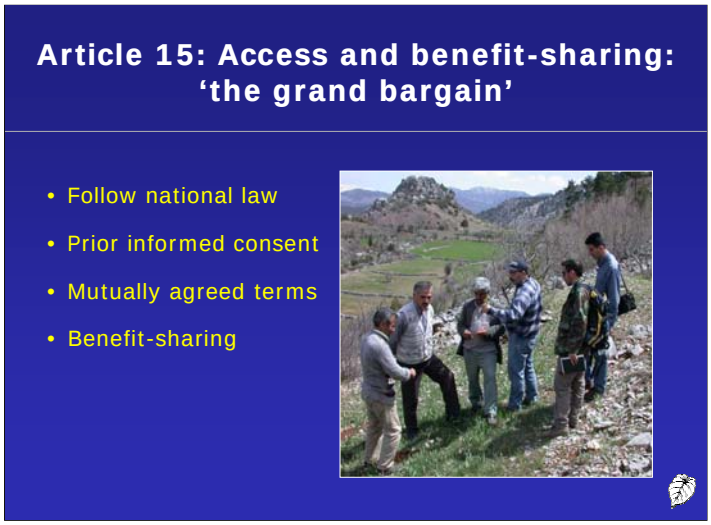
- **Sustainable use** – research into medicinal use, agriculture and traditional knowledge.

- **Research and training** – training courses and workshops; lab internships; field training; graduate supervision; capacity building.

- **Public education & awareness** – programmes for schools; adult education; signs, trails and tours for visitors; communication via radio, newspapers, TV, books.

- **Access and benefit-sharing** – agreements and permits for fieldwork and exchange between institutions; building links and collaborations with other institutions.

- **Exchange of information, technical and scientific co-operation** – joint research and publications; exchange of facilities, staff, equipment, data, know-how.



Article 15 of the CBD focuses on access and benefit-sharing. This article has a particular impact on the work of *ex situ* collections, especially those with active fieldwork or acquisition programmes.

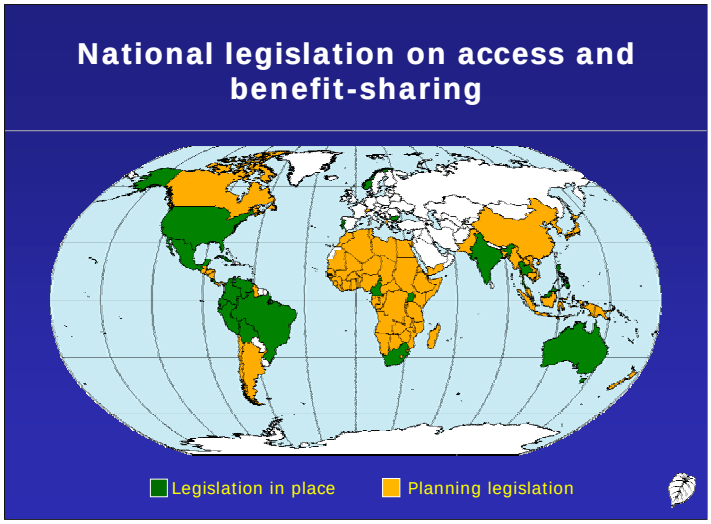
Article 15 states that national governments have the authority to decide the terms of access to their genetic resources. In other words, how you get access to plants will differ from country to country, depending on their individual national laws and policies.

Consequently, as a collector **you must follow national provisions on access**. This may mean getting a collecting permit or permission from a government department. You may no longer be able to get permission to collect material from a partner institution, such as an in-country botanic garden or university, unless that institution has clear government authority to give you that permission.

Article 15 states that unless the country says otherwise, access must be with the **Prior Informed Consent** of the Party providing the resource. This means that to get consent, you must first give a clear description of how you intend to use that resource.

In addition, Article 15 states that access must be on **mutually agreed terms,** negotiated by the Provider and User. These terms should promote **the fair and equitable sharing of benefits,** such as the transfer of technology and the opportunity to participate in research, preferably in the country of origin.

Some people have called this '**the grand bargain'** at the heart of the CBD: the exchange, on mutually agreed terms, of access to genetic resources and associated knowledge in return for the fair and equitable sharing of benefits.



This map shows the countries that either already have or are in the process of introducing national or regional legislation to **control access** to their resources, and to **ensure fair and equitable benefit-sharing**. The list is constantly growing.

It clearly shows that the most biodiverse countries have been first to regulate access to their genetic resources.

However, remember that some non-Parties (for instance, the USA) also have regulations requiring prior informed consent and benefit-sharing.

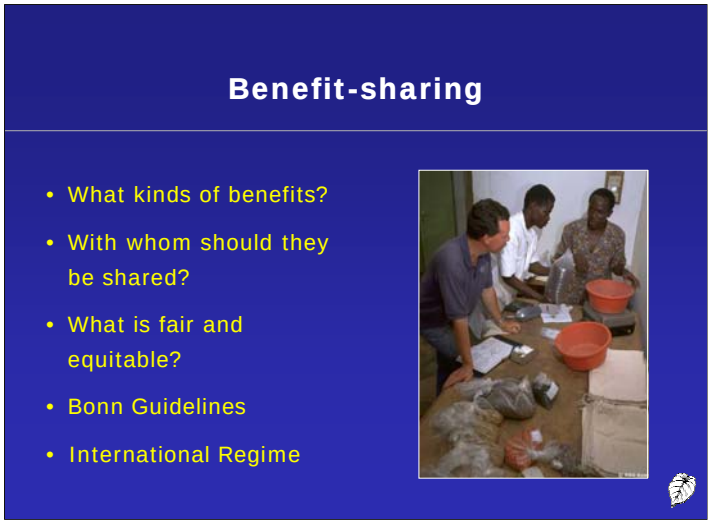
Also remember that even if there is no post-CBD access and benefit-sharing legislation, for instance in most of Europe, you may need to get permission to collect material. Many countries have pre-CBD legislation in place that sets out clear access procedures.

The situation is complex and changing, and sometimes action is taken at a regional level. Many African countries are using the African Model Law as a basis, but are at different stages of developing their national laws.

It is important for institutions, especially those with fieldwork programmes, to work with local partners to monitor the legal situation in countries of interest. You can contact country National Focal Points for information.

In some countries, individuals may face criminal prosecution if they collect material outside these new laws. Their institutions, and botanists in general, may also find it very difficult to work in those countries again.

[Note to speaker: this map is current as of March 2006.]



What does the CBD mean by benefit-sharing?

'Fair and equitable benefit-sharing' is one of the three objectives of the CBD. However, it is never actually defined in the CBD. Where national legislation exists, it can be quite specific as to the kind of benefits that must be shared in exchange for obtaining access, and stakeholders that should be consulted.

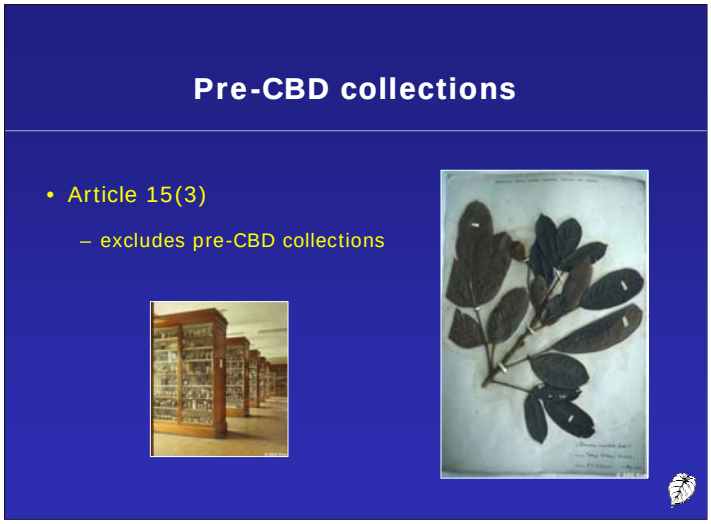
Some questions we need to consider are:

What do we mean by benefits? Benefits do not need to be financial. This is particularly relevant to botanic gardens and herbaria, which tend to generate non-monetary benefits such as: joint fieldwork, the sharing of research results, joint publications, technical training, and academic supervision.

With whom should benefits be shared? Benefits can be shared more widely than just with an immediate scientific partner. In return for you getting access to a particular resource, many different people may be entitled to receive benefits, including the government of the country of origin and Indigenous Peoples who have tended the resource for generations.

What amounts to fair and equitable? This will depend on individual circumstances, and may need to be negotiated on a case-by-case basis.

The Conference of the Parties established a Working Group on access and benefit-sharing to deal with these issues. The working group developed the **Bonn Guidelines** to give advice to countries and stakeholders on how to regulate access and ensure benefits are shared fairly. The Bonn Guidelines were adopted by the COP in April 2002 and amongst other things, provide a helpful list of possible monetary and non-monetary benefits. Following the World Summit on Sustainable Development in 2002, the COP asked the Working Group to negotiate a new **International Regime** on access and benefit-sharing. Negotiations started in February 2005.



We have focussed on the main provisions of Article 15 that may impact on institutions: national sovereignty, Prior Informed Consent, mutually agreed terms, and benefit-sharing.

Institutions also need to consider that **Article 15(3) excludes resources that were not obtained 'in accordance with this Convention'** from its provisions. In effect, this means that holders of genetic resources acquired BEFORE the CBD came into force are NOT required to share benefits from their subsequent use of this material, or to obtain Prior Informed Consent for any change in use.

This is highly relevant since the majority of material held in *ex-situ* collections was acquired before the CBD came into force on 29th December 1993. This is often called **'pre-CBD material'.**

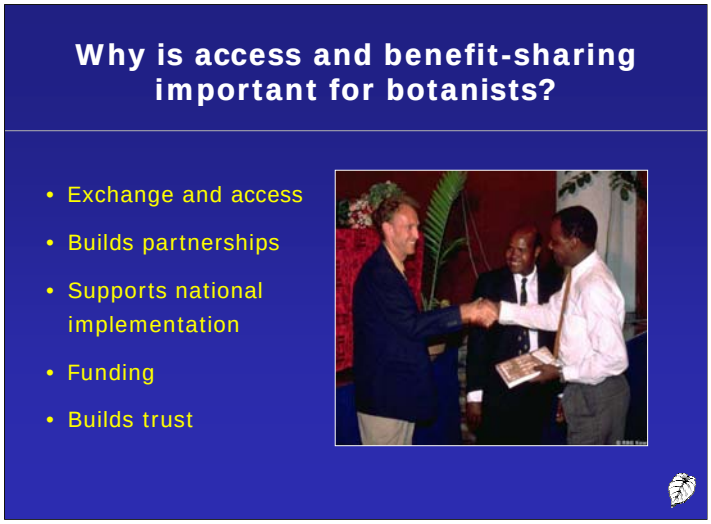
Does this mean that we can ignore the provisions of the CBD for 'pre-CBD' material? Although this can be argued to be the legal position, in reality many botanical institutions have taken the decision, as far as possible, to treat pre- and post-CBD material in the same manner, where access and benefit-sharing obligations are concerned.

Why is this?

- Many botanical institutions have **important and on-going relationships** with partner institutions in source countries and don't want to upset these relationships by exploiting material without their consent, or by refusing to share benefits gained from 'pre-CBD' genetic resources.

- Also, from a purely **practical and curatorial** point of view, it is often easier for institutions to treat all material in the same way.

- Some **national legislation** includes pre-CBD material in its access and benefit-sharing provisions.



We've just looked through some of the complexities of Article 15 on access and benefit-sharing, but why is it so important for us as botanists to comply with it?

Botanical collections need to be maintained and improved to be of value to science and conservation, **we need to continue to exchange and get access to new material** from a wide range of countries and organisations.

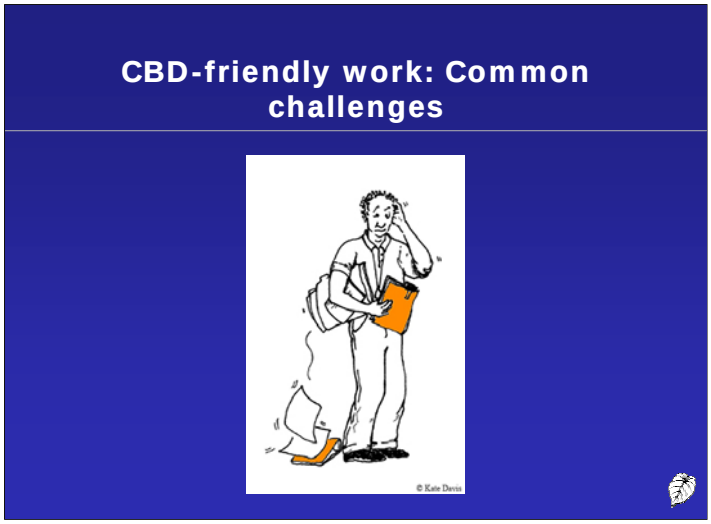
Our work **relies on valuable partnerships with other institutions and governments**. In order to build relationships and structure projects that contribute to our partners' national biodiversity strategies, emerging laws need to be respected.

Botanical institutions provide vital support **to help their national governments implement the CBD.** By getting involved in decision-making, we can influence developing legislation, so it is well-planned and supports scientific research.

Funding agencies expect work to be carried out legally, with appropriate host country permission. Increasingly they also expect projects to help fulfil countries' obligations under the CBD.

Botanical institutions act as 'clearing houses' and may supply genetic resources to a wide range of users, from other botanical institutions to industry. We risk being perceived as being 'leaky' (or worse, as 'biopirates') if this supply does not comply with the letter and spirit of laws and policies in countries of origin. We need to honour new laws to **build trust and maintain the respect** of other institutions and governments.


Implementation



So, as people working in botanical institutions, we face common challenges:

Our legal obligations under the CBD are sometimes unclear - we are in a period of transition, with national laws changing around us.

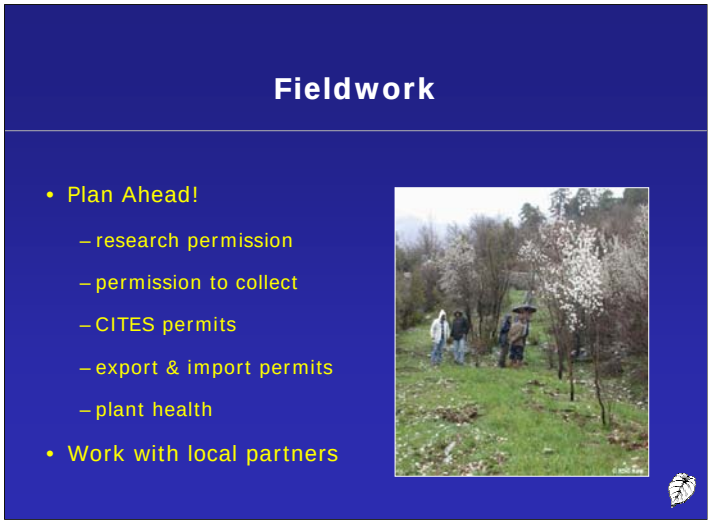
The CBD gives little guidance on the practical implementation of important issues like **Prior Informed Consent and benefit-sharing** – whose consent should we get, and how? What benefits should we share, and with whom?

These new obligations put a strain on already **stretched resources**. How can we ensure that we fulfil these new obligations, but continue to carry out our important scientific work?

How can we work together to minimise the risk of being accused of **biopiracy**?

By looking ahead, getting involved, and sharing experiences and ideas, we have a real opportunity to manage and overcome some of these challenges.

Many botanical institutions have already begun working to find practical ways to implement the CBD. **This next section looks at how we can make sure we fulfil the CBD's requirements for access and benefit-sharing.**



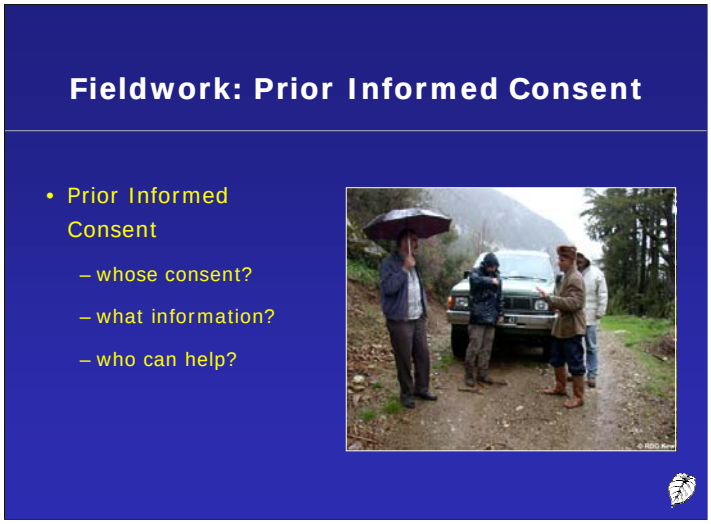
Many gardens and herbaria obtain a large proportion of new material from collecting expeditions in the wild. All botanists undertaking **fieldwork** should be aware of, and follow, the laws and procedures for access and benefit-sharing in the individual countries they are visiting.

There are two general rules:

1. Plan ahead. Before you leave you will need to allow sufficient time to find out about requirements for collecting and export. This should mean that you have the necessary paperwork in place when you arrive, or at least have allowed enough time to obtain it once there. Depending on where you are going, you will need to find out whether you need:

- **research permission**
- **permission to collect** the material and associated information;
- **CITES permits** for CITES-listed material;
- **export permits** to get material out of the country;
- **import permits** to get material back to your institution; and
- **phytosanitary/plant health certificates.**

2. Work with local partners. Increasingly you may find it difficult to get permission to collect without some evidence that you have an in-country counterpart, with whom you will carry out fieldwork and share benefits.



Prior Informed Consent is a key term for the CBD, but what does it mean? It means that before getting access to material (in our case, plants), the collector must:

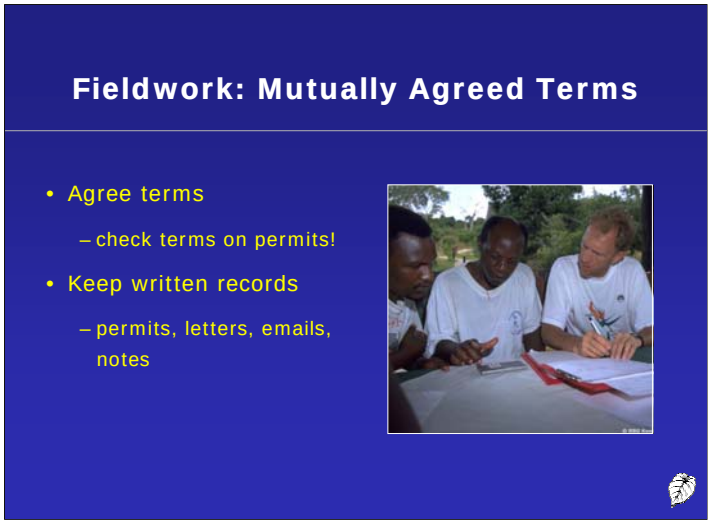
- ask the Provider for permission (**Consent**);
- ask before acquiring the material (**Prior**); and
- give full details of what they want to collect, and how it will be used – both by the collector and by the end users - so the Provider knows enough to make an **informed** decision.

Finding out how to get **Prior Informed Consent** in the country where you are hoping to collect material is rarely simple!

- **Whose consent do you need?** This will vary from country to country and will depend upon where, and what, you wish to collect. You need to find out if there is a designated **competent national authority**. You may be entitled to collect with a simple **collecting permit** from local or national authorities, or with **landowner's permission,** or there may be a more complex procedure. It is always good practice, and sometimes a legal requirement, to get permission from **local and Indigenous communities.**

- **What information should you provide?** You should give full information which covers not just how your project will use the material, but also how your institution may use it later. You may wish to provide a letter that sets out the institution's standard uses of material in its collection.

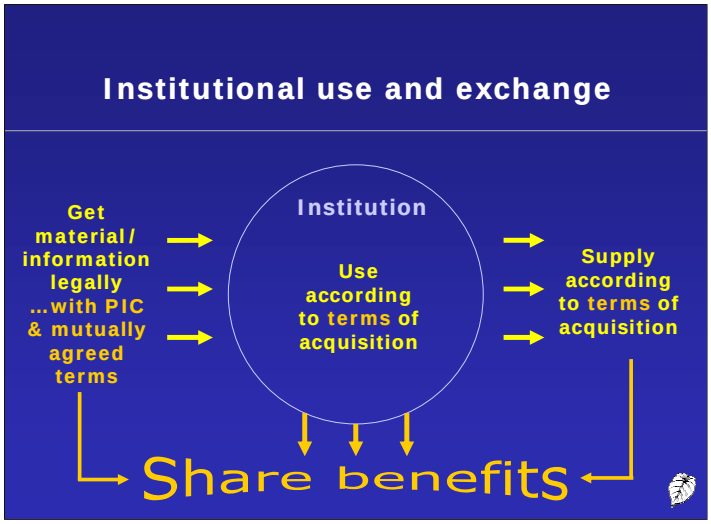
- **Who can help?** In order to find out which permitting authorities you should approach, and what other stakeholders you should involve, you should consult your local partners, the ABS National Focal Point (check the CBD website), your embassy in that country, and colleagues with recent experience of working in that country.



Next, you must **agree the terms of collection and use** – these may or may not be very negotiable! **Check your permits** before collecting so that you only accept terms that your institution can actually manage and comply with, and so that you understand how the material may be used once you get it back to your institution. Can you pass it on to others, for instance? What benefits will be shared? If the permits are in a different language, get someone to help you translate them!

Finally, you should **keep written records,** to document Prior Informed Consent and any additional terms. Keep collecting permits, letters from landowners, and supply agreements. Make notes of conversations in your field notebooks. Keep copies of all correspondence, such as emails or faxes, and notes of telephone conversations. You could even document Prior Informed Consent on videotape or audiotape in certain circumstances.

Sometimes all of these issues can be clarified and set out in a written agreement, such as a 'Memorandum of Understanding' between partners.



Apart from material collected on fieldwork, most botanical institutions rely on the exchange of large amounts of material with other institutions and individuals.

For **CBD-friendly institutional use and exchange**, we need to make sure that: all material coming in to our institution has been **acquired legally**; any **terms relating to the use of the material are recorded,** especially any unusual or notable ones; while in our institution, the material is **used in line** with these terms; and that all **supply** to third parties is also in line with the terms under which the material was acquired.

How can a botanical institution do this?

Acquiring material legally:
When getting new material from other institutions or individuals, we need to ensure, to the best of our ability, that they have collected or acquired the material legally, that they are allowed to pass the material on to us, and that we know the terms under which the material has been passed to us. One way of doing this is by asking donors to sign a donation letter, or a written agreement (often called a Material Transfer Agreement), setting out all of this information.

Use under consistent terms:
Once material is in the institution, all staff must use it in line with the terms under which it was first acquired. Terms from the original collecting permits, or from Material Transfer Agreements, will need to be recorded on relevant databases and/or labels where they can be easily checked by staff wanting to use the material.

Supply under consistent terms:
First, check that you are allowed to supply the material to a third party! If so, make sure any notable terms are relayed to the recipient. Many institutions now use a simple Material Transfer Agreement or loan agreement to do this.

[Note to speaker: this slide can be used as a summary, but you could tailor the information above to cover your institution's specific policies, procedures and staff roles]

Simple institution-wide measures can help you implement the CBD in your daily exchange and use of material.

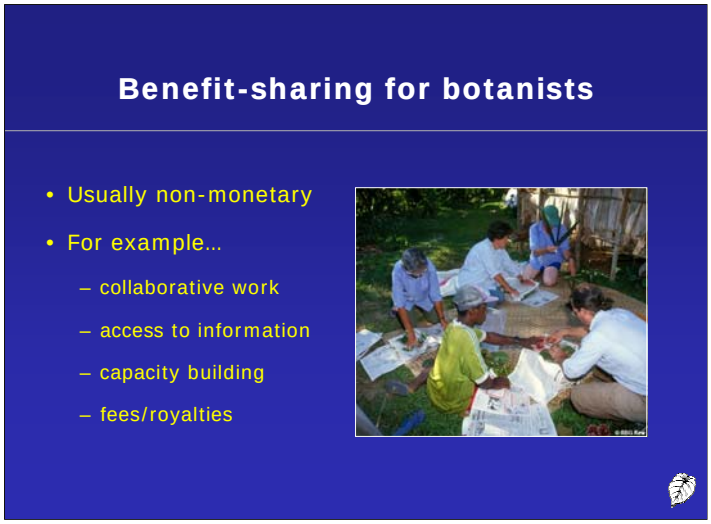
The use of **written agreements,** such as Material Transfer Agreements, is one way to show that Prior Informed Consent has been obtained, and that access and benefit-sharing is on mutually agreed terms.

As we have seen, it is important to **track** any terms attached to material, especially where they are unusual: for example, that material cannot be supplied to others, or that it can only be put on public display with prior consent of the donor. Such terms may have significant implications for the curation and future use of the material. They need to be recorded on labels, databases or in logbooks, and kept linked with specimens, so that they are easily accessible to staff. Tracking how the material is used, and by whom, is also important to ensure benefits are shared as agreed.

Institutions will need to look at their wider **internal procedures**. For instance, is there a member of staff responsible for CBD implementation? Are all staff aware of the procedures for acquiring and supplying material, and their obligations to share benefits? Is there a policy for visiting scientists working at the institution? Institutions will also need to consider their policy on access to databases and other information produced or held by the institution.

Many institutions have found it useful to publish and distribute **an institutional policy on the CBD**. A policy provides staff with clear guidelines to follow, and ensures that outside stakeholders and potential partners know what to expect.

[Note to speaker: this slide can be used as a summary, but you could tailor the information above to cover your institution's specific policies, procedures and staff roles]



In exchange for access and use, what benefits can botanists share?

In general, benefits shared by botanical institutions are **most likely to be non-monetary** rather than monetary. Benefits and benefit-sharing are often indirect, arising from shared experience and use of collections and facilities rather than from the use of specific genetic resources.

Here are some **examples** of benefit-sharing by botanical institutions, both large and small:

- collaborative work, such as joint fieldwork, joint research, sharing of research results, co-authorship of publications;
- access to information, such as that held in collections and databases (through visits, high quality imaging, computer support);
- capacity building of individuals, communities and institutions;
- fees/royalties. These will only be relevant where the resources are being used commercially. They could be collected and distributed through a benefit-sharing trust fund to maximize returns.

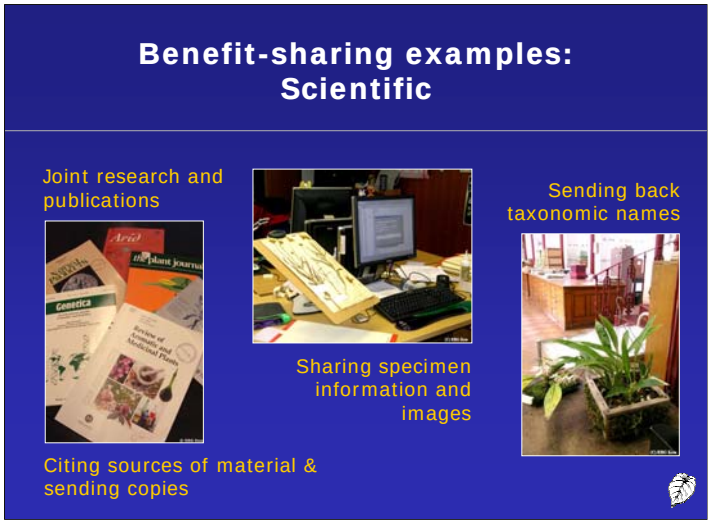
Benefit-sharing is often set out in **written agreements**. It is important for both sides to be realistic about the types of benefits that can be shared, what is most appropriate and useful for the recipient, and the time-scale over which the benefit-sharing should be spread.

Since the CBD does not define benefit-sharing, you can be as imaginative as is possible in the circumstances!

[Note to speaker: you may wish to include examples here of benefits that have been shared by or with your institution]

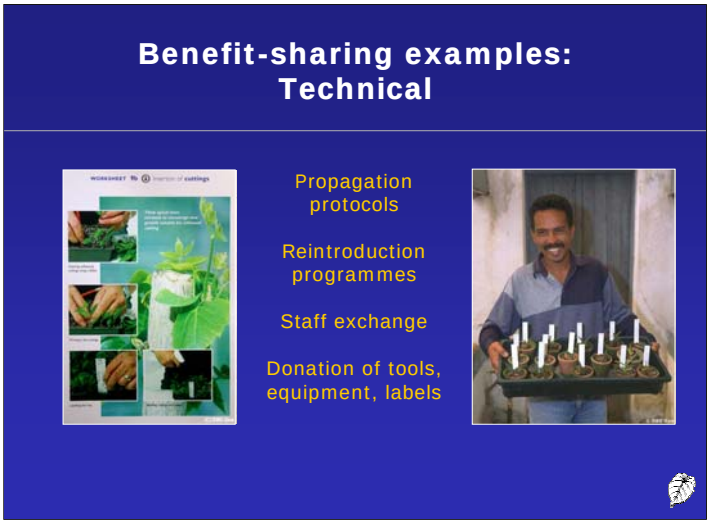
Some important benefits arise before any use of genetic resources has occurred, through working collaboratively, such as:

- **Sharing knowledge and experience** (training in field identification, plant collection and pressing, ecological survey skills);
- **Improving national and local collections** (leaving the top set of specimens with the national collection and another set with a local herbarium);
- **Sharing/donating equipment**;
- **Supporting the local economy** (employing local guides, staying in local accommodation, buying food from local sources)



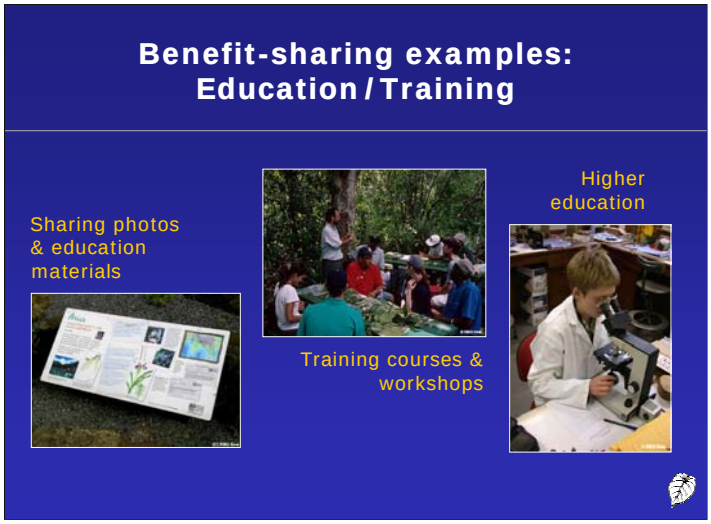
Many important non-monetary benefits arise from scientific research, such as:

- **Joint research and publications** arising from working in partnership;
- **Providing copies of publications** to colleagues in countries of origin, and citing sources of material in publications and online databases such as GenBank;
- **Sharing specimen images and information** with countries of origin and the international scientific community (remembering that it may sometimes be necessary to restrict some sensitive information on labels, such as traditional uses or localities of plants threatened by overcollection).
- **Sending back new taxonomic determinations** to the country of origin to build and maintain the scientific value of national and local collections.



Botanic gardens can also share important technical and horticultural expertise and materials, for example:

- **Propagation protocols** for threatened or difficult-to-grow species, or general training;
- **Reintroduction** of propagated plants to gardens in the country of origin;
- **Exchange of staff** between gardens to provide advice and learn new skills;
- **Donation of equipment** for example horticultural tools and labels, herbarium materials, or computer equipment.



There are also possibilities for benefit-sharing and capacity-building in the area of education and marketing. Depending on resources, institutions can:

- **Share photos and educational materials** – for use in schools programmes, interpretation for visitors or marketing programmes
- **Run training courses** to develop local, national or international skills
- **Supervise students** in higher education programmes

Commercialisation of genetic resources is a complex and highly sensitive area.

Why should institutions think about this issue? While few botanical institutions actually commercialise plant material themselves, many receive approaches from commercial companies for the direct supply of unusual, or new, material. This has lead to a negative view of *ex-situ* collections as 'leaky', since, historically, material has been passed on without any reference to the country of origin. When you also consider the increasing awareness of the potential financial value of biodiversity, it is clear that every botanical institution should consider its position on the use and supply of material for commercialisation, even if it is not directly involved in such activities itself.

What should institutions do?

- **Define commercialisation.** It is sometimes difficult to work out at what point non-commercial research or use may become commercial. For this reason, it is important for providers and users, such as government authorities, universities and *ex-situ* collections, to agree, right from the start, a clear and simple definition of which activities are commercial (such as, transfer to a commercial company for further research, or applying for intellectual property rights), and when new Prior Informed Consent should be obtained for a change in use.

- Institutions directly **involved in commercialisation of post-CBD material** must ensure they have Prior Informed Consent to use material in this way and that they share the benefits fairly and equitably. They also need to decide how they will treat material acquired pre-CBD.

- Institutions wishing to **supply material to others for commercial purposes** need to consider whether they have the right to pass on the material for such use and, if so, the terms on which the material may be passed on. Institutions may prefer to forward any commercial enquiries directly to the country of origin.

- A **transparent policy on commercialisation** that covers these issues is a good way to clarify the institution's position and to build trust with partners.

Plant sales are a common feature at many botanic gardens. Some botanic gardens do not supply material for commercial research, but do sell garden-grown seed or plants to visitors in their shop. Most of these plants will probably end up in private gardens or window sills, but some may be purchased and later used in commercial breeding programmes. So, gardens need to consider:

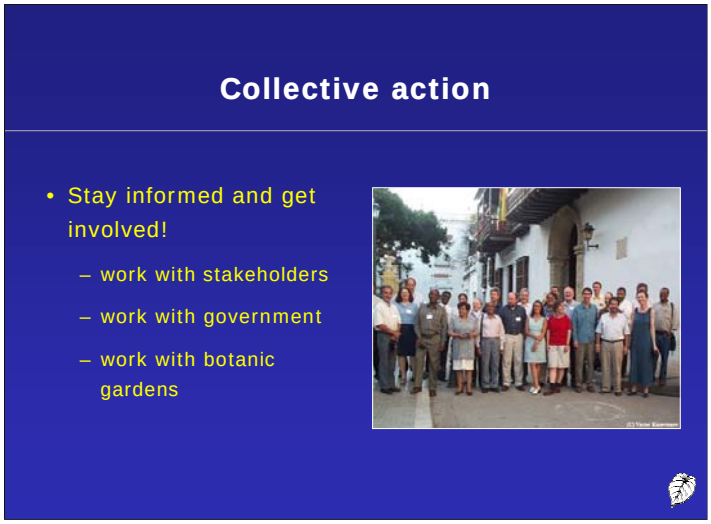
Do they have the right to sell or distribute the plant? Was the plant or its parent acquired on any special terms restricting distribution or sale? Has Prior Informed Consent been obtained from the plant's country of origin for this kind of activity?

Under what conditions should the plant be sold, how will these conditions be communicated to the buyer, and how to control the buyer's subsequent use of the plant? Gardens can ask buyers to sign a short material supply agreement, or to specially label plants and seed packets, stating that the material is sold for non-commercial, private use only. If there is a special plant sale event, similar terms could be set out at the entrance to the sale, in the catalogue, and on the written sales receipts. The nature of the plants on sale may determine the best option: some plants are much more likely to be commercialised (for example, orchids) than others (for example common bedding plants that are already widely available). Some gardens choose to sell only plants native to their country, and some sell only commercially-available cultivars, rather than plants from their collections.

What benefits will be shared, and how? How can gardens ensure that benefits return to countries of origin? Many plants at plant sales are sold for small amounts of money, and may originate from many different countries. It can be difficult to share benefits fairly and equitably without significant transaction costs. A benefit-sharing trust fund may be a useful way to pool these small monetary returns and make the money available for appropriate conservation and capacity building projects.

The number of CBD-friendly plant sales initiatives is steadily growing, as botanic gardens work with countries of origin to promote public awareness of conservation.

[Note to speaker: you may wish to provide examples of recent plant sales projects]



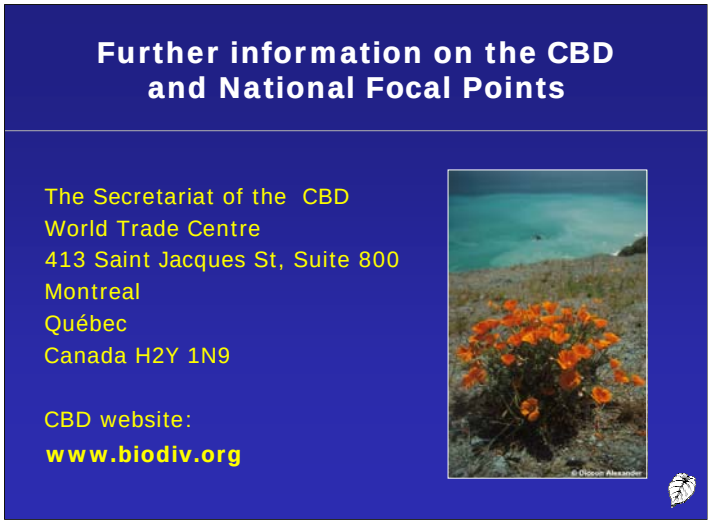
So, to summarise. It is important that we collectively **stay informed** about the CBD, and take opportunities to **get involved**. Remember that much of the work carried out by botanical institutions is vital to governments implementing the CBD. They need our help and our input!

For example, botanical institutions can:

- **Work with local stakeholders** to develop best practice – ensure that you consult local groups, and users and providers such as Indigenous Peoples, landowners, universities, local government etc.
- **Work with your governments** to ensure botanical collections are represented in decision-making at national and international levels. Tell your CBD National Focal Point about your successes – they could be included in the next CBD National Report. Invite government representatives to visit your institution to learn about your work. You could suggest that your country proposes a representative from the botanical community to be on one of the international technical expert groups.
- **Work with the wider botanical community** through national and international networks and professional societies.

The botanic garden community has been very pro-active in developing voluntary initiatives to implement the CBD. There are regular opportunities for staff to meet and share ideas, through international organisations and national networks. Consequently, standard accepted models for CBD-friendly work are developing that can help us all keep informed and up-to-date.

[Note to speaker: The picture shows the representatives involved in the Pilot Project for Botanic Gardens, at a meeting in Cartagena, Colombia, in 2000. This group developed the 'Principles on Access to Genetic Resources and Benefit-sharing']



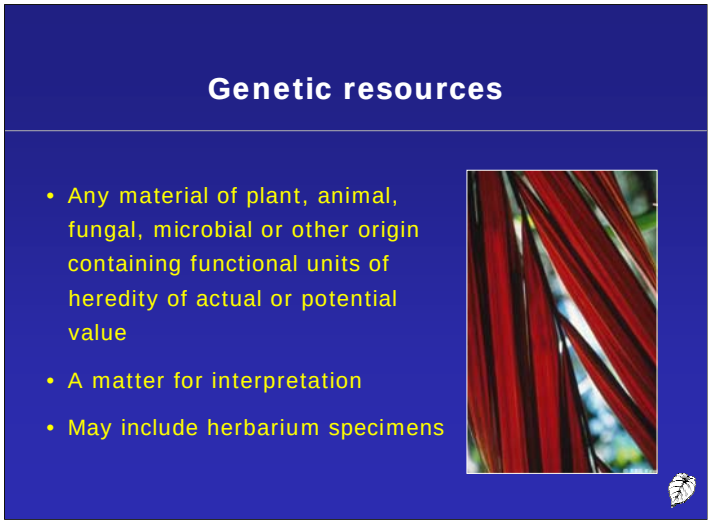
You may obtain **further information** on:

- the CBD, including its current work programme and upcoming meetings;
- the CBD National Focal Points; and
- individual National Reports,

from the CBD's website at: **www.biodiv.org**.

You can also contact your CBD National Focal Point directly to find out what is happening in your country and how you can get involved.


Additional slides



What are genetic resources?

Some Articles in the CBD only apply to genetic resources, as opposed to biological material - in particular Article 15 on access and benefit-sharing.

The CBD defines genetic resources as **'genetic material of actual or potential value'**. It defines genetic material as **'any material of plant, animal, microbial or other origin containing functional units of heredity.'** From living plants and cells down to fragments of DNA or RNA molecules, a range of entities can potentially carry hereditary information from one generation to another – or to other organisms.

The definition of genetic resources is important because it lies at the crux of many new strategies and laws governing access and use, and so has implications for scientific research. However, the CBD definitions have given rise to **different interpretations**. On the one hand, 'potential value' is a broad term: who can predict the potential value of something in the future? On the other hand, 'containing functional units of heredity' narrows the definition: strictly speaking, this should include organisms and cells but not isolated DNA itself. DNA, although the unit of heredity, is not by itself functional. Some people consider that the term 'genetic resources' refers more to the way that material is used (that is, for genetic information and properties) than to the type of material.

Are herbarium specimens genetic resources? It is probably a good idea to treat them as though they are, even though at the current time it is not always possible to extract intact DNA from them for genetic studies.

The existing access legislation of some countries covers 'biological resources' rather than just genetic resources. This wording easily includes herbarium specimens and DNA, whether functional or not.

What are Ecosystem services?

Natural ecosystems **provide human societies with a variety of goods and services**. These are often broadly grouped into:

- Goods, such as food, timber and fresh water;
- Ecosystem functions, such as maintaining fertile soil, climate regulation and natural pest control; and
- Aesthetic and cultural values.

Taken together, all the goods and services provided to human societies by ecosystems are termed **ecosystem services**.

The conservation of ecosystem services supports the objectives of the CBD, and is an especially important approach if conservationists are to promote conservation from a purely 'human-use' viewpoint.

With this in mind, scientists have attempted to provide financial estimates of the value of the services ecosystems provide. This has led to some striking findings:

- Their **high global value:** The world's ecosystem services are valued to be worth a minimum of 33 trillion US dollars (about twice the global gross national product).
- The long term **cost of losing ecosystem services almost always greatly exceeds the short term financial benefits** from destroying part of the ecosystem.

These findings provide extremely compelling economic arguments for putting the CBD into practice.

Although the majority of the world's biodiversity is found in developing countries, most of the word's *ex situ* conservation and research centres are located in developed countries. These institutions maintain samples of a considerable portion of the world's known biodiversity, as well as related data and information, which is often not available in the country of origin.

Article 17 of the CBD seeks to redress this balance. It calls for Parties to take into account the special needs of developing countries, and to **exchange information** that is relevant to conservation and sustainable use, including information on research, technological knowledge and training. This exchange should also include the repatriation of information.

What does repatriation of information actually mean?

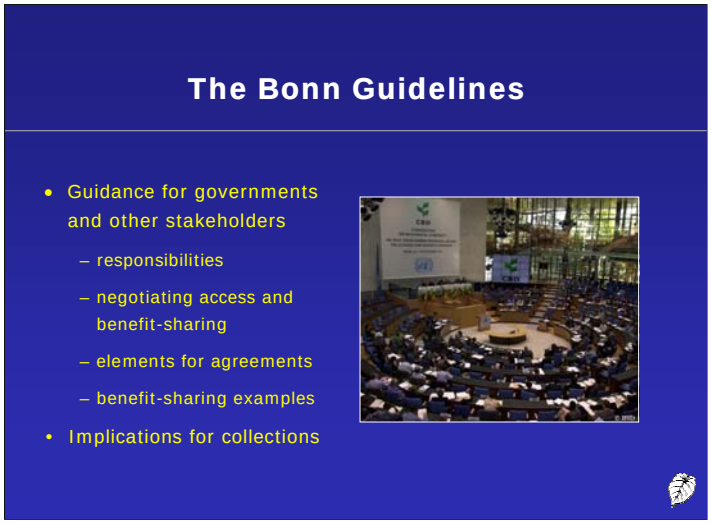
Repatriation involves **identifying data or information** derived from biological material that is not available in the country of origin of that material.

It tends to flow from *ex situ* conservation centres in developed countries, **to institutions in developing countries of origin,** such as universities, libraries and herbaria.

Repatriation of information can be undertaken in a variety of ways, through **exchange of and access to:**

- botanical and scientific information (for example, databases, 'virtual herbaria', image libraries);
- biological materials;
- training and capacity building; and
- reintroduction processes.

Successful and useful repatriation **involves extensive planning on both sides,** an assessment of national needs and capacities, and in some cases, supply assessments of botanical institutions and libraries.



The 'Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization' were designed to **provide voluntary guidance** for the development of national strategies, laws, contracts, and capacity building activities. They were developed by an expert panel, and adopted by COP6 in April 2002.

The Bonn Guidelines outline:

- **responsibilities** of Parties and stakeholders as users and providers;
- **participation of stakeholders**, especially local and Indigenous communities;
- steps in the **process of negotiating access and benefit-sharing** (particularly Prior Informed Consent and Mutually Agreed Terms);
- suggested elements for use in **Material Transfer Agreements**, as well as the monitoring, evaluation and enforcement of these agreements; and
- examples of **fair and equitable benefit-sharing**.

They explicitly recognise the need for **flexibility**, that each country may be **both a user and provider** of genetic resources, and the **need for a national access and benefit-sharing strategy**.

They are not designed to be the only CBD action on access and benefit-sharing, but part of a package of **complementary approaches**, including national strategies, voluntary codes of conduct, model agreements and capacity-building measures.

As it is likely that governments will use the Guidelines as a tool for developing their national strategies and laws, they have **important implications for *ex situ* collections**. We need to consider them when planning fieldwork with partners and when designing institutional policies, and should provide our CBD National Focal Points with feed-back on their impact at a practical level.

A new **International Regime** on access to genetic resources and benefit-sharing is **currently being negotiated** by the Parties to the CBD, following a call from the World Summit on Sustainable Development in 2002.

This new regime is being developed in part because many Parties were dissatisfied with the 'voluntary' nature of the Bonn Guidelines, and the emphasis on development of national laws by countries providing genetic resources. These Parties feel there is a need for more concerted **focus on the users of genetic resources**, to ensure they are following these national laws, obtaining prior informed consent, honouring mutually agreed terms and improving benefit-sharing.

It is not yet clear what shape this regime will take, and there are **many areas of controversy**. It may be legally-binding, or it may contain a mixture of binding and voluntary components. One major area of contention is whether, and how, the regime will cover 'derivatives' of genetic resources – as yet there is no agreed definition of 'derivatives'. Another difficult area concerns how the international regime will extend to traditional knowledge, and how to enable the participation of indigenous and local communities.

Parties are debating possible measures to ensure that links are kept between genetic resources and their origin along the chain of their use so that legal acquisition can be proved and benefits shared appropriately, especially if there is a commercial outcome. One of the likely components of this regime is an '**international certificate of legal provenance**' for genetic resources. It is not yet clear how wide the scope of any such certificate scheme would be, nor how it would work in practice; the feasibility and possible options are being discussed during the negotiations. However, botanical institutions should track the development of this concept closely, as it is likely to have profound practical implications for fieldwork and collections management.

In most of the developing world, people are directly dependent on plant genetic resources for their livelihoods. But both these resources and the **traditional knowledge** related to them are under threat.

The CBD was first international treaty to link use/conservation of biological diversity with knowledges, innovations and practises of Indigenous Peoples. Article 8(j) of the CBD states that this traditional knowledge must be:

- **respected, preserved and maintained**; **promoted**, with the **approval and involvement** of the holders; and that
- **benefits** arising from use of such knowledge must be **shared equitably.**

In order to implement these provisions, the CBD has established a Working Group that specifically addresses Article 8(j). Indigenous Peoples' groups are represented in this working group.

Botanists, particularly those doing ethno-botanical research, need to be aware of these issues when carrying out work in areas inhabited by Indigenous Peoples and local communities. It is good practice, and increasingly a legal requirement, to seek their **Prior Informed Consent** to use their knowledge. As part of this process, you will be expected to **share benefits** derived from your use of this knowledge.

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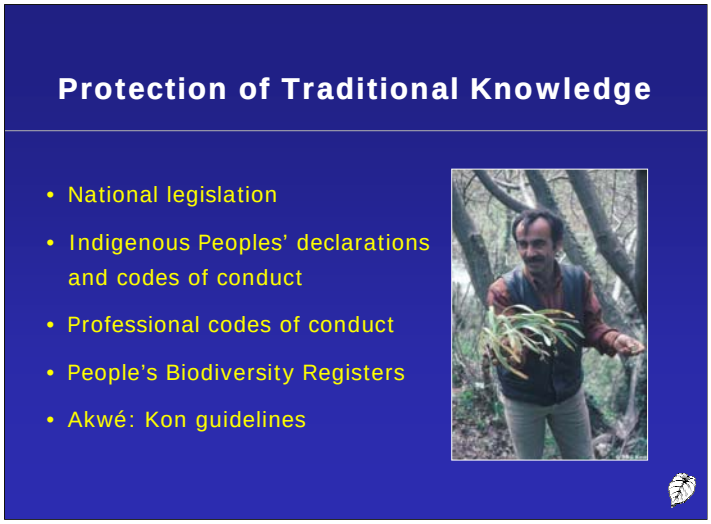


Since the CBD came into force, a number of initiatives have been used to **protect traditional knowledge**. Botanists working in this area will need to consider the following:

Some countries have already introduced **national legislation** protecting Indigenous Peoples' rights and traditional knowledge.

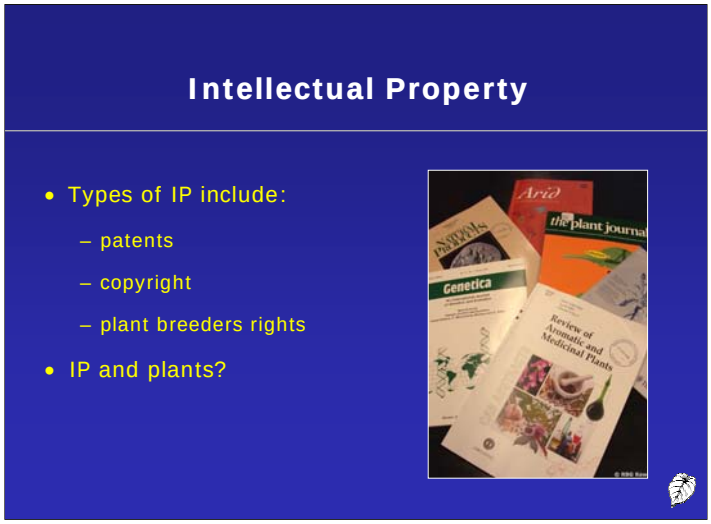
In the absence of national law, some Indigenous groups have protected their rights through **declarations** and by drawing up **codes of conduct** for those wishing to do research in areas where they live.

A growing number of **codes of conduct drawn up by professional bodies** give general guidance on best practice, how Prior Informed Consent should be obtained from Indigenous communities, and how information derived from these sources should be published or distributed.

One response to attempts to patent Indigenous knowledge has been to create registers and records of this knowledge. These **People's Biodiversity Registers** can be used to challenge patents, by showing that the patent is not based on 'new' knowledge, and cannot therefore be a 'new' innovation.

Following recommendations from the working group on Article 8(j), COP7 adopted the **Akwé: Kon Guidelines** to provide guidance to Parties and Governments proposing developments in areas traditionally occupied or used by indigenous and local communities.

Scientists should always respect the fact that some peoples and communities may not wish their knowledge, innovations and practices to be acquired and used by others.

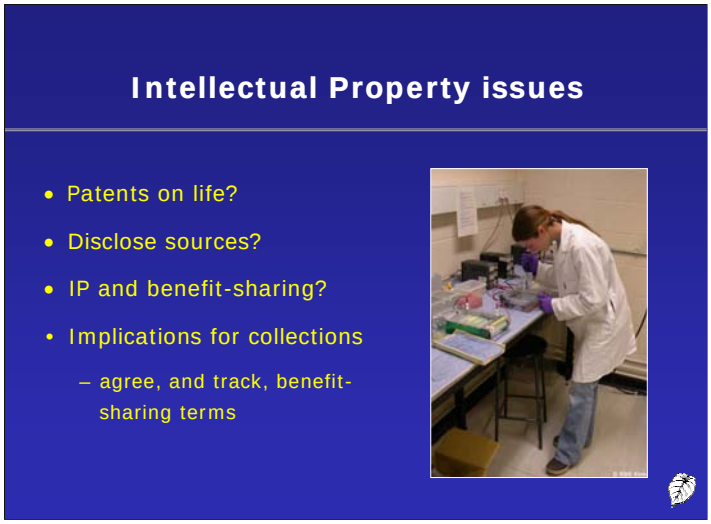


Intellectual Property (IP) refers to new creations of the mind, such as inventions, and literary or artistic works. IP rights provide mechanisms to protect such intellectual creations, and include patents, copyright, trademarks, plant variety protection and trade secrets. For example:

- A **patent** is an exclusive right granted by a government for an **invention**, which is a product or a process that provides a new way of doing something, or offers a new technical solution to a problem. In exchange for a complete disclosure of the invention, the applicant is granted the exclusive right to make, use or sell the claimed invention in a particular country for a limited period of time, usually 20 years from the date that the patent was issued.
- Original literary, artistic and musical works, such as academic papers, technical drawings and photographs, may be protected by **copyright**. This gives the copyright owner the exclusive right to reproduce the work for the life of the creator, plus another 50, or in some countries, 70, years.
- New plant varieties can be protected by way of **plant breeders rights** or, in the U.S.A., by a **plant patent**. Plant breeders rights usually last for 20 years from the date the right was granted.

The initial ownership of IP is, in most cases, retained by the creator, or creators, of that IP. However, as with physical property, IP can be sold, licensed, exchanged or given away. Under many employment contracts, IP created in the course of employment by an employee automatically belongs to the employer.

The relationship between IP, plant genetic resources, and the traditional knowledge associated with those resources, has come under increased international scrutiny. The debate is fuelled in part by the rapid rise of modern biotechnology, and also by several well-publicised cases of patent applications over naturally-occurring genetic resources, and traditional knowledge that has been in use for generations. For example, a patent on the use of turmeric for wound healing was revoked once the patented invention was compared to ancient Indian documents that showed the idea was neither novel nor inventive.



Current Intellectual Property (IP) issues being considered by the CBD and other organisations, such as the World Trade Organisation (WTO) and the World Intellectual Property Organisation (WIPO), as well as non-governmental organisations and Indigenous People's groups, include:

- Should IP rights, in particular patents, apply to biological materials, such as genes, plants and animals? Or should special new IP systems (so-called '*sui generis*', meaning 'of its own kind') be developed in some cases?
- Should a patent applicant be obliged to disclose the source, or the country of origin, of biological material and associated traditional knowledge (TK) used in an invention?
- What role does IP have to play in benefit-sharing under the CBD?

The outcomes of these debates are not limited to the world of patent applications. **Botanical collections need to consider the IP implications** of any material transfer agreements, or collecting permits, that they agree to. IP questions that might arise from agreeing, as part of a benefit-sharing package, to carry out joint research with a partner could include:

- when is co-authorship of any resulting publications appropriate? This will have **copyright** implications for both the individual researchers and their employers;
- who may own any inventions arising out of the joint research? This will determine who may file for a **patent** to protect that invention, and who may agree the terms of a **licence** to commercialise that invention. The licence terms might include provision that royalty payments be returned to the original providers of the biological material or TK, or that free licenses must be granted to researchers in the country that provided access to the resources so they can carry out research on the material or TK.

As with all other aspects of benefit-sharing, institutions need to ensure their internal tracking systems allow them to comply with any agreed obligations. Botanical collections are also increasingly involved in digitisation projects to disseminate data and images of their collections on the internet. The copyright implications of such projects should be considered at an early stage of project planning.

One of the most relevant CBD work programmes for *ex situ* collections is the Global Taxonomy Initiative (or GTI), endorsed at COP6 in April 2002. Knowledge gaps in taxonomic systems, and a shortage of trained taxonomists and curators in many parts of the world, affect our ability to conserve, use and share the benefits of biodiversity, and therefore to implement the CBD. The GTI was set up to address this **'taxonomic impediment.'** It aims to do this through:

- **providing key information** on components of biodiversity at genetic, species and ecosystem level; and
- **supporting capacity building** to ensure that countries can carry out priority taxonomic work.

The GTI works through a number of Operational Objectives which support:

- **taxonomic needs assessments** at all levels (national, regional and global) mainly through workshops and networks (for instance BioNET-INTERNATIONAL at the global level).

- **sharing taxonomic information** and checklists, through the CBD Clearing House Mechanism and other internet-based projects (e.g. the Global Biodiversity Information Facility).

- encouraging more **training and capacity building** programmes for taxonomists, curators and parataxonomists, and the creation and strengthening of *ex situ* collections and reference centres.

- encouraging **collaboration** and information exchange between institutions in developing and developed countries (South-South and South-North).

- supporting governments to **designate GTI National Focal Points**, to provide information to the Clearing House Mechanism on current access and benefit-sharing laws and policies.

The Global Strategy for Plant Conservation was developed as a practical and measurable approach to halt the destruction of plant diversity. It was adopted by the Parties to the CBD in April 2002, at COP6.

It sets out **16 specific targets** to be met by 2010, with the general objectives of:

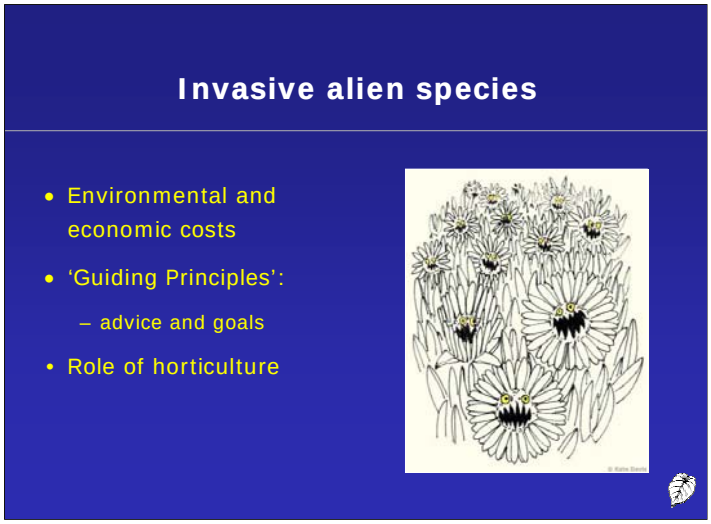
- understanding and documenting plant diversity;
- conserving plant diversity (*in situ* and *ex situ*);
- using plant diversity sustainably;
- promoting education and awareness of plant diversity; and
- building capacity for the conservation of plant diversity.

Regional strategies are encouraged as the most effective way of meeting the 16 global targets. Several countries have now developed national responses to the GSPC (as at March 2006: the Seychelles, Colombia, New Zealand, Ireland, South Africa, China and the United Kingdom). Countries are encouraged to nominate GSPC National Focal Points.

Many of the targets are directly relevant to the activities of botanical institutions. For example, Target 1 calls for 'a widely accessible working list of known plant species, as a step towards a complete world flora'. Target 8 is: '60% of threatened plant species in accessible *ex situ* collections, preferably in the country of origin, and 10% of them included in recovery and restoration programmes'.

The Global Partnership for Plant Conservation (GPPC), launched at COP7 in 2004, is an initiative bringing together a wide range of international agencies and organisations involved in plant conservation and implementation of the GSPC. The GPPC work programme includes stakeholder consultation, support for national GSPC implementation, support for the development of a GSPC toolkit and communication and awareness raising.

[Note to speaker: you may want to include information and links to regional GSPC initiatives]

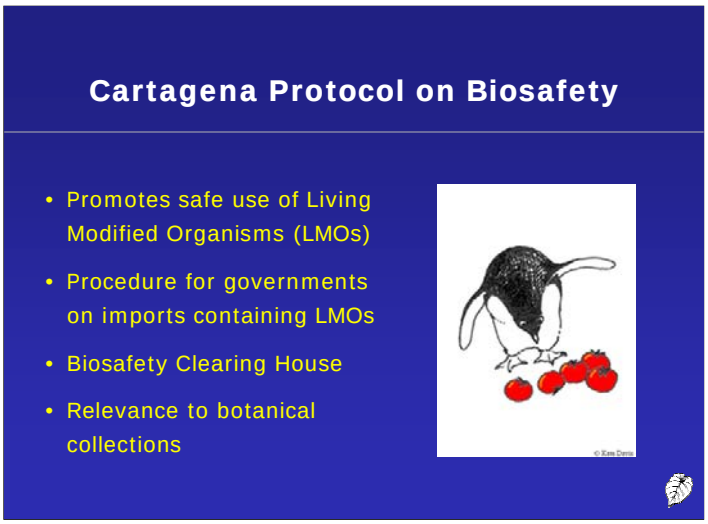


The fight against **invasive alien (or non-native) species** is addressed in Article 8(h). These are species that have been introduced, intentionally or unintentionally, into areas outside their normal range, and which spread at the cost of native species and habitats.

Invasive alien species present the **second largest threat to biodiversity**, after habitat loss. They levy **direct economic costs** for humans: African nations alone spend around 60 million US dollars annually trying to control invasive alien weeds such as water hyacinth (*Eichhornia crassipes*) and water lettuce (*Pistia stratiotes*) that clog up important waterways. They also levy heavy costs in terms of lost ecosystem services. The problem is growing with human mobility and global trade. Combatting invasive alien species is now a **conservation priority** that needs to be addressed at global, regional, trans-border and national levels by a wide range of sectors, including transport, tourism, agriculture and trade.

The CBD adopted the '**Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species**' at COP6 in 2002. These non-binding Principles **provide guidance and goals** for governments.

Horticulture has played a significant role in the introduction of some invasive alien species, for example, water hyacinth. By developing codes of practice for responsible exchange, and raising public awareness about invasive species, the botanical community can help to minimise the spread of invasive species. Botanical institutions also provide vital expertise and resources for research and monitoring.



One of the major cross-cutting issues for the CBD is **'biosafety'**: the need to protect human health and the environment from the possible adverse effects of the products of modern biotechnology, especially the increased use of living modified organisms – also known as genetically modified organisms.

Living modified organisms (LMOs) are living organisms that possess novel combinations of genetic material obtained through the use of modern biotechnology. For example: 'transgenic' tomatoes contain a gene – from a cold water fish - that protects the plants from frost (see cartoon!).

In 1996 the COP established a Working Group on Biosafety to develop a draft protocol specifically focusing on the international movement of LMOs. On 29 January 2000, the Parties to the CBD adopted **the Cartagena Protocol on Biosafety,** as a supplementary agreement to the CBD. As of March 2006 the Protocol has 132 Parties. It entered into force on 11 September 2003 once it had been ratified by 50 states.

The Cartagena Protocol:

- aims to **promote the safe transfer, handling and use of LMOs** that may have an adverse effect on the conservation and sustainable use of biological diversity;
- establishes a **procedure for ensuring that governments can decide whether or not they are willing to accept imports** of agricultural commodities that include LMOs into their territory; and
- establishes a **Biosafety Clearing-House** (part of the CBD Clearing House Mechanism) to facilitate exchange of information on LMOs.

This protocol is **becoming increasingly relevant to botanical collections**, as commercial horticulture and agriculture sectors develop growing numbers of genetically modified plant varieties.

[Note to speaker: check latest number of Parties to the Protocol on www.biodiv.org/biosafety]

The CBD is not the only international treaty to cover access to plant genetic resources. Many *ex situ* collections will also need to consider the **International Treaty on Plant Genetic Resources for Food and Agriculture** (the ITPGRFA, or 'IT'). The IT establishes an access and benefit-sharing regime for plant genetic resources for food and agriculture that is in harmony with the CBD.

The text was only agreed in November 2001 and it is therefore a very new treaty. The Treaty **came in to force on 29 June 2004** and as of March 2006 it has 87 Parties.

Like the CBD, the IT recognises the sovereign rights of countries over their plant genetic resources, but instead of promoting bilateral arrangements as the CBD does, its contracting Parties agree to work together in a **'Multilateral System.'** This is because the Treaty's commitment to promoting food security justifies countries taking a common approach. The idea is that all member states will agree in advance on one system for ABS. This is not intended to be renegotiated.

The IT **facilitates access** between its Parties to 35 food and 29 feed crops. The crops are listed in an Annex, which can be changed with the consensus of the Parties.

Benefit-sharing in the IT is prescribed in much more detail than it is in the CBD. The IT establishes a **system of fair and equitable sharing of financial benefits** resulting from the commercial use of the crops covered by the Multilateral System. Benefits are 'paid' into the system, and primarily flow out to farmers in all countries (especially developing countries) who conserve and sustainably use plant genetic resources.

The IT also recognises and promotes **farmer's rights.** For instance, the treaty preserves the right of farmers to save seed, and to use and exchange it.

[Note to speaker: check latest number of Parties to the IT on www.fao.org/ag/cgrfa/itpgr.htm]

The IT is designed to work harmoniously with the CBD, but its central notion of **facilitated access** using a Multilateral System differs from bilateral systems of access under the CBD. In addition, under the IT:

- Access is **only** facilitated for uses of material relating to **food and agriculture** - not for chemical, pharmaceutical or other non-food/feed industrial uses.

- Access should be granted **quickly**, without the need to track individual accessions, and at **free or minimal costs**.

- Transfers will take place under a **standard Material Transfer Agreement**. This means there will be no case by case negotiations or drafting of contracts.

- Material supplied under the Multilateral System must, if it is conserved, be **kept available by recipients**. Intellectual property rights, or other rights, that would limit facilitated access to the material in the form in which it was originally received from the Multilateral System are allowed only on payment of a mandatory fee.

- It does not matter when the crops were acquired. The IT **will apply to crops acquired both before and after the CBD** came into force in December 1993.

Botanical collections that hold crop species listed in the IT will need to consider carefully how the IT will affect their ability to use and transfer that material in the future.

When the COP adopted the Strategic Plan of the CBD in 2002, Parties made a further commitment:

> 'to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth'.

The 2010 Biodiversity Target was endorsed by the World Summit on Sustainable Development later in 2002.

In 2004, at COP7 the Parties adopted a framework for achieving the Target, by outlining seven focal areas: Reducing the rate of loss of the components of biodiversity;

- Promoting sustainable use of biodiversity;
- Addressing the major threats to biodiversity;
- Maintaining ecosystem integrity;
- Protecting traditional knowledge, innovations and practices;
- Ensuring the fair and equitable sharing of benefits arising out of the use of genetic resources;
- Mobilizing financial and technical resources, especially for developing countries.

The Target is massively ambitious, and the timescale extremely tight. However, it has been successful in raising awareness of biodiversity loss, and encouraging partnerships between the wide variety of organisations (conservation, education, industry and NGOs) working to achieve its aims.

References and additional information

To help you update your presentation or do your own further research on particular topics, the following books, websites, articles and notes may be useful. They are listed by slide.

Many of the documents referred to are contained in Decisions of the Conference of the Parties (COP). These can be obtained from the official CBD website (www.biodiv.org). For instance, to find COP6 Decision VI/20 you need to go to the 'Decisions' section, click on COP6, and then look for Decision 20.

Slides 4-5: What is the CBD and What is unique about this treaty?

The official website of the CBD is at www.biodiv.org.

Glowka, L, Burhenne-Guilmin, F & Synge, H in collaboration with McNeely, JA & Gündling, L (1994) *A Guide to the Convention on Biological Diversity*, IUCN Gland, Switzerland and Cambridge, UK. A very useful introduction to the CBD. Available in English, French, Spanish and Arabic.

Secretariat of the CBD (2005) *Handbook of the Convention on Biological Diversity Including its Cartagena Protocol on Biosafety*, 3rd edition, (Montreal, Canada). Contains the full text of the CBD and the Cartagena Protocol, and Decisions of the COP up to 2004.

Bragdon, S (2004) International Law of Relevance to Plant Genetic Resources: A practical review for scientists and other professionals working with plant genetic resources. *Issues in Genetic Resources* No. 10. International Plant Genetic Resources Institute, Rome, Italy. This useful review places the CBD in context with other international conventions and treaties.

Slide 6: Parties to the CBD

Check www.biodiv.org/world/parties.asp for the latest list of ratifications. As at March 2006 only 7 states have not ratified the CBD: Andorra, Brunei Darussalam, the Holy See, Iraq, Somalia, Timor Leste, and the United States of America.

How does a country become a Party to the CBD?

When the CBD was first presented to the international community in Rio de Janeiro (Brazil) in 1992, over 150 countries showed their support for its aims by signing it immediately. However, the CBD did not come into force until 29 December 1993. This was 90 days after it had been formally accepted by 30 countries (through a process of ratification, acceptance or approval). These 30 countries then became 'Parties' to the CBD. For all additional countries the CBD enters into force 90 days after the deposit of their ratification (or equivalent) document. In other words, the CBD comes into force on different dates for different countries.

Ratification, acceptance and approval are different ways by which countries can show a formal willingness to become a Party, and be legally bound by the CBD. This will usually mean that it has been passed through a country's legislative process (for instance, in the United Kingdom, through Parliament).

The CBD was closed for signature on 4 June 1993 and countries that did not sign up before this date can only join it through a slightly different process, called accession. (See Articles 33 – 42 of the CBD text for further details).

Slide 7: What is biological diversity?

For further information on some of the conventions that address specific areas of biodiversity:

The **Ramsar Convention on Wetlands** (1971) official website is at www.ramsar.org

The **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES**), is an international agreement between governments to ensure that international trade in specimens of wild animals and plants does not threaten their survival. It entered into force in 1975. Its official website is www.cites.org.

Also go to www.unep.org for full list of environmental treaties since 1933.

Slides 9-10: Financial value of biodiversity

See Table 1.1 'Ballpark' estimates for annual markets for various categories of product derived from genetic resources, in: ten Kate, K & Laird, SA (1999) *The Commercial Use of Biodiversity*, Earthscan Publications Ltd, London, UK.

Recent studies suggest only between 5 and 15 per cent of higher plant species have been investigated for the presence of bio-active compounds (see page 43 in ten Kate & Laird (1999), above).

For estimated financial value of Ecosystem Services, see slide 47.

Artuso, A (2002) Bioprospecting, benefit sharing and biotechnological capacity building. *World Development* 30 (8): 1355-1368.

Laird, SA & Wynberg, R (2005). The commercial use of biodiversity: an update on current trends in demand for access to genetic resources and benefit-sharing, and industry perspectives on ABS policy and implementation. Available as document UNEP/CBD/WG-ABS/4/INF/5 from the CBD website.

Newman *et al.* (2003) Natural Products as sources of new drugs over the period 1981-2002, *Journal of Natural Products*, 66:1022 – 1037.

Pearce, D and Moran, D (1994). *The Economic Value of Biodiversity*. IUCN, Earthscan Publications, London, UK.

Slide 11: Threats to biodiversity

Examples you could use to illustrate some of the main threats to biodiversity include:

- **Habitat loss, fragmentation and degradation**. People are altering habitats all over the world: logging forests, draining wetlands, clearing land for development and farming, so changing landscapes, natural water flows and species compositions. Where habitats are not completely destroyed, they may be fragmented into smaller patches. In fragmented landscapes, populations may become isolated, resulting in inbreeding, loss of genetic diversity and extinction.
- **Spread of invasive alien species**. A large number of species are able to spread to, and dominate, new places, causing habitat loss and threatening native species diversity. Delicately balanced island ecosystems are at particular risk. Alien invasions often stem from intentional or unintentional introductions by humans.
- **Over-exploitation of species**. People use some plant and animal species at a far greater rate than the species can replace themselves, which can push them towards extinction (for instance, through unsustainable fisheries and forestry, and illegal trade in plants and animals).
- **Pollution and climate change.** Pollution of our air, soil and water seriously affects and endangers biodiversity at all levels. Increased atmospheric levels of carbon dioxide and methane are causing a great increase in the rate of climate change. Over a few decades, we have observed rises in temperature and sea levels, changes in precipitation patterns and increased frequencies of extreme events (such as flooding, droughts, heat waves and storms).

The figures used in the slide come from the 2004 IUCN Red List of Threatened Species: www.iucnredlist.org. The main purpose of the IUCN Red List is to catalogue and highlight those taxa that are facing a higher risk of global extinction (i.e. those listed as Critically Endangered, Endangered, and Vulnerable).

Slide 12: How does the CBD approach the challenge?

The 'Precautionary Approach' is spelled out in Principle 15 of the Rio Declaration on Environment and Development (June 1992) (see www.unep.org and search 'rio declaration'):

'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.'

Slide 13: The Ecosystem Approach

The CBD website has useful case studies on *in situ* conservation, *ex situ* conservation and sustainable use initiatives. See also slide 47 on Ecosystem Services.

An 'Ecosystem' is defined in Article 2 of the CBD as 'a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit'.

For more information on the ecosystem approach see:
www.biodiv.org/programmes/cross-cutting/ecosystem/default.shtml.

Also see the summary of the Millennium Ecosystem Assessment Synthesis Report at:
www.greenfacts.org/ecosystems/index.htm.

Slide 15: Bodies of the CBD

If you wish to attend a CBD meeting, you will need to register with the CBD Secretariat – check the CBD website in advance for the necessary procedures. People wishing to attend a meeting of the Conference of the Parties are required to pre-register (forms are available from the CBD website) and also to obtain an official letter from the head of their organisation providing the name, title and contacts of the representative. See the Note Verbale on the CBD website: www.biodiv.org/doc/notifications/2006/ntf-2006-008-cop-mop-en.pdf.

Going to CBD meetings can be bewildering. For some useful general guidance to the CBD and its political processes, see the links below. Both were prepared specifically to assist indigenous and local communities to participate effectively in the CBD.

Johnston, S and Barber, CV (2004) *The Convention on Biological Diversity: Understanding and Influencing the Process. A Guide to Understanding and Participating Effectively in The Seventh Conference of the Parties to the Convention on Biological Diversity.* United Nations University Institute of Advanced Studies and the Equator Initiative. (2006) (see www.undp.org/equatorinitiative/equatorknowledge/publications.htm).

Oldham, P (2001-2002) *Negotiating Diversity: A Field Guide to the Convention on Biological Diversity.* Available online at www.cesagen.lancs.ac.uk/virtual/biodiversity/.

Slide 16: How is the CBD funded?

The Global Environmental Facility (GEF) was established in 1991 and is run by:

- the United Nations Environment Program (UNEP);
- the United Nations Development Program (UNDP); and
- the World Bank.

GEF assistance is intended for developing countries (under the CBD, as set out in Article 21) and countries with economies in transition (in its own capacity, outside the CBD). It is not for international institutions, institutions in developed countries, or the CBD Secretariat. Projects must be country-driven. The GEF can provide incremental costs (with co-financing from other sources) for projects, and full costs for 'enabling activities' such as drawing up national action plans.

For more information about the GEF, and GEF-sponsored projects, see its website at www.undp.org/gef/. A compilation of previous guidance given by the COP to the GEF was prepared for COP7 in 2004 and is available from the CBD website as document UNEP/CBD/COP/7/INF/1.

Slide 18: Cross-cutting issues

Information about these issues is available on the CBD website (www.biodiv.org). See also the following additional slides and notes (slide/page number in parentheses).

Biosafety (slide 58) – Increased use of biotechnology techniques in food production has raised concerns about the effect on human health and the environment. A separate protocol, the Cartagena Protocol, has been negotiated to deal with 'biosafety' issues, such as genetically modified organisms and transgenic crops. The Cartagena Protocol on Biosafety homepage is at www.biodiv.org/biosafety/.

Access to genetic resources (slide 49) – The 'Ad Hoc Working Group on Access and Benefit-Sharing' developed the 'Bonn Guidelines' on access to genetic resources and benefit-sharing to give advice to countries and stakeholders working out how best to regulate access and ensure fair and equitable benefit-sharing. These guidelines were adopted by the COP in April 2002 as decision VI/24. The full text of the Bonn Guidelines is printed in the back of this booklet, and is also available, with some background information, at www.biodiv.org/programmes/socio-eco/benefit/bonn.asp.

Traditional knowledge (slides 51-52) – The 'Ad Hoc Working Group on Article 8(j)' has been set up to look at ways of protecting the traditional biodiversity knowledge of Indigenous and local communities. Representatives of Indigenous Peoples sit on this working group. To find out about the work and results of this Working Group, see www.biodiv.org/programmes/socio-eco/traditional/.

2010 Biodiversity Target (slide 61) – At COP6, Parties made a further commitment to implement the three objectives of the Convention and: 'to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth'. This target was endorsed by the World Summit on Sustainable Development in 2002. See www.biodiv.org/2010-target/.

Taxonomy (slide 55) – The Global Taxonomy Initiative (GTI) was adopted by the COP in April 2002 as Decision VI/8 and sets specific targets for global and regional work building up taxonomic knowledge. You can find a list of national focal points for the GTI at www.biodiv.org/programmes/cross-cutting/taxonomy/.

Plant conservation (slide 56) – The 'Global Strategy for Plant Conservation' (GSPC), which sets specific targets to guide national and international work to halt the destruction of plant diversity, was also adopted by the COP in April 2002. See Decision VI/9 and www.biodiv.org/programmes/cross-cutting/plant/ for information on the GSPC.

Invasive alien species (slide 57) – Concern about how to control the introduction of potentially harmful invasive species has led to the adoption of 'Guiding Principles' by the COP in April 2002, Decision VI/23. See www.biodiv.org/programmes/cross-cutting/alien/.

Slide 20: Stakeholder participation

Here are some examples you could use to show the range of stakeholder initiatives. You may also be able to add some more up-to-date, or local, initiatives.

Voluntary institutional policies, ethical guidelines and codes of conduct:

- The 'Principles on Access to Genetic Resources and Benefit-Sharing,' developed by an international group of botanic gardens and herbaria (see notes for slide 43 on this project, The Pilot Project for Botanic Gardens, and www.kew.org/conservation for copies of the document and more information on the project);
- A code of conduct developed by holders and users of microbial resources, the Micro-Organisms Sustainable Use and Access Regulation International Code of Conduct, or MOSAICC (see the link to the MOSAICC project on the website www.belspo.be/bccm/);
- Private company policies, such as the Asian Development Bank's 'Policy on Indigenous Peoples' (see Information document 24 for COP3), GlaxoSmithKline Plc's 'Guidelines on Discovering New Medicines from Nature' (see http://science.gsk.com/responsibility), and The Body Shop's mission statement (see www.bodyshop.com).

Declarations by local and Indigenous communities, for example:

- Mataatua declaration on Cultural and Intellectual Property Rights;
- the Inuit Tapirisat of Canada have developed guidelines on 'Negotiating research relationships in the North';
- Farmers' rights declarations have led to actual legislation in many countries.

For information on all above, see the Access and Benefit Sharing case studies section on the CBD website (www.biodiv.org/programmes/socio-eco/benefit/cs.aspx).

Work of NGOs to connect stakeholders and governments, for example:

- World Wide Fund for Nature (WWF)-led projects on biodiversity research and awareness raising. See www.panda.org/ and 'Indigenous Peoples and conservation: WWF Statement of Principles' in Compilation of International Guidelines Concerning Indigenous and Local Communities, UNEP/CBD/COP/3/Inf/24 (30 October 1996).
- Southeast Asia Regional Initiatives for Community Empowerment (SEARICE), capacity building with local communities in the Philippines to raise awareness of, and support decision-making on, issues that may affect them such as legislation, planning decisions and customary rights. See www.searice.org.ph/.
- Biowatch, South Africa, ensured the consultation of stakeholders in the development of the country's new access legislation (the Biodiversity Bill), and co-ordinated comments (see www.biowatch.org.za/).

Slides 22-23: The CBD and botanical institutions

Botanic Gardens Conservation International (2001) *An International Review of the Ex Situ Plant Collections of the Botanic Gardens of the World*, available from the BGCI website: www.bgci.org.uk.

Wyse Jackson, PS and Sutherland, LA (2000) *International Agenda for Botanic Gardens in Conservation*, Botanic Gardens Conservation International, United Kingdom.

Barthlott, W, von den Driesch, M, Ibisch, P, Lobin, W & Rauer, G (2000) *Botanic Gardens and Biodiversity*, German Federal Agency for Nature Conservation.

The Role of Botanic Gardens in Implementing the CBD. Submission received by the Secretariat from the Royal Botanic Gardens, Kew and Botanic Gardens Conservation International, UNEP/CBD/COP/3/Inf/46 (29 October 1996).

Slide 25: National legislation on access and benefit-sharing

As at March 2006:

Regional groups, national governments or state governments **already regulating access to genetic resources** to ensure Prior Informed Consent and benefit-sharing include:

The Andean Pact countries (**Bolivia, Colombia, Ecuador, Peru, Venezuela**); **Australia** (at the Commonwealth level and also in States of Western Australia and Queensland); **Brazil** (at the Federal level and the States of Acre and Amapa); **Bulgaria; Cameroon**; **Costa Rica**; **Cuba**; **India; Malaysia** (the States of Sabah and Sarawak); **Mexico**; **Norway; Philippines**; **Portugal**; **South Africa**; **Thailand**; **Uganda**; **United States of America**; **Vanuatu**.

Those **planning to regulate access to genetic resources** to ensure Prior Informed Consent and benefit-sharing include:

Central American Countries (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama) have developed the Draft Central American Accord on Access to Genetic Resources and Biochemicals and Associated Traditional Knowledge; The 53 members of the **African Union** (all African countries except Morocco) have developed African Model Legislation for the Protection of the Rights of Local Communities, Farmers, Breeders and for the Regulation of Access to Biological Resources; the 10 member countries of the **Association** of **South-East Asian Nations** (ASEAN) **(Brunei Darrussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Phillipines, Singapore, Thailand, Vietnam)** have developed the ASEAN Framework Agreement on Access to Biological and Genetic Resources (2000); and in addition,

Albania; Argentina; Bangladesh; Cambodia; Canada; Chile; China; Cook Islands; El Salvador; Ethiopia; Fiji; Gambia; Guyana; Guinea Bissau; Honduras; Indonesia; Ivory Coast; Japan; Kenya; Republic of Korea; Malaysia; Marshall Islands; Micronesia; Namibia; New Zealand; Nicaragua; Pakistan; Panama; Papua New Guinea; Samoa ; the Seychelles; Singapore; Switzerland; Vietnam; Yemen.

The situation is ever-changing. Sources for the above information include:

Personal communication, Lyle Glowka, Biodiversity Strategies International, Bonn, Germany, 7 March 2002.

The database on Access and Benefit Sharing measures on the CBD website: www.biodiv.org/programmes/socio-eco/benefit/measures.aspx.

The Biotechnology Industry Organisation (BIO) Index of National Access Regimes and Status of CBD Implementation (www.bio.org/ip/cbd/cbda.asp) – this website is rather patchy and out of date.

ECOLEX, an IUCN run website providing information on Environmental Law, see www.ecolex.org/index.php.

Genetic Resources Action International (GRAIN) www.grain.org/brl/.

Bass, S and Ruiz, M (2000) *Protecting biodiversity: National laws regulating access to genetic resources in the Americas.* International Development Research Center, Ottawa, Canada (study of seven South American countries).

Carrizosa, S, Brush, SB, Wright, BD & McGuire, P (eds.) (2004) *Accessing Biodiversity and Sharing the Benefits: Lessons from Implementing the Convention on Biological Diversity* IUCN, Environmental Policy and Law Paper no. 54. IUCN, Gland, Switzerland and Cambridge, UK. This book analysis the development of ABS laws and policies in the 41 Pacific Rim countries that signed the CBD.

Glowka, L (2001) *Access to genetic resources and traditional knowledge: Lessons from South and Southeast Asia.* IUCN, Homagama, Sri Lanka.

Nnadozie, K, Lettington, R, Bruch, C, Bass, S & King, S (2003) *African perspectives on genetic resources: A handbook on laws, policies, and institutions.* African Union Scientific, Technical and Research Commission, the Southern Environmental and Agricultural Policy Research Institute, and the Environmental Law Institute, Washington DC, USA (study of ABS laws and policies in 10 African countries). This report can be downloaded as a pdf file from the Environmental Law Institute at www.elistore.org.

Nordic Council of Ministers (2003) *Access and Rights to Genetic Resources – a Nordic Approach,* Copenhagen, Denmark. (Includes study of ABS initiatives in Denmark, Finland, Iceland, Norway and Sweden).

Access legislation case studies

Since the Convention has come into force, many countries, particularly those rich in biodiversity, have introduced new legislation regulating access to their genetic resources. You may want to add some case studies to your presentation – for instance of your own country's or region's access legislation, or that of a country where your institution does a lot of fieldwork.

You should be able to get up-to-date information on developing national legislation from a country's National Focal Point (available from www.biodiv.org).

When thinking about national legislation on access and benefit-sharing, you may also wish to take a look at the Bonn Guidelines (printed in full at the end of this booklet, and see slide 49), which provide a good overview of the types of issues that a country will consider when developing legal, administrative or policy measures on access and benefit-sharing.

Information on countries and regions with new access legislation include:

The Common Access Regime for Genetic Resources, **Andean Pact** Decision 391 (July 1996), also known as the Cartagena Agreement, can be found on the Grain website at: www.grain.org/brl/ (search 'Andean Community').

Information on the **Central American Accord** can be found at www.ccad.ws.

Information on activities of **ASEAN countries** can be found at www.aseansec.org.

The **African Union** has recently adopted a model law for the 'Protection of the rights of local communities, farmers and breeders and the regulation of access to biological resources': see www.grain.org/brl/oau-model-law-en.cfm.

Ekpere, JA (2001) The African Model Law: the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources: an Explanatory Booklet. Organisation for African Unity (OAU), Addis Ababa, Ethiopia. Also available as a pdf file from www.grain.org/brl_files/oau-booklet.pdf.

Further information on ABS development in Africa can be found at www.abs-africa.info/contributions.html.

Slide 26: Benefit-sharing

See examples of case studies posted on CBD website: www.biodiv.org/programmes/socio-eco/benefit/cs.aspx.

The Bonn Guidelines, printed at the end of this booklet, have a section on benefit-sharing (paragraphs 45-50, Section D), and suggest a list of monetary and non-monetary benefits that can be shared (Appendix II).

The Bonn Guidelines state that, *'benefits should be shared fairly and equitably with all those who have been identified as having contributed to the resource management, scientific and/ or commercial processes'* (para 48).

Access permits often set out a list of acceptable benefits, and a timescale within which, for instance, new determinations of plant taxa must be notified to the country of origin. Some national laws even set out guidelines for the payment of royalties.

Slide 27: Pre-CBD material

Another reason why, in the near future, it may be practical to treat all pre- and post-CBD institutions in the same way is the recent 'International Treaty on Plant Genetic Resources for Food and Agriculture' (known as the IT), adopted by the Food and Agriculture Organization (or FAO) of the United Nations, in 2002. This establishes a separate access and benefit-sharing regime for certain plant genetic resources used for food and agriculture - regardless of when those genetic resources were originally acquired (see slides 59-60 on the IT).

Slides 30-40: CBD-friendly work

Prior Informed Consent: the Bonn Guidelines give guidance on the principles of Prior Informed Consent. See paragraphs 24-40 (in Section C); paragraph 36 is particularly relevant for botanists wishing to collect material. In the case of material coming from another *ex situ* collection, Prior Informed Consent can in some circumstances be obtained from the body governing that collection (see paragraph 32 of Bonn Guidelines).

Mutually Agreed Terms: see paragraphs 16 (in Section C) and 41-44 (in Section D) of the Bonn Guidelines for further guidance on these issues.

Change of use: bear in mind that if you decide you want to use the material for a different purpose than originally agreed, you should go back to the country of origin or donating institution and get Prior Informed Consent for this change of use (see paragraph 34 of the Bonn Guidelines).

Written agreements: many institutions have started to use Material Transfer Agreements (MTAs) as a means of ensuring that, from the beginning of a project, all partners have a clear understanding, recorded in writing, of (for example):

- how, and by whom, a project will be managed;
- how, and by whom, any biological material may be collected, used, and curated; and

- how any associated benefits may be shared.

Appendix 1 of the Bonn Guidelines sets out 'Suggested Elements for Material Transfer Agreements'.

Some examples of different types of MTAs include:

- **Material Acquisition Agreement** – a legally binding document that can be used to set out the terms under which biological material may be acquired, used and transferred, and benefits shared. Partners should seek independent legal advice before signing a Material Acquisition Agreement.
- **Memorandum of Understanding** – a way to record, in writing, the mutual expectations surrounding a project and/or a partnership, including the uses that may be made of the biological material and how associated benefits may be shared. An MoU is normally a short document, drafted in simple language.
- **Donation letter** – donors may be asked to sign a donation letter stating that the material was originally acquired legally and that the donor has permission to pass on the material to the receiving institution, and clarifying the terms of use and transfer.
- **Use of material letter -** to set out the uses that may be made of material in an institution's collection (for instance that it will be used for taxonomic and other scientific research; education; public display etc), and to clarify the terms on which material may be supplied to others. Such a letter can be handed to authorities that grant access, such as national permitting authorities, to help them make an informed decision on whether or not to grant access in the first place.
- **Material Supply** (or **Transfer**) **Agreement -** for material leaving an institution. It should set out any relevant original terms of acquisition, and state any additional terms of use, transfer and benefit-sharing.
- **Loan agreement -** to clarify the terms under which material may sent out on loan.

Some examples of botanic garden Material Supply Agreements (MSAs) are available at www.bgci.org/abs.

A discussion of CBD-friendly practice and examples of research institution MSAs for exchange of DNA samples are provided in: Savolainen, V, Powell, MP, Davis, K, Reeves, G & Corthals, A (eds) (2006) DNA and Tissue Banking for Biodiversity and Conservation: Theory, Practice and Uses. Royal Botanic Gardens, Kew, UK.

An example of a framework for access and benefit-sharing agreements is provided in Cheyne, P (2004) Access and Benefit-Sharing Agreements: bridging the gap between scientific partnerships and the Convention on Biological Diversity. Ch. 1 in: Smith, RD, Dickie, JB, Linington, SH, Pritchard, HW, & Probert, RJ (ed.s) Seed Conservation: Turning Science into Practice. Pp. 5-25. Royal Botanic Gardens, Kew, UK.

Biber-Klemm, S & Martinez, S (2006) Access and Benefit Sharing: Good practice for academic research on genetic resources. Swiss Academy of Sciences, Bern. A new user-friendly booklet for users of genetic resources produced by the Swiss government. Available from www.scnat.ch/downloads/ABS-Tool_E7.pdf.

Some further guidance on setting up fair and equitable benefit-sharing agreements (especially for bioprospecting or other more commercial research) is provided in the Guide to Using the Working Draft ABS Management Tool. This new tool is aimed at people involved in the day-to-day negotiation of ABS agreements, within companies, research organizations, communities, or government agencies. The guide text and more information on the ABS Management Tool are available at www.iisd.org/standards/abs.asp.

Access to databases and other information

The CBD does not comprehensively address the collecting of information, confidentiality of information, and the terms for access to data (including databases and images). However, access to images and information is a sensitive area, and several countries deal with these issues in their access and benefit-sharing laws. Institutions should exercise caution and ensure they comply with national laws and agreements with partners.

Slides 41 and 42: Commercialisation and Plant Sales

One possible definition (from the Pilot Project for Botanic Gardens, see slide 43) is: *'Commercialisation' and 'Commercialise' shall mean applying for, obtaining or transferring intellectual property rights or other tangible or intangible rights by sale or licence or in any other manner, commencement of product development, conducting market research, and seeking pre-market approval and/or the sale of any resulting product.*

For a comprehensive analysis of the commercialisation of genetic resources, see:

ten Kate, K & Laird, SA (1999) *The Commercial Use of Biodiversity*, Earthscan Publications Ltd, London, UK.

Laird, SA & Wynberg, R (2005) The commercial use of biodiversity: an update on current trends in demand for access to genetic resources and benefit-sharing, and industry perspectives on ABS policy and implementation. Available as document UNEP/CBD/WG-ABS/4/INF/5 from the CBD website.

More guidance for gardens involved in commercial activities can be found on pp. 31-32 and 41-44 of:

Latorre Garcia, F. *et al.* (2000) *Results of the Pilot Project for Botanic Gardens: Principles on Access to Genetic Resources and Benefit-sharing, Common Policy Guidelines to Assist with their Implementation and Explanatory Text,* Royal Botanic Gardens, Kew, UK. This can be downloaded from the RBG Kew website: www.kew.org/conservation/.

A report by Mark Webb 2001 Churchill Fellow: 'To investigate models overseas to guide the development and commercialisation of Australian plants for the local and international plant markets'. Available at www.churchilltrust.com.au.

For some interesting case studies involving botanic gardens, see:

- The commercialisation case studies on the new Botanic Gardens Conservation International ABS webpages www.bgci.org/abs.
- The official website of the Wollemi Pine; order your own specimen to help conservation! www.wollemipine.com.
- The Plant Introduction Scheme of the UBC Botanical Garden and Centre for Plant Research www.ubcbotanicalgarden.org/pisbg/.
- The NBI-Ball Agreement and Bioprospecting in perspective (press release), available at: www.nbi.ac.za/research/ball.htm. See also article on FloraCulture International website: Four years of partnership between Ball Horticultural and the Government of South Africa. www.floracultureintl.com/archive/articles/834.asp.

Slide 43: Collective action

Voluntary initiatives from botanical institutions

Two examples of ways that the botanic garden community is implementing the CBD:

1. **The Pilot Project for Botanic Gardens** (also called the DFID Common Policy Guidelines project) - a voluntary initiative by 28 botanic gardens and herbaria from 21 countries wishing to harmonise CBD implementation by the botanical community. The project group met at four workshops over four years and agreed a set of **'Principles on Access to Genetic Resources and Benefit-Sharing for Participating Institutions.'** These are voluntary and non-legally binding, and are designed to guide gardens and herbaria, large and small, in developing their own institutional policies in line with the CBD's provisions on access and benefit-sharing. The Principles cover acquisition, use and supply of material, use of written agreements, benefit-sharing, curation and tracking, and oblige participating institutions to develop a transparent policy on commercialisation. They are open for endorsement by any botanical institution. See www.kew.org/conservation for further information (in English) and the text of the Principles (currently available in English, French, German, Portuguese, Russian and Spanish). More information and background to the project is available in: Latorre Garcia, F. *et al.* (2000) *Results of the Pilot Project for Botanic Gardens: Principles on Access to Genetic Resources and Benefit-sharing, Common Policy Guidelines to Assist with their Implementation and Explanatory Text,* Royal Botanic Gardens, Kew, UK. This can be downloaded from the RBG Kew website: www.kew.org/conservation/.

2. **The International Plant Exchange Network** (IPEN) - another approach, developed by the Verband Botanischer Gärten (an association of botanic gardens in German-speaking countries). This group is predominantly made up of gardens with living collections (not herbaria). They rely on traditional seed exchange for their material rather than collection from the wild, and do not generally have commercial aspects to their work. IPEN allows participating gardens to exchange certain material for non-commercial purposes without using material supply agreements for each transfer. Gardens that wish to join the network must sign and abide by a **Code of Conduct** that sets out gardens' responsibilities for acquisition, maintenance and supply of living plant material and associated benefit-sharing. Acquisition or supply of material with extra terms and conditions, or any commercial use, is not covered by the network and requires the use of appropriate Material Transfer Agreements. See www.biologie.uni-ulm.de/verband/cbd/list.html for information (in German) and the text of the Code of Conduct (currently available in German, English and Russian).

The new Botanic Gardens Conservation International (BGCI) web pages on ABS contain updated information on both initiatives: see www.bgci.org/abs.

Wyse Jackson, PS and Sutherland, LA (2000) *International Agenda for Botanic Gardens in Conservation,* Botanic Gardens Conservation International, United Kingdom.

www.bgbm.org/TDWG/acc/Software.htm has a useful list of software packages for biological collection management.

Slide 46: Genetic resources

For a short account of the definitional problems surrounding the term 'genetic resources', see: Young, TR (2004) "Genetic Resources" and "Utilisation of Genetic Resources": A Legislative View. Discussion paper in the International Expert Workshop on Access and Benefit Sharing, Cuernavaca, Mexico, October 24-27 2004. Available at www.canmexworkshop.com.

Slide 47: Ecosystem Services

The most comprehensive recent reference to ecosystem services is in the Millennium Ecosystem Assessment. www.millenniumassessment.org/en/index.aspx. See general 'ecosystem service information' in the report "Ecosystems and Well-Being: Synthesis" on p.39 onwards (Box. 2.1 on page 40 provides a general background) and p. 103-122, with reports on specific ecosystem services.

Hooper, DU *et al.* (2005) Effects of biodiversity on ecosystem functioning: a consensus of current knowledge. Ecological Monographs 75(1):3-35 Available at http://fire.biol.wwu.edu/hooper/Hooperetal2005EcolMonogr.pdf.

For a good introduction to ecosystem services see: Daily, GC (ed.) (1997) *Nature's Services: Societal Dependence on Natural Ecosystems*, Island Press, Washington, DC, USA.

For recent studies on the valuation of ecosystem services see:

Balmford, A *et al.* (2002) Ecology – Economic reasons for conserving wild nature. *Science* **297**: 950-953.

Chapin, FS *et al.* (2000) Consequences of changing biodiversity. *Nature* **405**: 234-242.

Constanza, R *et al.* (1997) The Value of World's Ecosystem Services and Natural Capital. *Nature* **387**: 253-260.

Pimentel, D *et al.* (1997) Economic and Environmental Benefits of Biodiversity. BioScience **47**(11): 747-757.

Slide 48: Repatriation

For an introduction to repatriation, with guidelines for conducting needs assessments and supply assessments see:

Ruiz, M and Pooma, R (2000) *Going Home: A Manual on the Repatriation of Information from ex situ Conservation and Research Institutions to countries of origin*, Royal Botanic Gardens, Kew, UK.

Slide 49: Bonn Guidelines

The Bonn Guidelines on Access and Benefit-sharing were adopted as Decision VI/24 at COP 6. The Guidelines can be found in the annex of this publication, and can be downloaded at: www.biodiv.org/programmes/socio-eco/benefit/bonn.asp.

Slide 50: International Regime

The Parties to the CBD gave the mandate for the negotiation of the International Regime to the Ad Hoc Open-Ended Working Group on Access to Genetic Resources, so the majority of the official and information documents concerning the regime can be found on the CBD website under the meetings of this group. Negotiations started in February 2005 and at COP8 (March 2006) the Working Group was instructed to complete this work at the earliest possible time before COP10 (2010).

To find out more about many of the issues under discussion, including some ideas on the concept of international certificates, see the papers from the International Expert Workshops on Access to Genetic Resources and Benefit-Sharing held in Cuernavaca, Mexico in 2004 and in Cape Town, South Africa in 2005, available at www.canmexworkshop.com and www.norsafworkshop.com.

See also the case studies and analysis in Tobin, B, Cunningham, D & Watanbe (2004) The feasibility, practicality and cost of a certificate of origin system for genetic resources: preliminary results of comparative analysis of tracking material in biological resource centres and of proposals for a certificate scheme. United Nations University Institute of Advanced Studies, Yokohama, Japan. Available from the CBD website as document UNEP/CBD/WG-ABS/3/INF/5.

The relationship of the international regime to other legal instruments and organisations, such as the Food and Agriculture Organisation's International Treaty on Plant Genetic Resources for Food and Agriculture, the World Trade Organization's agreement on Trade-Related aspects of Intellectual Property rights and the World Intellectual Property Organization, is not yet agreed.

Slides 51-52: Traditional Knowledge

General Publications

Laird, SA (ed.) (2002) *Biodiversity and Traditional Knowledge, Equitable Partnerships in Practice*, Earthscan Publications Ltd, London, UK.

Martin, G (1995) *Ethnobotany: A methods manual*, Chapman and Hall, London, UK.

Posey, DA (1996) *Traditional Resource Rights: International Instruments for Protection and Compensation for Indigenous Peoples and Local Communitie.* IUCN, Gland, Switzerland.

Case studies

One case study that has received much attention is the patenting of a compound from the *Hoodia* plant, based on traditional knowledge gained from local indigenous peoples. The references below provide further information:

Joint press release of the South African San Council and the CSIR, South Africa, available at: www.csir.co.za/ (and search 'Hoodia').

Ethics and Practice in Ethnobiology and Prior Informed Consent with Indigenous Peoples regarding Genetic Resources. Paper submitted by Roger Chennells at Biodiversity, Biotechnology and Traditional Knowledge, St Louis 4-6 April 2003, available at: http://law.wustl.edu/centeris/index.asp?id=1836.

See also the papers by R Chennells and M Horak from the International Expert Workshop on Access to Genetic Resources and Benefit-Sharing held in Cape Town, South Africa in 2005, available at www.norsafworkshop.com.

Wynberg, R (2002) Benefit-Sharing in South Africa: Fact or Fiction? In: Laird (2002), as cited above, also available at: www.biowatch.org.za/docs/benefit_sharing.pdf.

Work under the CBD

Secretariat of the Convention on Biological Diversity (2004). *Akwe: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessment regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities.* Montreal. Available from the CBD website at www.biodiv.org/doc/publications/akwe-brochure-fr.pdf.

See also the CBD website (www.biodiv.org) for details of meetings and work carried out by the Working Group on Article 8(j).

The CBD guides cited in the resources for Slide 15 highlight many important issues for indigenous and local communities, their target audience.

National legislation protecting traditional knowledge

Examples of current laws (some others exist in draft form):

- Philippines: Indigenous People's Rights Act, 1997 (includes a Code of Conduct for Academic Collector of Biological and Genetic Resources in the Philippines);
- Panama: Intellectual Property and Community Rights, 2000;
- Peru: Law Introducing a Protection Regime for the Collective Knowledge of Indigenous Peoples Derived from Biological Resources, 2002 (Law no. 27811);

These laws and others can be found on the website of GRAIN (Genetic Resources Action International) www.grain.org/brl/index-en.cfm.

Codes of Conduct drawn up by Professional bodies

For example see the International Society of Ethnobiology Code of Ethics. The Principles of the Code of Ethics are available at http://ise.arts.ubc.ca/ethics.html; more detailed Standards of Practice are under development.

See also the Pew Conservation Scholars' Suggested Ethical Guidelines for Accessing and Exploring Biodiversity, available from the CBD website (see below).

Indigenous People's declarations and Codes of Conduct

Examples of declarations and codes of conduct include:

- The Cusco Declaration on Access to Genetic Resources, Traditional Knowledge and Intellectual Property Rights of Like-Minded Megadiverse Countries;
- The Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples, June 1993;

- World Council of Indigenous Peoples, Declaration of Principles, October 1996;
- The Inuit Tapirisat of Canada have developed their own guidelines on 'Negotiating research relationships in the North'.

All the above (and many others) can be found on the CBD web pages in the section on Article 8(j): Traditional Knowledge, Innovations and Practices, Instruments, Guidelines, Codes and Statements. See: www.biodiv.org/programmes/socio-eco/traditional/instruments.asp.

People's Biodiversity Registers

Information on some of these initiatives can be obtained from the WIPO programme on 'Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore'. See www.wipo.int/globalissues/databases/index.html.

RV Anuradha, RV, Taneja, B & Kothari, A (2001) Experiences with Biodiversity Policy Making and Community Registers in India. Participation in Access and Benefit-Sharing Policy Case Study no.3. Available online at www.poptel.org.uk/iied/docs/blg/indiastudy.pdf.

Also see TEK*PAD (Traditional Ecological Knowledge Prior Art Database), an index and search engine of existing Internet-based, public domain documentation concerning indigenous knowledge and plant species uses. TEK*PAD brings together and archives in a single location, various types of public domain data necessary to establish prior art. Data includes taxonomic and other species data, ethnobotanical uses, scientific and medical articles and abstracts, as well as patent applications themselves. It is meant to be used by anyone researching traditional ecological knowledge, including scientists, health professionals, and those involved in the patent application process itself. It can be found at http://ip.aaas.org/tekindex.nsf.

Slides 53-54: Intellectual Property

The World Intellectual Property Organisation (WIPO), Geneva, has established an Intergovernmental Committee (IGC) to consider intellectual property rights and genetic resources, traditional knowledge and folklore. In April 2002, Parties to the CBD asked the IGC to carry out a technical study on the implications of requiring the disclosure within patent applications of, for example: the country of origin of genetic resources used in the claimed invention; the source of associated traditional knowledge, innovations and practices; and evidence of Prior Informed Consent. The results of this survey will be published on the IGC web site at: www.wipo.int/tk/en/.

In addition, the IGC has established an electronic database of contractual agreements and practices relating to intellectual property, access to genetic resources and associated benefit-sharing. This database, which contains several examples of Material Transfer Agreements provided by botanical institutions, can be found at: www.wipo.int/tk/en/databases/contracts/.

The following organisations are actively involved in the ethical and technical debate surrounding the relationship between IP and genetic resources, and these resources may be useful for more detailed research:

- **The Commission on Intellectual Property Rights** (CIPR) was set up by the British government to look at how IP might work better for poor people and developing countries. The final report (2002), with specific chapters on Agriculture and Genetic Resources, and on Traditional Knowledge, is at www.iprcommission.org/.
- **The Crucible Group** was formed in 1992 to examine the impact of IP on farmers, rural society and biodiversity. The group consisted of 28 participants from the developed and developing world, including agricultural research scientists, science managers, intellectual property specialists, trade diplomats and agricultural policy analysts. The group has published the following documents:

  Crucible Group (1994) *People, Plants, and Patents: The Impact of Intellectual Property on Trade, Plant Biodiversity, and Rural Society.* International Development Research Centre, Ottawa, Canada. www.idrc.ca/en/ev-9317-201-1-DO_TOPIC.html.

  Crucible II Group (2001) *Seeding Solutions: Volume 1: Policy Options for Genetic Resources (People, Plants and Patents Revisited).* IDRC, Ottawa, Canada. www.idrc.ca/en/ev-9424-201-1-DO_TOPIC.html.

  Crucible II Group (2003) *Seeding Solutions: Volume 2: Options for National Laws Governing Access to and Control Over Genetic Resource.* IDRC, Ottawa, Canada. www.idrc.ca/en/ev-9434-201-1-DO_TOPIC.html.

- **The World Trade Organization (WTO) Agreement on Trade-Related aspects of Intellectual Property rights (TRIPS)** came into effect on January 1st 1995, and is a multilateral agreement on IP. It sets a timetable for all WTO members to meet certain minimum standards for protection of IP. In relation to IP and genetic resources it is highly controversial, not least because it has been very difficult to reconcile the relationship between TRIPS (especially Article 27.3(b)), and the access and benefit-sharing provisions under the CBD. See, for example:

  The WTO overview of TRIPS at: www.wto.org/english/tratop_e/trips_e/intel2_e.htm#patents.

Tansey, G (2002) Discussion Paper 4. Food Security, Biotechnology and Intellectual Property: Unpacking some issues around TRIPS. www.geneva.quno.info/pdf/FSmono.pdf.

Correa, C (2001) Traditional Knowledge and Intellectual Property. www.geneva.quno.info/pdf/tkmono1.pdf.

Drahos, P & Blakeney, M (ed.s) (2001) *IP in Biodiversity and Agriculture: Regulating the Biosphere.* Vol. 9 in the series *Perspectives on Intellectual Property*, in association with the Queen Mary Intellectual Property Research Institute, University of London. Sweet & Maxwell, London, UK.

Dutfield, G (2000) *Intellectual Property Rights, Trade and Biodiversity*, Earthscan Publications Ltd, London, UK.

- **The International Convention for the Protection of New Varieties of Plants (UPOV)** was adopted in Paris in 1961 and was revised in 1972, 1978 and 1991. The objective of the Convention is the protection of new varieties of plants by intellectual property rights: www.upov.int/index.html. UPOV is one form of *sui generis* legislation.

IP, access and benefit-sharing, and botanical collections

The role of IP in the field of access and benefit-sharing is to help generate and create benefits from the use of genetic resources and traditional knowledge (TK), and then to clarify how the benefits are managed. An access agreement between a user and a provider (for instance, a local community, or the management authority of a national park) may, as part of the negotiated access and benefit-sharing package, include certain terms relating to IP rights.

Some institutions are now drawing up IP policies that seek to balance the free exchange of scientific information with the protection of potentially valuable IP rights in such resources and knowledge. See www.ipgri.cgiar.org/policy/policy.htm for the IP policy of the International Plant Genetic Resources Institute (IPGRI), a set of botanical collections.

There is also a movement to improve open access to and unrestricted use of data, information and knowledge related to biodiversity conservation. For more information see the Conservation Commons website at www.conservationcommons.org/.

Slide 55: Global Taxonomy Initiative

Further detail on the GTI, including its text in Decision VI/8, can be found on the CBD website at www.biodiv.org/programmes/cross-cutting/taxonomy/. This site has a useful page of links to global, national and geographically restricted databases, specific taxa databases and taxonomic programmes. It also contains a list of national focal points for the GTI.

www.bionet-intl.org/ has further details for BioNET INTERNATIONAL, the Global Network for Taxonomy. This organisation works to create sustainable mechanisms for developing countries to become self-reliant in taxonomy, by creating technical co-operation networks.

www.gbif.org/ is the homepage of the Global Biodiversity Information Facility (GBIF), an interoperable network of biodiversity databases. Its purpose is to make biodiversity data freely and universally available via the internet, working with the CBD's Clearing House Mechanism and participating institutions.

A draft guide to the GTI has been produced by the CBD Secretariat, available from the CBD website as document UNEP/CBD/SBSTTA/9/INF/30.

Slide 56: Global Strategy for Plant Conservation

The 16 targets of the GSPC are:

a. Understanding and documenting plant diversity:

(i) A widely accessible working list of known plant species, as a step towards a complete world flora;

(ii) A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels;

(iii) Development of models with protocols for plant conservation and sustainable use, based on research and practical experience;

b. Conserving plant diversity:

(iv) At least 10% of each of the world's ecological regions effectively conserved;

(v) Protection of 50% of the most important areas for plant diversity assured;

(vi) At least 30% of production lands managed consistent with the conservation of plant diversity;

(vii) 60% of the world's threatened species conserved in situ;

(viii) 60% of threatened plant species in accessible ex situ collections, preferably in the country of origin, and 10% of them included in recovery and restoration programmes;

(ix) 70% of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained;

(x) Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems;

c. Using plant diversity sustainably:

xi) No species of wild flora endangered by international trade;

(xii) 30% of plant-based products derived from sources that are sustainably managed;

(xiii) The decline of plant resources, and associated indigenous and local knowledge, innovations and practices that support sustainable livelihoods, local food security and health care, halted;

d. Promoting education and awareness about plant diversity:

(xiv) The importance of plant diversity and the need for its conservation incorporated into communication, educational and public-awareness programmes;

e. Building capacity for the conservation of plant diversity:

(xv) The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy;

(xvi) Networks for plant conservation activities established or strengthened at national, regional and international levels.

See www.biodiv.org/programmes/cross-cutting/plant/ for further information on the GSPC, and see Decision VI/9 for the targets and background information on each target. The following consultation document links each target to relevant Articles and Decisions of the CBD: González-Catalayud, A, ten Kate, K & Wyse Jackson, P, *An Analysis of Opportunities for the Implementation of the Global Strategy for Plant Conservation through the Thematic and Cross-cutting Programmes of Work of the Convention on Biological Diversity*, UNEP/CBD/GSPC/1/3 28 January 2002, downloadable at www.biodiv.org/doc/meetings/pc/tempc-01/official/tempc-01-03-en.pdf.

The Global Partnership for Plant Conservation (GPPC), launched at COP7 in 2004, is an initiative bringing together a wide range of international agencies and organisations involved in plant conservation and implementation of the GSPC. The GPPC work programme includes stakeholder consultation, support for national GSPC implementation, support for the development of a GSPC toolkit and communication and awareness raising, The GPPC website provides updated information on GSPC implementation: see www.plants2010.org.

Several countries have now developed national responses to the GSPC (as at February 2006: the Seychelles, Colombia, New Zealand, Ireland, South Africa, China and the United Kingdom). The United Kingdom response, the Plant Diversity Challenge, is available at www.jncc.gov.uk/pdf/PlantDiversityChallenge.pdf.

Slide 57: Invasive alien species

The **Guiding Principles** cover issues of: responsibility, prevention (such as border controls and quarantine), introduction (such as risk assessments), and impact mitigation. They also cover research and monitoring; exchange of information (using, for example the Global Invasive Species Programme and the Clearing House Mechanism); and public awareness and capacity building.

The CBD website has information and useful links. The Guiding Principles are found in Decision VI/23.

Shine, C, Williams, N & Gundling, L (2000) *A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species.* IUCN, Gland, Switzerland and Cambridge, UK.

Wittenberg, R & Cock, MJW (2001) *Invasive Alien Species: A Toolkit of Best Prevention and Management Practices.* CAB International, Wallington, Oxon, UK. Published on behalf of the Global Invasive Species Programme.

www.gisp.org is the website of the Global Invasive Species Programme (GISP), a partnership network of scientific and technical experts, from governments, intergovernmental organisations, non-governmental organisations, academic institutions, and the private sector.

www.issg.org/index.html is the website of IUCN Species Survival Commission Invasive Species Specialist Group (ISSG), which provides advice on threats from invasives and control or eradication methods to conservation

practitioners and policy-makers (with focus on oceanic islands). Published guidelines are available from the website.

The Center for Plant Conservation web pages on invasive species bring together information resources and link to two workshops on Linking Ecology & Horticulture to Prevent Plant Invasions, held in Missouri Botanical Garden (December 2001) and Chicago Botanic Garden (October 2002). The Missouri workshop proceedings include a set of overarching principles and draft voluntary codes of conduct for governments, nursery professionals, the gardening public, landscape architects, and botanic gardens and arboreta. The Chicago workshop proceedings include further information on using the codes of conduct, and the Chicago Botanic Garden Invasive Plant Policy. See www.centerforplantconservation.org/invasives/welcome.html. For information about the Chicago policy see www.chicagobotanic.org/research/conservation/invasive_policy.html.

Slide 58: Cartagena Protocol on Biosafety

The Cartagena Protocol on Biosafety homepage is at www.biodiv.org/biosafety/.

Mackenzie, R, Burhenne-Guilmin, F, La Viña, AGM & Werksman, JD in cooperation with Ascencio, A, Kinderlerer, J, Kummer, K & Tapper, R (2003) *An Explanatory Guide to the Cartagena Protocol on Biosafety*. IUCN Environmental Policy and Law Paper no. 46. IUCN, Gland, Switzerland and Cambridge, UK.

Most of the debate on living modified organisms (or genetically modified organisms) has centred on agricultural research, but the horticulture sector is beginning to join in. The Royal Horticultural Society leaflet 'Conservation and Environmental Guidelines: Genetic Modification' provides some useful background information on the issues and the science, and sets out the Society's policy. It is downloadable at: www.rhs.org.uk/Learning/research/conservation_and_environment_genetic.asp.

Slides 59-60: International Treaty on Plant Genetic Resources for Food and Agriculture

The text of the IT was approved in November 2001 and the Treaty came in to force on 29 June 2004 once it has been ratified by 40 countries.

The IT arose out of the need to revise the 1983 International Undertaking on Plant Genetic Resources of the Food and Agriculture Organisation of the United Nations.

The impact of the International Treaty (IT) upon botanical institutions will vary from collection to collection. The IT only applies when access is required to the items listed in Annex 1 of the IT for ‘research, breeding and training for food and agriculture’; i.e. not for taxonomic identification, or for germination tests for scientific purposes only. In addition, the IT only applies to collections that are in the ‘public domain’; i.e. it does not apply to privately owned collections.

Parties to the IT are currently developing a standard legal agreement (a Material Transfer Agreement), under which the resources listed in Annex 1 of the IT may be transferred. Botanical institutions that supply these resources, or wish to receive these resources into their collections for food and agricultural purposes, will be obliged to use this agreement, and to share benefits in accordance with the IT. In addition, botanical institutions that receive specimens from the Multilateral System will not be able to claim intellectual property rights, or other rights, that might restrict access over the resources, ‘or their genetic parts or components, as they were received from the Multilateral System.’

Further information, full text of the IT, and a list of Parties can be found on the website of Commission on Genetic Resources for Food and Agriculture, a permanent forum of the Food and Agriculture Organization of the United Nations: www.fao.org/ag/cgrfa/itpgr.htm.

Bragdon, S (2004) International Law of Relevance to Plant Genetic Resources: A practical review for scientists and other professionals working with plant genetic resources. *Issues in Genetic Resources* No. 10. International Plant Genetic Resources Institute, Rome, Italy.

Esquinas-Alcázar, J (2005) Protecting crop genetic diversity for food security: political, ethical and technical challenges. Nature Reviews Genetics **6**: 946-953.

Moore, G & Tymowski, W (2005) *Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture*. IUCN Environmental Policy and Law Paper no. 57. IUCN, Gland, Switzerland and Cambridge, UK.

Slide 61: 2010 Biodiversity Target

More information on the 2010 target is available on the CBD website: www.biodiv.org/2010-target.

The sub-targets and indicators identified build upon documents prepared by the SBSTTA, COP and the “2010 Global Biodiversity Challenge” held in May 2003 in London. A summary report of the meeting is available online at www.iisd.ca/linkages/sd/sdgbc.

The 2010 Biodiversity Indicators Partnership (BIP) is a new initiative involving organisations and agencies working on the selected biodiversity indicators. It aims to support delivery of the 2010 indicators at the global level and communicate progress, to establish links between global and regional indicator development, and to relate the 2010 target work to the targets and indicators used by other international initiatives. For latest information on the BIP and the indicators for tracking progress on the 2010 Target, see www.twentyten.net.

Countdown 2010 is a partnership of organisations from all sectors and levels working in one or more Pan-European countries committed to the 2010 biodiversity target. IUCN Europe hosts their website at http://countdown2010.net/.

A framework for measuring biodiversity in order to monitor change and measure progress towards the 2010 target is set out in the 2003 Royal Society report 'Measuring biodiversity for conservation' (Policy document 11/03), available at www.royalsoc.ac.uk.

Convention on Biological Diversity

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 SISTAINABLE 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 populations 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 governmental 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
REASEARCH 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 and Articles 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 DITTRIBUTION 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 RESOUCES

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
RELATIONSHIPS 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.

Article 23
CONFERENCE OF THE PARTIES

1. A Conference of the Parties is hereby established. The first meeting of the Conference of the Parties shall be convened by the Executive Director of the United Nations Environment Programme not later than one year after the entry into force of this Convention. Thereafter, ordinary meetings of the Conference of the Parties shall be held at regular intervals to be determined by the Conference at its first meeting.

2. Extraordinary meetings of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to them by the Secretariat, it is supported by at least one third of the Parties.

3. The Conference of the Parties shall by consensus agree upon and adopt rules of procedure for itself and for any subsidiary body it may establish, as well as financial rules governing the funding of the Secretariat. At each ordinary meeting, it shall adopt a budget for the financial period until the next ordinary meeting.

4. The Conference of the Parties shall keep under review the implementation of this Convention, and, for this purpose, shall:

(a) Establish the form and the intervals for transmitting the information to be submitted in accordance with Article 26 and consider such information as well as reports submitted by any subsidiary body;

(b) Review scientific, technical and technological advice on biological diversity provided in accordance with Article 25;

(c) Consider and adopt, as required, protocols in accordance with Article 28;

(d) Consider and adopt, as required, in accordance with Articles 29 and 30, amendments to this Convention and its annexes;

(e) Consider amendments to any protocol, as well as to any annexes thereto, and, if so decided, recommend their adoption to the parties to the protocol concerned;

(f) Consider and adopt, as required, in accordance with Article 30, additional annexes to this Convention;

(g) Establish such subsidiary bodies, particularly to provide scientific and technical advice, as are deemed necessary for the implementation of this Convention;

(h) Contact, through the Secretariat, the executive bodies of conventions dealing with matters covered by this Convention with a view to establishing appropriate forms of cooperation with them; and

(i) Consider and undertake any additional action that may be required for the achievement of the purposes of this Convention in the light of experience gained in its operation.

5. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State not Party to this Convention, may be represented as observers at meetings of the Conference of the Parties. Any other body or agency, whether governmental or non-governmental, qualified in fields relating to conservation and sustainable use of biological diversity, which has informed the Secretariat of its wish to be represented as an observer at a meeting of the Conference of the Parties, may be admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.

Article 24
SECRETARIAT

1. A secretariat is hereby established. Its functions shall be:

(a) To arrange for and service meetings of the Conference of the Parties provided for in Article 23;

(b) To perform the functions assigned to it by any protocol;

(c) To prepare reports on the execution of its functions under this Convention and present them to the Conference of the Parties;

(d) To coordinate with other relevant international bodies and, in particular to enter into such administrative and contractual arrangements as may be required for the effective discharge of its functions; and

(e) To perform such other functions as may be determined by the Conference of the Parties.

2. At its first ordinary meeting, the Conference of the Parties shall designate the secretariat from amongst those existing competent international organizations which

have signified their willingness to carry out the secretariat functions under this Convention.

Article 25
SUBSIDIARY BODY ON THE SCIENTIFIC TECHNICAL AND TECHNOLOGICAL ADVICE

1. A subsidiary body for the provision of scientific, technical and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely advice relating to the implementation of this Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the authority of and in accordance with guidelines laid down by the Conference of the Parties, and upon its request, this body shall:

(a) Provide scientific and technical assessments of the status of biological diversity;

(b) Prepare scientific and technical assessments of the effects of types of measures taken in accordance with the provisions of this Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how relating to the conservation and sustainable use of biological diversity and advise on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes and international cooperation in research and development related to conservation and sustainable use of biological diversity; and

(e) Respond to scientific, technical, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions, terms of reference, organization and operation of this body may be further elaborated by the Conference of the Parties.

Article 26
REPORTS

Each Contracting Party shall, at intervals to be determined by the Conference of the Parties, present to the Conference of the Parties, reports on measures which it has taken for the implementation of the provisions of this Convention and their effectiveness in meeting the objectives of this Convention.

Article 27
SETTLEMENT OF DISPUTES

1. In the event of a dispute between Contracting Parties concerning the interpretation or application of this Convention, the parties concerned shall seek solution by negotiation.

2. If the parties concerned cannot reach agreement by negotiation, they may jointly seek the good offices of, or request mediation by, a third party.

3. When ratifying, accepting, approving or acceding to this Convention, or at any time thereafter, a State or regional economic integration organization may declare in writing to the Depositary that for a dispute not resolved in accordance with paragraph 1 or paragraph 2 above, it accepts one or both of the following means of dispute settlement as compulsory:

(a) Arbitration in accordance with the procedure laid down in Part 1 of Annex II;

(b) Submission of the dispute to the International Court of Justice.

4. If the parties to the dispute have not, in accordance with paragaph 3 above, accepted the same or any procedure, the dispute shall be submitted to conciliation in accordance with Part 2 of Annex II unless the parties otherwise agree.

5. The provisions of this Article shall apply with respect to any protocol except as otherwise provided in the protocol concerned.

Article 28
ADOPTION OF PROTOCOLS

1. The Contracting Parties shall cooperate in the formulation and adoption of protocols to this Convention.

2. Protocols shall be adopted at a meeting of the Conference of the Parties.

3. The text of any proposed protocol shall be communicated to the Contracting Parties by the Secretariat at least six months before such a meeting.

Article 29
AMENDMENT OF THE CONVENTION FOR PROTOCOLS

1. Amendments to this Convention may be proposed by any Contracting Party. Amendments to any protocol may be proposed by any Party to that protocol.

2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. Amendments to any protocol shall be adopted at a meeting of the Parties to the Protocol in question. The text of any proposed amendment to this Convention or to any protocol, except as may otherwise be provided in such protocol, shall be communicated to the Parties to the instrument in question by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the signatories to this Convention for information.

3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention or to any protocol by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a two-third majority vote of the Parties to the instrument in question present and voting at the meeting, and shall be submitted by the Depositary to all Parties for ratification, acceptance or approval.

4. Ratification, acceptance or approval of amendments shall be notified to the Depositary in writing. Amendments adopted in accordance with paragraph 3 above shall enter into force among Parties having accepted them on the ninetieth day after the deposit of instruments of ratification, acceptance or approval by at least two thirds of the Contracting Parties to this Convention or of the Parties to the protocol concerned, except as may otherwise be provided in such protocol. Thereafter the amendments shall enter into force for any other Party on the ninetieth day after that Party deposits its instrument of ratification, acceptance or approval of the amendments.

5. For the purposes of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

Article 30
ADOPTION AND AMENDMENT OF ANNEXES

1. The annexes to this Convention or to any protocol shall form an integral part of the Convention or of such protocol, as the case may be, and, unless expressly provided otherwise, a reference to this Convention or its protocols constitutes at the same time a reference to any annexes thereto. Such annexes shall be restricted to procedural, scientific, technical and administrative matters.

2. Except as may be otherwise provided in any protocol with respect to its annexes, the following procedure shall apply to the proposal, adoption and entry into force of additional annexes to this Convention or of annexes to any protocol:

(a) Annexes to this Convention or to any protocol shall be proposed and adopted according to the procedure laid down in Article 29;

(b) Any Party that is unable to approve an additional annex to this Convention or an annex to any protocol to which it is Party shall so notify the Depositary, in writing, within one year from the date of the communication of the adoption by the Depositary. The Depositary shall without delay notify all Parties of any such notification received. A Party may at any time withdraw a previous declaration of objection and the annexes shall thereupon enter into force for that Party subject to subparagraph (c) below;

(c) On the expiry of one year from the date of the communication of the adoption by the Depositary, the annex shall enter into force for all Parties to this Convention or to any protocol concerned which have not submitted a notification in accordance with the provisions of subparagraph (b) above.

3. The proposal, adoption and entry into force of amendments to annexes to this Convention or to any protocol shall be subject to the same procedure as for the proposal, adoption and entry into force of annexes to the Convention or annexes to any protocol.

4. If an additional annex or an amendment to an annex is related to an amendment to this Convention or to any protocol, the additional annex or amendment shall not enter into force until such time as the amendment to the Convention or to the protocol concerned enters into force.

Article
31
RIGHT TO VOTE

1. Except as provided for in paragraph 2 below, each Contracting Party to this Convention or to any protocol shall have one vote.

2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States which are Contracting Parties to this Convention or the relevant protocol. Such organizations shall not exercise their right to vote if their member States exercise theirs, and vice versa.

Article
32
RELATIONSHIPS BETWEEN THIS CONVENTION AND ITS PROTOCOLS

1. A State or a regional economic integration organization may not become a Party to a protocol unless it is, or becomes at the same time, a Contracting Party to this Convention.

2. Decisions under any protocol shall be taken only by the Parties to the protocol concerned. Any Contracting Party that has not ratified, accepted or approved a protocol may participate as an observer in any meeting of the parties to that protocol.

Article
33
SIGNATURE

This Convention shall be open for signature at Rio de Janeiro by all States and any regional economic integration organization from 5 June 1992 until 14 June 1992, and at the United Nations Headquarters in New York from 15 June 1992 to 4 June 1993.

Article
34
RATIFICATION ACCEPTANCE OR APPROVAL

1. This Convention and any protocol shall be subject to ratification, acceptance or approval by States and by regional economic integration organizations. Instruments of ratification, acceptance or approval shall be deposited with the Depositary.

2. Any organization referred to in paragraph 1 above which becomes a Contracting Party to this Convention or any protocol without any of its member States being a Contracting Party shall be bound by all the obligations under the Convention or the protocol, as the case may be. In the case of such organizations, one or more of whose member States is a Contracting Party to this Convention or relevant protocol, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention or protocol, as the case may be. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention or relevant protocol concurrently.

3. In their instruments of ratification, acceptance or approval, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention or the relevant protocol. These organizations shall also inform the Depositary of any relevant modification in the extent of their competence.

Article
35
ACCESSION

1. This Convention and any protocol shall be open for accession by States and by regional economic integration organizations from the date on which the Convention or the protocol concerned is closed for signature. The instruments of accession shall be deposited with the Depositary.

2. In their instruments of accession, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention or the relevant protocol. These organizations shall also inform the Depositary of any relevant modification in the extent of their competence.

3. The provisions of Article 34, paragraph 2, shall apply to regional economic integration organizations which accede to this Convention or any protocol.

Article
36
ENTRY INTO FORCE

1. This Convention shall enter into force on the ninetieth day after the date of deposit of the thirtieth instrument of ratification, acceptance, approval or accession.

2. Any protocol shall enter into force on the ninetieth day after the date of deposit of the number of instruments of ratification, acceptance, approval or accession, specified in that protocol, has been deposited.

3. For each Contracting Party which ratifies, accepts or approves this Convention or accedes thereto after the deposit of the thirtieth instrument of ratification, acceptance, approval or accession, it shall enter into force on the ninetieth day after the date of deposit by such Contracting Party of its instrument of ratification, acceptance, approval or accession.

4. Any protocol, except as otherwise provided in such protocol, shall enter into force for a Contracting Party that ratifies, accepts or approves that protocol or accedes thereto after its entry into force pursuant to paragraph 2 above, on the ninetieth day after the date on which that Contracting Party deposits its instrument of ratification, acceptance, approval or accession, or on the date on which this Convention enters into force for that Contracting Party, whichever shall be the later.

5. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.

Article
37
RESERVATIONS

No reservations may be made to this Convention.

Article
38
WITHDRAWALS

1. At any time after two years from the date on which this Convention has entered into force for a Contracting Party, that Contracting Party may withdraw from the Convention by giving written notification to the Depositary.

2. Any such withdrawal shall take place upon expiry of one year after the date of its receipt by the Depositary, or on such later date as may be specified in the notification of the withdrawal.

3. Any Contracting Party which withdraws from this Convention shall be considered as also having withdrawn from any protocol to which it is party.

Article
39
FINANCIAL INTERIM ARRANGEMENTS

Provided that it has been fully restructured in accordance with the requirements of Article 21, the Global Environment Facility of the United Nations Development Programme, the United Nations Environment Programme and the International Bank for Reconstruction and Development shall be the institutional structure referred to in Article 21 on an interim basis, for the period between the entry into force of this Convention and the first meeting of the Conference of the Parties or until the Conference of the Parties decides which institutional structure will be designated in accordance with Article 21.

Article
40
SECRETARIAT INTERRIM ARRANGEMENTS

The secretariat to be provided by the Executive Director of the United Nations Environment Programme shall be the secretariat referred to in Article 24, paragraph 2, on an interim basis for the period between the entry into force of this Convention and the first meeting of the Conference of the Parties.

Article
41
DEPOSITARY

The Secretary-General of the United Nations shall assume the functions of Depositary of this Convention and any protocols.

Article
42
AUTHENTIC TEXTS

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Convention.

Done at Rio de Janeiro on this fifth day of June, one thousand nine hundred and ninety- two.

Annex I
IDENTIFICATION AND MONITORING

1. Ecosystems and habitats: containing high diversity, large numbers of endemic or threatened species, or wilderness; required by migratory species; of social, economic, cultural or scientific importance; or, which are representative, unique or associated with key evolutionary or other biological processes;

2. Species and communities which are: threatened; wild relatives of domesticated or cultivated species; of medicinal, agricultural or other economic value; or social, scientific or cultural importance; or importance for research into the conservation and sustainable use of biological diversity, such as indicator species; and

3. Described genomes and genes of social, scientific or economic importance.

Annex II
Part 1
ARBITRATION

Article 1

The claimant party shall notify the secretariat that the parties are referring a dispute to arbitration pursuant to Article 27. The notification shall state the subject-matter of arbitration and include, in particular, the articles of the Convention or the protocol, the interpretation or application of which are at issue. If the parties do not agree on the subject matter of the dispute before the President of the tribunal is designated, the arbitral tribunal shall determine the subject matter. The secretariat shall forward the information thus received to all Contracting Parties to this Convention or to the protocol concerned.

Article 2

1. In disputes between two parties, the arbitral tribunal shall consist of three members. Each of the parties to the dispute shall appoint an arbitrator and the two arbitrators so appointed shall designate by common agreement the third arbitrator who shall be the President of the tribunal. The latter shall not be a national of one of the parties to the dispute, nor have his or her usual place of residence in the territory of one of these parties, nor be employed by any of them, nor have dealt with the case in any other capacity.

2. In disputes between more than two parties, parties in the same interest shall appoint one arbitrator jointly by agreement.

3. Any vacancy shall be filled in the manner prescribed for the initial appointment.

Article 3

1. If the President of the arbitral tribunal has not been designated within two months of the appointment of the second arbitrator, the Secretary-General of the United Nations shall, at the request of a party, designate the President within a further two-month period.

2. If one of the parties to the dispute does not appoint an arbitrator within two months of receipt of the request, the other party may inform the Secretary-General who shall make the designation within a further two-month period.

Article 4

The arbitral tribunal shall render its decisions in accordance with the provisions of this Convention, any protocols concerned, and international law.

Article 5

Unless the parties to the dispute otherwise agree, the arbitral tribunal shall determine its own rules of procedure.

Article 6

The arbitral tribunal may, at the request of one of the parties, recommend essential interim measures of protection.

Article 7

The parties to the dispute shall facilitate the work of the arbitral tribunal and, in particular, using all means at their disposal, shall:

(a) Provide it with all relevant documents, information and facilities; and

(b) Enable it, when necessary, to call witnesses or experts and receive their evidence.

Article 8

The parties and the arbitrators are under an obligation to protect the confidentiality of any information they receive in confidence during the proceedings of the arbitral tribunal.

Article 9

Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the costs of the tribunal shall be borne by the parties to the dispute in equal shares. The tribunal shall keep a record of all its costs, and shall furnish a final statement thereof to the parties.

Article 10

Any Contracting Party that has an interest of a legal nature in the subject-matter of the dispute which may be affected by the decision in the case, may intervene in the proceedings with the consent of the tribunal.

Article 11

The tribunal may hear and determine counterclaims arising directly out of the subject-matter of the dispute.

Article 12

Decisions both on procedure and substance of the arbitral tribunal shall be taken by a majority vote of its members.

Article 13

If one of the parties to the dispute does not appear before the arbitral tribunal or fails to defend its case, the other party may request the tribunal to continue the proceedings and to make its award. Absence of a party or a failure of a party to defend its case shall not constitute a bar to the proceedings. Before rendering its final decision, the arbitral tribunal must satisfy itself that the claim is well founded in fact and law.

Article 14

The tribunal shall render its final decision within five months of the date on which it is fully constituted unless it finds it necessary to extend the time-limit for a period which should not exceed five more months.

Article 15

The final decision of the arbitral tribunal shall be confined to the subject-matter of the dispute and shall state the reasons on which it is based. It shall contain the names of the members who have participated and the date of the final decision. Any member of the tribunal may attach a separate or dissenting opinion to the final decision.

Article 16

The award shall be binding on the parties to the dispute. It shall be without appeal unless the parties to the dispute have agreed in advance to an appellate procedure.

Article 17

Any controversy which may arise between the parties to the dispute as regards the interpretation or manner of implementation of the final decision may be submitted by either party for decision to the arbitral tribunal which rendered it.

Annex II
Part 2,
CONCILIATION

Article 1

A conciliation commission shall be created upon the request of one of the parties to the dispute. The commission shall, unless the parties otherwise agree, be composed of five members, two appointed by each Party concerned and a President chosen jointly by those members.

Article 2

In disputes between more than two parties, parties in the same interest shall appoint their members of the commission jointly by agreement. Where two or more parties have separate interests or there is a disagreement as to whether they are of the same interest, they shall appoint their members separately.

Article 3

If any appointments by the parties are not made within two months of the date of the request to create a conciliation commission, the Secretary-General of the United Nations shall, if asked to do so by the party that made the request, make those appointments within a further two-month period.

Article 4

If a President of the conciliation commission has not been chosen within two months of the last of the members of the commission being appointed, the Secretary-General of the United Nations shall, if asked to do so by a party, designate a President within a further two-month period.

Article 5

The conciliation commission shall take its decisions by majority vote of its members. It shall, unless the parties to the dispute otherwise agree, determine its own procedure. It shall render a proposal for resolution of the dispute, which the parties shall consider in good faith.

Article 6

A disagreement as to whether the conciliation commission has competence shall be decided by the commission.

Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization

I. GENERAL PROVISIONS

A. Key features

1. These Guidelines may serve as inputs when developing and drafting legislative, administrative or policy measures on access and benefit-sharing with particular reference to provisions under Article s 8(j), 10 (c), 15, 16 and 19; and contracts and other arrangements under mutually agreed terms for access and benefit-sharing.

2. Nothing in these Guidelines shall be construed as changing the rights and obligations of Parties under the Convention on Biological Diversity.

3. Nothing in these Guidelines is intended to substitute for relevant national legislation.

4. Nothing in these Guidelines should be interpreted to affect the sovereign rights of States over their natural resources;

5. Nothing in these Guidelines, including the use of terms such as “provider”, “user”, and “stakeholder”, should be interpreted to assign any rights over genetic resources beyond those provided in accordance with the Convention;

6. Nothing in these Guidelines should be interpreted as affecting the rights and obligations relating to genetic resources arising out of the mutually agreed terms under which the resources were obtained from the country of origin.

7. The present Guidelines are voluntary and were prepared with a view to ensuring their:

(a) *Voluntary nature*: they are intended to guide both users and providers of genetic resources on a voluntary basis;

(b) *Ease of use*: to maximize their utility and to accommodate a range of applications, the Guidelines are simple;

(c) *Practicality*: the elements contained in the guidelines are practical and are aimed at reducing transaction costs;

(d) *Acceptability*: the Guidelines are intended to gain the support of users and providers;

(e) *Complementarity*: the Guidelines and other international instruments are mutually supportive;

(f) *Evolutionary approach*: the Guidelines are intended to be reviewed and accordingly revised and improved as experience is gained in access and benefit-sharing;

(g) Flexibility: to be useful across a range of sectors, users and national circumstances and jurisdictions, guidelines should be flexible;

(h) *Transparency*: they are intended to promote transparency in the negotiation and implementation of access and benefit-sharing arrangements.

B. Use of terms

8. The terms as defined in Article 2 of the Convention shall apply to these Guidelines. These include: biological diversity, biological resources, biotechnology, country of origin of genetic resources, country providing genetic resources, *ex situ* conservation, *in situ* conservation, genetic material, genetic resources, and *in situ* conditions.

C. Scope

9. All genetic resources and associated traditional knowledge, innovations and practices covered by the Convention on Biological Diversity and benefits arising from the commercial and other utilization of such resources should be covered by the guidelines, with the exclusion of human genetic resources.

D. Relationship with relevant international regimes

10. The guidelines should be applied in a manner that is coherent and mutually supportive of the work of relevant international agreements and institutions. The guidelines are without prejudice to the access and benefit-sharing provisions of the FAO International Treaty for Plant Genetic Resources for Food and Agriculture. Furthermore, the work of the World Intellectual Property Organization (WIPO) on issues of relevance to access and benefit-sharing should be taken into account. The application of the guidelines should also take into account existing regional legislation and agreements on access and benefit-sharing.

E. Objectives

11. The objectives of the Guidelines are the following:

(a) To contribute to the conservation and sustainable use of biological diversity;

(b) To provide Parties and stakeholders with a transparent framework to facilitate access to genetic resources and ensure fair and equitable sharing of benefits;

(c) To provide guidance to Parties in the development of access and benefit-sharing regimes;

(d) To inform the practices and approaches of stakeholders (users and providers) in access and benefit-sharing arrangements;

(e) To provide capacity-building to guarantee the effective negotiation and implementation of access and benefit-sharing arrangements, especially to developing countries, in particular least developed countries and small island developing States among them;

(f) To promote awareness on implementation of relevant provisions of the Convention on Biological Diversity;

(g) To promote the adequate and effective transfer of appropriate technology to providing Parties, especially developing countries, in particular least developed countries and small island developing States among them, stakeholders and indigenous and local communities;

(h) To promote the provision of necessary financial resources to providing countries that are developing countries, in particular least developed countries and small island developing States among them, or countries with economies in transition with a view to contributing to the achievement of the objectives mentioned above;

(i) To strengthen the clearing-house mechanism as a mechanism for cooperation among Parties in access and benefit-sharing;

(j) To contribute to the development by Parties of mechanisms and access and benefit sharing regimes that recognize the protection of traditional knowledge, innovations and practices of indigenous and local communities, in accordance with domestic laws and relevant international instruments;

(k) To contribute to poverty alleviation and be supportive to the realization of human food security, health and cultural integrity, especially in developing countries, in particular least developed countries and small island developing States among them;

(l) Taxonomic research, as specified in the Global Taxonomy Initiative, should not be prevented, and providers should facilitate acquisition of material for systematic use and users should make available all information associated with the specimens thus obtained.

12. The Guidelines are intended to assist Parties in developing an overall access and benefit-sharing strategy, which may be part of their national biodiversity strategy and action plan, and in identifying the steps involved in the process of obtaining access to genetic resources and sharing benefits.

II. ROLES AND RESPONSIBILITIES IN ACCESS AND BENEFIT-SHARING PURSUANT TO ARTICLE 15 OF THE CONVENTION ON BIOLOGICAL DIVERSITY

A. National focal point

13. Each Party should designate one national focal point for access and benefit-sharing and make such information available through the clearing-house mechanism. The national focal point should inform applicants for access to genetic resources on procedures for acquiring prior informed consent and mutually agreed terms, including benefit-sharing, and on competent national authorities, relevant indigenous and local communities and relevant stakeholders, through the clearing-house mechanism.

B. Competent national authority(ies)

14. Competent national authorities, where they are established, may, in accordance with applicable national legislative, administrative or policy measures, be responsible for granting access and be responsible for advising on:

(a) The negotiating process;

(b) Requirements for obtaining prior informed consent and entering into mutually agreed terms;

(c) Monitoring and evaluation of access and benefit-sharing agreements;

(d) Implementation/enforcement of access and benefit-sharing agreements;

(e) Processing of applications and approval of agreements;

(f) The conservation and sustainable use of the genetic resources accessed;

(g) Mechanisms for the effective participation of different stakeholders, as appropriate for the different steps in the process of access and benefit-sharing, in particular, indigenous and local communities;

(h) Mechanisms for the effective participation of indigenous and local communities while promoting the objective of having decisions and processes available in a language understandable to relevant indigenous and local communities.

15. The competent national authority(ies) that have the legal power to grant prior informed consent may delegate this power to other entities, as appropriate.

C. Responsibilities

16. Recognizing that Parties and stakeholders may be both users and providers, the following balanced list of roles and responsibilities provides key elements to be acted upon:

(a) Contracting Parties which are countries of origin of genetic resources, or other Parties which have acquired the genetic resources in accordance with the Convention, should:

i. Be encouraged to review their policy, administrative and legislative measures to ensure they are fully complying with Article 15 of the Convention;

ii. Be encouraged to report on access applications through the clearing-house mechanism and other reporting channels of the Convention;

iii. Seek to ensure that the commercialization and any other use of genetic resources should not prevent traditional use of genetic resources;

iv. Ensure that they fulfil their roles and responsibilities in a clear, objective and transparent manner;

v. Ensure that all stakeholders take into consideration the environmental consequences of the access activities;

vi. Establish mechanisms to ensure that their decisions are made available to relevant indigenous and local communities and relevant stakeholders, particularly indigenous and local communities;

vii. Support measures, as appropriate, to enhance indigenous and local communities' capacity to represent their interests fully at negotiations;

(b) In the implementation of mutually agreed terms, users should:

i. Seek informed consent prior to access to genetic resources, in conformity with Article 15, paragraph 5, of the Convention;

ii. Respect customs, traditions, values and customary practices of indigenous and local communities,

iii. Respond to requests for information from indigenous and local communities;

iv. Only se genetic resources for purposes consistent with the terms and conditions under which they were acquired;

v. Ensure that uses of genetic resources for purposes other than those for which they were acquired, only take place after new prior informed consent and mutually agreed terms are given;

vi. Maintain all relevant data regarding the genetic resources, especially documentary evidence of the prior informed consent and information concerning the origin and the use of genetic resources and the benefits arising from such use;

vii. As much as possible endeavour to carry out their use of the genetic resources in, and with the participation of, the providing country;

viii. When supplying genetic resources to third parties, honour any terms and conditions regarding the acquired material. They should provide this third party with relevant data on their acquisition, including prior informed consent and conditions of use and record and maintain data on their supply to third parties. Special terms and conditions should be established under mutually agreed terms to facilitate taxonomic research for non-commercial purposes;

ix. Ensure the fair and equitable sharing of benefits, including technology transfer to providing countries, pursuant to Article 16 of the Convention arising from the commercialization or other use of genetic resources, in conformity with the mutually agreed terms they established with the indigenous and local communities or stakeholders involved;

(c) Providers should:

i. Only supply genetic resources and/or traditional knowledge when they are entitled to do so;

ii. Strive to avoid imposition of arbitrary restrictions on access to genetic resources.

(d) Contracting Parties with users of genetic resources under their jurisdiction should take appropriate legal, administrative, or policy measures, as appropriate, to support compliance with prior informed consent of the Contracting Party providing such resources and mutually agreed terms on which access was granted. These countries could consider, *inter alia*, the following measures:

i. Mechanisms to provide information to potential users on their obligations regarding access to genetic resources;

ii. Measures to encourage the disclosure of the country of origin of the genetic resources and of the origin of traditional knowledge, innovations and practices of indigenous and local communities in applications for intellectual property rights;

iii. Measures aimed at preventing the use of genetic resources obtained without the prior informed consent of the Contracting Party providing such resources;

iv. Cooperation between Contracting Parties to address alleged infringements of access and benefit-sharing agreements;

v. Voluntary certification schemes for institutions abiding by rules on access and benefit-sharing;

vi. Measures discouraging unfair trade practices;

vii. Other measures that encourage users to comply with provisions under subparagraph 16 (b) above.

III. PARTICIPATION OF STAKEHOLDERS

17. Involvement of relevant stakeholders is essential to ensure the adequate development and implementation of access and benefit-sharing arrangements. However, due to the diversity of stakeholders and their diverging interests, their appropriate involvement can only be determined on a case by- case basis.

18. Relevant stakeholders should be consulted and their views taken into consideration in each step of the process, including:

a) When determining access, negotiating and implementing mutually agreed terms, and in the sharing of benefits;

b) In the development of a national strategy, policies or regimes on access and benefit sharing.

19. To facilitate the involvement of relevant stakeholders, including indigenous and local communities, appropriate consultative arrangements, such as national consultative committees, comprising relevant stakeholder representatives, should be made.

20. The involvement of relevant stakeholders should be promoted by:

(a) Providing information, especially regarding scientific and legal advice, in order for them to be able to participate effectively;

(b) Providing support for capacity-building, in order for them to be actively engaged in various stages of access and benefit-sharing arrangements, such as in the development and implementation of mutually agreed terms and contractual arrangements.

21. The stakeholders involved in access to genetic resources and benefit-sharing may wish to seek the support of a mediator or facilitator when negotiating mutually agreed terms.

IV. STEPS IN THE ACCESS AND BENEFIT-SHARING PROCESS

A. Overall strategy

22. Access and benefit-sharing systems should be based on an overall access and benefit-sharing strategy at the country or regional level. This access and benefit-sharing strategy should aim at the conservation and sustainable use of biological diversity, and may be part of a national biodiversity strategy and action plan and promote the equitable sharing of benefits.

B. Identification of steps

23. The steps involved in the process of obtaining access to genetic resources and sharing of benefits may include activities prior to access, research and development conducted on the genetic resources, as well as their commercialization and other uses, including benefit-sharing.

C. Prior informed consent

24. As provided for in Article 15 of the Convention on Biological Diversity, which recognizes the sovereign rights of States over their natural resources, each Contracting Party to the Convention shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and fair and equitable sharing of benefits arising from such uses. In accordance with Article 15, paragraph 5, of the Convention on Biological Diversity, access to genetic resources shall be subject to prior informed consent of the contracting Party providing such resources, unless otherwise determined by that Party.

25. Against this background, the Guidelines are intended to assist Parties in the establishment of a system of prior informed consent, in accordance with Article 15, paragraph 5, of the Convention.

1. Basic principles of a prior informed consent system

26. The basic principles of a prior informed consent system should include:

(a) Legal certainty and clarity;

(b) Access to genetic resources should be facilitated at minimum cost;

(c) Restrictions on access to genetic resources should be transparent, based on legal grounds, and not run counter to the objectives of the Convention;

(d) Consent of the relevant competent national authority(ies) in the provider country. The consent of relevant stakeholders, such as indigenous and local communities, as appropriate to the circumstances and subject to domestic law, should also be obtained.

2. *Elements of a prior informed consent system*

27. Elements of a prior informed consent system may include:

(a) Competent authority(ies) granting or providing for evidence of prior informed consent;

(b) Timing and deadlines;

(c) Specification of use;

(d) Procedures for obtaining prior informed consent;

(e) Mechanism for consultation of relevant stakeholders;

(f) Process.

Competent authority(ies) granting prior informed consent

28. Prior informed consent for access to *in situ* genetic resources shall be obtained from the Contracting Party providing such resources, through its competent national authority(ies), unless otherwise determined by that Party.

29. In accordance with national legislation, prior informed consent may be required from different levels of Government. Requirements for obtaining prior informed consent (national/provincial/local) in the provider country should therefore be specified.

30. National procedures should facilitate the involvement of all relevant stakeholders from the community to the government level, aiming at simplicity and clarity.

31. Respecting established legal rights of indigenous and local communities associated with the genetic resources being accessed or where traditional knowledge associated with these genetic resources is being accessed, the prior informed consent of indigenous and local communities and the approval and involvement of the holders of traditional knowledge, innovations and practices should be obtained, in accordance with their traditional practices, national access policies and subject to domestic laws.

32. For *ex situ* collections, prior informed consent should be obtained from the competent national authority(ies) and/or the body governing the *ex situ* collection concerned as appropriate.

Timing and deadlines

33. Prior informed consent is to be sought adequately in advance to be meaningful both for those seeking and for those granting access. Decisions on applications for access to genetic resources should also be taken within a reasonable period of time.

Specification of use

34. Prior informed consent should be based on the specific uses for which consent has been granted. While prior informed consent may be granted initially for specific use(s), any change of use including transfer to third parties may require a new application for prior informed consent. Permitted uses should be clearly stipulated and further prior informed consent for changes or unforeseen uses should be required. Specific needs of taxonomic and systematic research as specified by the Global Taxonomy Initiative should be taken into consideration.

35. Prior informed consent is linked to the requirement of mutually agreed terms.

Procedures for obtaining prior informed consent

36. An application for access could require the following information to be provided, in order for the competent authority to determine whether or not access to a genetic resource should be granted. This list is indicative and should be adapted to national circumstances:

(a) Legal entity and affiliation of the applicant and/or collector and contact person when the applicant is an institution;

(b) Type and quantity of genetic resources to which access is sought;

(c) Starting date and duration of the activity;

(d) Geographical prospecting area;

(e) Evaluation of how the access activity may impact on conservation and sustainable use of biodiversity, to determine the relative costs and benefits of granting access;

(f) Accurate information regarding intended use (e.g.: taxonomy, collection, research, commercialization);

(g) Identification of where the research and development will take place;

(h) Information on how the research and development is to be carried out;

(i) Identification of local bodies for collaboration in research and development;

(j) Possible third party involvement;

(k) Purpose of the collection, research and expected results;

(l) Kinds/types of benefits that could come from obtaining access to the resource, including benefits from derivatives and products arising from the commercial and other utilization of the genetic resource;

(m) Indication of benefit-sharing arrangements;

(n) Budget;

(o) Treatment of confidential information.

37. Permission to access genetic resources does not necessarily imply permission to use associated knowledge and *vice versa*.

Process

38. Applications for access to genetic resources through prior informed consent and decisions by the competent authority(ies) to grant access to genetic resources or not shall be documented in written form.

39. The competent authority could grant access by issuing a permit or licence or following other appropriate procedures. A national registration system could be used to record the issuance of all permits or licences, on the basis of duly completed application forms.

40. The procedures for obtaining an access permit/licence should be transparent and accessible by any interested party.

D. Mutually agreed terms

41. In accordance with Article 15, paragraph 7, of the Convention on Biological Diversity, each Contracting Party shall "take legislative, administrative or policy measures, as appropriate (...) 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". Thus, guidelines should assist Parties and stakeholders in the development of mutually agreed terms to ensure the fair and equitable sharing of benefits.

1. Basic requirements for mutually agreed terms

42. The following principles or basic requirements could be considered for the development of mutually agreed terms:

(a) Legal certainty and clarity;

(b) Minimization of transaction costs, by, for example:

i. Establishing and promoting awareness of the Government's and relevant stakeholders' requirements for prior informed consent and contractual arrangements;

ii. Ensuring awareness of existing mechanisms for applying for access, entering into arrangements and ensuring the sharing of benefits;

iii. Developing framework agreements, under which repeat access under expedited arrangements can be made;

iv. Developing standardized material transfer agreements and benefit-sharing arrangements for similar resources and similar uses (see appendix I for suggested elements of such an agreement);

(c) Inclusion of provisions on user and provider obligations;

(d) Development of different contractual arrangements for different resources and for different uses and development of model agreements;

(e) Different uses may include, *inter alia*, taxonomy, collection, research, commercialization;

(f) Mutually agreed terms should be negotiated efficiently and within a reasonable period of time;

(g) Mutually agreed terms should be set out in a written agreement.

43. The following elements could be considered as guiding parameters in contractual agreements. These elements could also be considered as basic requirements for mutually agreed terms:

(a) Regulating the use of resources in order to take into account ethical concerns of the particular Parties and stakeholders, in particular indigenous and local communities concerned;

(b) Making provision to ensure the continued customary use of genetic resources and related knowledge;

(c) Provision for the use of intellectual property rights include joint research, obligation to implement rights on inventions obtained and to provide licences by common consent;

(d) The possibility of joint ownership of intellectual property rights according to the degree of contribution.

2. *Indicative list of typical mutually agreed terms*

44. The following provides an indicative list of typical mutually agreed terms:

(a) Type and quantity of genetic resources, and the geographical/ecological area of activity;

(b) Any limitations on the possible use of the material;

(c) Recognition of the sovereign rights of the country of origin;

(d) Capacity-building in various areas to be identified in the agreement;

(e) A clause on whether the terms of the agreement in certain circumstances (e.g. change of use) can be renegotiated;

(f) Whether the genetic resources can be transferred to third parties and conditions to be imposed in such cases, e.g. whether or not to pass genetic resources to third parties without ensuring that the third parties enter into similar agreements except for taxonomic and systematic research that is not related to commercialization;

(g) Whether the knowledge, innovations and practices of indigenous and local communities have been respected, preserved and maintained, and whether the customary use of biological resources in accordance with traditional practices has been protected and encouraged;

(h) Treatment of confidential information;

(i) Provisions regarding the sharing of benefits arising from the commercial and other utilization of genetic resources and their derivatives and products .

3. *Benefit-sharing*

45. Mutually agreed terms could cover the conditions, obligations, procedures, types, timing, distribution and mechanisms of benefits to be shared. These will vary depending on what is regarded as fair and equitable in light of the circumstances.

Types of benefits

46. Examples of monetary and non-monetary benefits are provided in appendix II to these Guidelines.

Timing of benefits

47. Near-term, medium-term and long-term benefits should be considered, including up-front payments, milestone payments and royalties. The time-frame of benefit-sharing should be definitely stipulated. Furthermore, the balance among near-term, medium-term and long-term benefit should be considered on a case-by-case basis.

Distribution of benefits

48. Pursuant to mutually agreed terms established following prior informed consent, benefits should be shared fairly and equitably with all those who have been identified as having contributed to the resource management, scientific and/or commercial process. The latter may include governmental, non governmental or academic institutions and indigenous and local communities. Benefits should be directed in such a way as to promote conservation and sustainable use of biological diversity.

Mechanisms for benefit-sharing

49. Mechanisms for benefit-sharing may vary depending upon the type of benefits, the specific conditions in the country and the stakeholders involved. The benefit-sharing mechanism should be flexible as it should be determined by the partners involved in benefit-sharing and will vary on a case-by-case basis.

50. Mechanisms for sharing benefits should include full cooperation in scientific research and technology development, as well as those that derive from commercial products including trust funds, joint ventures and licences with preferential terms.

V. OTHER PROVISIONS

A. Incentives

51. The following incentive measures exemplify measures which could be used in the implementation of the guidelines:

(a) The identification and mitigation or removal of perverse incentives, that may act as obstacles for conservation and sustainable use of biological diversity through access and benefit-sharing, should be considered;

(b) The use of well-designed economic and regulatory instruments, directly or indirectly related to access and benefit-sharing, should be considered to foster equitable and efficient allocation of benefits;

(c) The use of valuation methods should be considered as a tool to inform users and providers involved in access and benefit-sharing;

(d) The creation and use of markets should be considered as a way of efficiently achieving conservation and sustainable use of biological diversity.

B. Accountability in implementing access and benefit-sharing arrangements

52. Parties should endeavour to establish mechanisms to promote accountability by all stakeholders involved in access and benefit-sharing arrangements.

53. To promote accountability, Parties may consider establishing requirements regarding:

(a) Reporting; and

(b) Disclosure of information.

54. The individual collector or institution on whose behalf the collector is operating should, where appropriate, be responsible and accountable for the compliance of the collector.

C. National monitoring and reporting

55. Depending on the terms of access and benefit-sharing, national monitoring may include:

(a) Whether the use of genetic resources is in compliance with the terms of access and benefit-sharing;

(b) Research and development process;

(c) Applications for intellectual property rights relating to the material supplied.

56. The involvement of relevant stakeholders, in particular, indigenous and local communities, in the various stages of development and implementation of access and benefit-sharing arrangements can play an important role in facilitating the monitoring of compliance.

D. Means for verification

57. Voluntary verification mechanisms could be developed at the national level to ensure compliance with the access and benefit-sharing provisions of the Convention on Biological Diversity and national legal instruments of the country of origin providing the genetic resources.

58. A system of voluntary certification could serve as a means to verify the transparency of the process of access and benefit-sharing. Such a system could certify that the access and benefit-sharing provisions of the Convention on Biological Diversity have been complied with.

E. Settlement of disputes

59. As most obligations arising under mutually agreed arrangements will be between providers and users, disputes arising in these arrangements should be solved in accordance with the relevant contractual arrangements on access and benefit-sharing and the applicable law and practices.

60. In cases where the access and benefit-sharing agreements consistent with the Convention on Biological Diversity and national legal instruments of the country of origin of genetic resources have not been complied with, the use of sanctions could be considered, such as penalty fees set out in contractual agreements.

F. Remedies

61. Parties may take appropriate effective and proportionate measures for violations of national legislative, administrative or policy measures implementing the access and benefit-sharing provisions of the Convention on Biological Diversity, including requirements related to prior informed consent and mutually agreed terms.

Appendix I

SUGGESTED ELEMENTS FOR MATERIAL TRANSFER AGREEMENTS

Material transfer agreements may contain wording on the following elements:

A. Introductory provisions

1. Preambular reference to the Convention on Biological Diversity

2. Legal status of the provider and user of genetic resources

3. Mandate and/or general objectives of provider and, where appropriate, user of genetic resources

B. Access and benefit-sharing provisions

1. Description of genetic resources covered by the material transfer agreements, including accompanying information

2. Permitted uses, bearing in mind the potential uses, of the genetic resources, their products or derivatives under the material transfer agreement (e.g. research, breeding, commercialization)

3. Statement that any change of use would require new prior informed consent and material transfer agreement

4. Whether intellectual property rights may be sought and if so under what conditions

5. Terms of benefit-sharing arrangements, including commitment to share monetary and non monetary benefits

6. No warranties guaranteed by provider on identity and/or quality of the provided material

7. Whether the genetic resources and/or accompanying information may be transferred to third parties and if so conditions that should apply

8. Definitions

9. Duty to minimize environmental impacts of collecting activities

C. Legal provisions

1. Obligation to comply with the material transfer agreement

2. Duration of agreement

3. Notice to terminate the agreement

4. Fact that the obligations in certain clauses survive the termination of the agreement

5. Independent enforceability of individual clauses in the agreement

6. Events limiting the liability of either party (such as act of God, fire, flood, etc.)

7. Dispute settlement arrangements

8. Assignment or transfer of rights

9. Assignment, transfer or exclusion of the right to claim any property rights, including intellectual property rights, over the genetic resources received through the material transfer agreement

10. Choice of law

11. Confidentiality clause

12. Guarantee

Appendix II

MONETARY AND NON-MONETARY BENEFITS

1. Monetary benefits may include, but not be limited to:

   (a) Access fees/fee per sample collected or otherwise acquired;

   (b) Up-front payments;

   (c) Milestone payments;

   (d) Payment of royalties;

   (e) Licence fees in case of commercialization;

   (f) Special fees to be paid to trust funds supporting conservation and sustainable use of biodiversity;

   (g) Salaries and preferential terms where mutually agreed;

   (h) Research funding;

   (i) Joint ventures;

   (j) Joint ownership of relevant intellectual property rights.

2. Non-monetary benefits may include, but not be limited to:

   (a) Sharing of research and development results;

   (b) Collaboration, cooperation and contribution in scientific research and development programmes, particularly biotechnological research activities, where possible in the provider country;

   (c) Participation in product development;

   (d) Collaboration, cooperation and contribution in education and training;

   (e) Admittance to *ex situ* facilities of genetic resources and to databases;

   (f) Transfer to the provider of the genetic resources of knowledge and technology under fair and most favourable terms, including on concessional and preferential terms where agreed, in particular, knowledge and technology that make use of genetic resources, including biotechnology, or that are relevant to the conservation and sustainable utilization of biological diversity;

   (g) Strengthening capacities for technology transfer to user developing country Parties and to Parties that are countries with economies in transition and technology development in the country of origin that provides genetic resources. Also to facilitate abilities of indigenous and local communities to conserve and sustainably use their genetic resources;

   (h) Institutional capacity-building;

   (i) Human and material resources to strengthen the capacities for the administration and enforcement of access regulations;

   (j) Training related to genetic resources with the full participation of providing Parties, and where possible, in such Parties;

   (k) Access to scientific information relevant to conservation and sustainable use of biological diversity, including biological inventories and taxonomic studies;

   (l) Contributions to the local economy;

   (m) Research directed towards priority needs, such as health and food security, taking into account domestic uses of genetic resources in provider countries;

(n) Institutional and professional relationships that can arise from an access and benefit sharing agreement and subsequent collaborative activities;

(o) Food and livelihood security benefits;

(p) Social recognition;

(q) Joint ownership of relevant intellectual property rights.