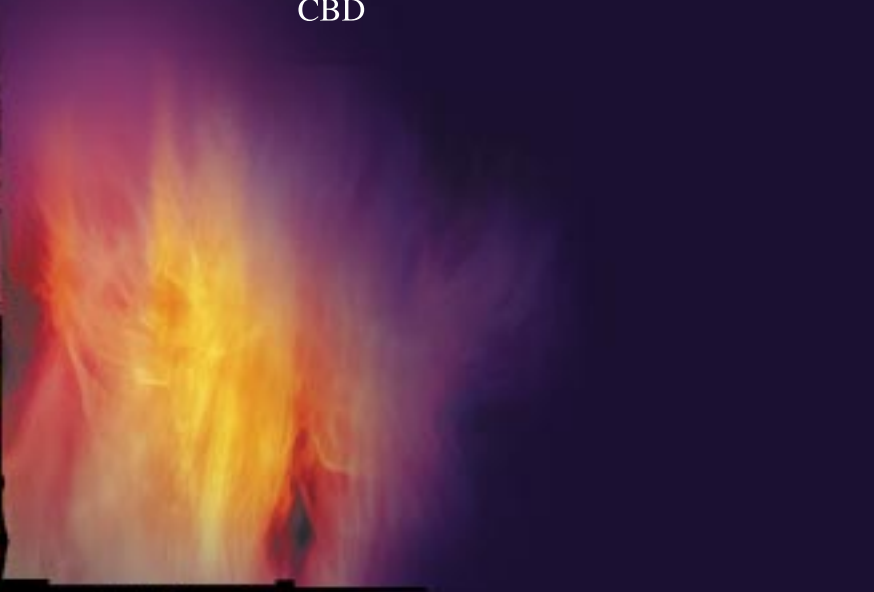




Secretariat of the Convention
on Biological Diversity

CBD



Sustaining life on Earth



How the Convention on
Biological Diversity promotes
nature and human well-being



UNEP





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April 2000

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Foreword

The natural environment provides the basic conditions without which humanity could not survive.

Life on the blue planet is contained within the biosphere, a thin and irregular envelope around the Earth's surface, just a few kilometres deep around the radius of the globe. Here, ecosystems purify the air and the water that are the basis of life. They stabilise and moderate the Earth's climate. Soil fertility is renewed, nutrients are cycled and plants are pollinated.

Although scientists are now able to appreciate the complexity of this web of interacting natural processes, we are still a very long way from understanding how they all fit together. What we do know is that if any part of the web suffers breaks down, the future of life on the planet will be at risk.

Biological diversity – the variability of life on Earth – is the key to the ability of the biosphere to continue providing us with these ecological goods and services and thus is our species' life assurance policy.

However, as a species we are degrading, and in some cases destroying, the ability of biological diversity to continue performing these services. The 20th century saw a fourfold increase in human numbers and an eighteen-fold growth in world economic output. With these came unsustainable patterns of consumption and the use of environmentally unsound technologies. There are now more than six billion of us and we are placing unprecedented strains on the planet's ability to cope. Worse, the fruits of this growth are extremely unequally divided. Whilst some enjoy better standards of living than at any time in history, nearly half the world's population is unjustifiably poor, making do on less than \$2 a day. Worse still, the poor suffer disproportionately from the damage done to the environment.

In the 21st century, we will stand or fall on our ability to collectively eradicate poverty, guarantee human rights and ensure an environmentally sustainable future. Freedom from want, freedom from fear and sustaining our future are all part of the same equation.

The world community has recognised this. Over the last ten years the United Nations has convened a series of summit meetings and negotiations to adopt legal instruments and programmes for action on key issues: education, the rights of children, environment and development, human rights, population and development, social development, the advancement of women, human settlements and food security. The legal and policy instruments are, by and large, in place. What is needed now is to ensure that they are implemented.

The Convention on Biological Diversity is one of these instruments. The Convention was opened for signature at the United Nations Conference on Environment and Development in Rio de Janeiro in June 1992. It came into force at the end of 1993 and has now been ratified by the overwhelming majority of countries, for whom it is now a legally binding commitment to conserve biological diversity, to sustainably use its components and to share equitably the benefits arising from the use of genetic resources.

This Guide provides an introduction to the Convention, the issues it addresses and the action that needs to be taken. Action by Governments alone will not be enough. We will reverse the trends of environmental degradation and guarantee environmental sustainability for ourselves and for future generations only when we all ensure that our actions and behaviour, individually and collectively, are sustainable.

I hope you will read this Guide with this in mind and urge you, your family and your community to take an active part in achieving the objectives of the Convention on Biological Diversity.



Klaus Töpfer
Executive Director
UNEP

Preface

In a world of increasing globalization and environmental degradation, management of its most precious living resource, biological diversity, is one of the most important and critical challenges facing humankind today.

Biological diversity is the resource upon which families, communities, nations and future generations depend. It is the link between organisms, binding each into an interdependent community or ecosystem in which all living creatures have their place and role. It is the very web of life.

Despite its importance, our heedless actions are eroding this resource at a perilous rate. The world is impoverished, even threatened, by this loss. Every gene, species and ecosystem lost erodes the planet's ability to cope with change. For the poorest in the world this flexibility is a matter of life and death. For all of humankind it diminishes the quality of life.

A major cause of this erosion is that individuals, communities and nations take the resource for granted. There is an assumption, based on thousands of years of development, that living resources and biological diversity are limitless. Despite isolated instances of where communities, even civilizations, have ignored this responsibility and suffered dramatically as a result, for most of us the idea that we might be reaching the limits of its endurance is beyond our experience and comprehension. An important step to address our overuse of the biosphere lies in educating people. An education that empowers and enables people to seek collective ways to overcome current destructive trends is critical component of any successful strategy for achieving a sustainable future.

The Convention represents an important part of the effort to address this issue. Yet few people understand what is the term "biodiversity" actually means, let alone the goals and processes of the Convention. This is part due to the fact that we have not used language that is relevant or intelligible to the public: we have not explained ourselves clearly enough. Given the important role that the public has in achieving the aims of the Convention this is a significant barrier to its implementation. I am confident this Guide will make an important contribution addressing this barrier by explaining the somewhat arcane practices and terminology of this important endeavor in a simple and clear way.

On a more personal note, as people and the public have been at the centre of my efforts to build a better future I am especially pleased to have the chance to support this Guide.



Hamdallah Zedan
Executive Secretary
CBD

Biodiversity – the web of life

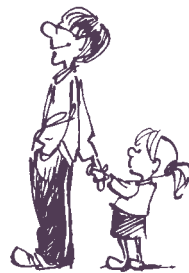
Biological diversity – or biodiversity – is the term given to the variety of life on Earth and the natural patterns it forms. The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which we are an integral part and upon which we so fully depend.

This diversity is often understood in terms of the wide variety of plants, animals and microorganisms. So far, about 1.75 million species have been identified, mostly small creatures such as insects. Scientists reckon that there are actually about 13 million species, though estimates range from 3 to 100 million.

Biodiversity also includes genetic differences within each species – for example, between varieties of crops and breeds of livestock. Chromosomes, genes, and DNA – the building blocks of life – determine the uniqueness of each individual and each species.

Yet another aspect of biodiversity is the variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes. In each ecosystem, living creatures, including humans, form a community, interacting with one another and with the air, water, and soil around them.

It is the combination of life forms and their interactions with each other and with the rest of the environment that has made Earth a uniquely habitable place for humans. Biodiversity provides a large number of goods and services that sustain our lives.



At the 1992 Earth Summit in Rio de Janeiro, world leaders agreed on a comprehensive strategy for "sustainable development" – meeting our needs while ensuring that we leave a healthy and viable world for future generations. One of the key agreements adopted at Rio was the Convention on Biological Diversity. This pact among the vast majority of the world's governments sets out commitments for maintaining the world's ecological underpinnings as we go about the business of economic development. The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources.

This booklet looks at the importance of biological diversity for the health of people and the planet. It explains the role of the Convention in protecting this biodiversity and ensuring that it is used for the benefit of all.

1 - We are changing life on Earth

The rich tapestry of life on our planet is the outcome of over 3.5 billion years of evolutionary history. It has been shaped by forces such as changes in the planet's crust, ice ages, fire, and interaction among species.

Now, it is increasingly being altered by humans. From the dawn of agriculture, some 10,000 years ago, through the Industrial Revolution of the past three centuries, we have reshaped our landscapes on an ever-larger and lasting scale. We have moved from hacking down trees with stone tools to literally moving mountains to mine the Earth's resources. Old ways of harvesting are being replaced by more intensive technologies, often without controls to prevent over-harvesting. For example, fisheries that have fed communities for centuries have been depleted in a few years by huge, sonar-guided ships using nets big enough to swallow a dozen jumbo jets at a time. By consuming ever more of nature's resources, we have gained more abundant food and better shelter, sanitation, and health care, but these gains are often accompanied by increasing environmental degradation that may be followed by declines in local economies and the societies they supported.

In 1999, the world's population hit 6 billion. United Nations experts

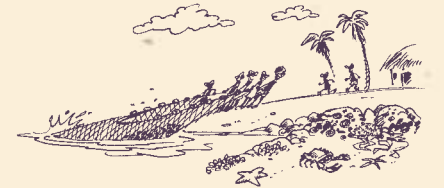
predict the world will have to find resources for a population of 9 billion people in 50 years. Yet our demands on the world's natural resources are growing even faster than our numbers: since 1950, the population has more than doubled, but the global economy has quintupled. And the benefits are not equally spread: most of the economic growth has occurred in a relatively few industrialized countries.

At the same time, our settlement patterns are changing our relationship with the environment. Nearly half the world's people live in towns and cities. For many people, nature seems remote from their everyday lives. More and more people associate food with stores, rather than with their natural source.

The value of biodiversity

Protecting biodiversity is in our self-interest. Biological resources are the pillars upon which we build civilizations. Nature's products support such diverse industries as agriculture, cosmetics, pharmaceuticals, pulp and paper, horticulture, construction and waste treatment. The loss of biodiversity threatens our food supplies, opportunities for recreation and tourism, and sources of wood, medicines and energy. It also interferes with essential ecological functions.

Our need for pieces of nature we once ignored is often important and unpredictable. Time after time we have rushed back to nature's cupboard for cures to illnesses or for infusions of tough genes from wild plants to save our crops from pest outbreaks. What's more, the vast



array of interactions among the various components of biodiversity makes the planet habitable for all species, including humans. Our personal health, and the health of our economy and human society, depends on the continuous supply of various ecological services that would be extremely costly or impossible to replace. These natural services are so varied as to be almost infinite. For example, it would be impractical to replace, to any large extent, services such as pest control performed by various creatures feeding on one another, or pollination performed by insects and birds going about their everyday business.

"Goods and Services" provided by ecosystems include:

- Provision of food, fuel and fibre
- Provision of shelter and building materials
- Purification of air and water
- Detoxification and decomposition of wastes
- Stabilization and moderation of the Earth's climate
- Moderation of floods, droughts, temperature extremes and the forces of wind
- Generation and renewal of soil fertility, including nutrient cycling
- Pollination of plants, including many crops
- Control of pests and diseases
- Maintenance of genetic resources as key inputs to crop varieties and livestock breeds, medicines, and other products
- Cultural and aesthetic benefits
- Ability to adapt to change



Biodiversity under threat

When most people think of the dangers besetting the natural world, they think of the threat to other creatures. Declines in the numbers of such charismatic animals as pandas, tigers, elephants, whales, and various species of birds, have drawn world attention to the problem of species at risk. Species have been disappearing at 50-100 times the natural rate, and this is predicted to rise dramatically. Based on current trends, an estimated 34,000 plant and 5,200 animal species – including one in eight of the world's bird species – face extinction.

For thousands of years we have been developing a vast array of domesticated plants and animals important for food. But this treasure house is shrinking as modern commercial agriculture focuses on relatively few crop varieties.

And, about 30% of breeds of the main farm animal species are currently at high risk of extinction.

While the loss of individual species catches our attention, it is the fragmentation, degradation, and outright loss of forests, wetlands, coral reefs, and other ecosystems that poses the gravest threat to biological diversity. Forests are home to much of the known terrestrial biodiversity, but about 45 per cent of the Earth's original forests are gone, cleared mostly during the past century. Despite some regrowth, the world's total forests are still shrinking rapidly, particularly in the tropics. Up to 10 per cent of coral reefs – among the richest ecosystems – have been destroyed, and one third of the remainder face collapse over the next 10 to 20 years. Coastal mangroves,

a vital nursery habitat for countless species, are also vulnerable, with half already gone.

Global atmospheric changes, such as ozone depletion and climate change, only add to the stress. A thinner ozone layer lets more ultraviolet-B radiation reach the Earth's surface where it damages living tissue. Global warming is already changing habitats and the distribution of species. Scientists warn that even a one-degree increase in the average global temperature, if it comes rapidly, will push many species over the brink. Our food production systems could also be seriously disrupted.

The loss of biodiversity often reduces the productivity of ecosystems, thereby shrinking nature's basket of goods and services,



from which we constantly draw. It destabilizes ecosystems, and weakens their ability to deal with natural disasters such as floods, droughts, and hurricanes, and with human-caused stresses, such as pollution and climate change. Already, we are spending huge sums in response to flood and storm damage exacerbated by deforestation; such damage is expected to increase due to global warming.

The reduction in biodiversity also hurts us in other ways. Our cultural identity is deeply rooted in our biological environment. Plants and animals are symbols of our world, preserved in flags, sculptures, and other images that define us and our societies. We draw inspiration just from looking at nature's beauty and power.

While loss of species has always occurred as a natural phenomenon, the pace of extinction has accelerated dramatically as a result of human activity. Ecosystems are being fragmented or eliminated, and innumerable species are in decline or already extinct. We are creating the greatest extinction crisis since the natural disaster that wiped out the dinosaurs 65 million years ago. These extinctions are irreversible and, given our dependence on food crops, medicines and other biological resources, pose a threat to our own well-being. It is reckless if not downright dangerous to keep chipping away at our life support system. It is unethical to drive other forms of life to extinction, and thereby deprive present and future generations of options for their survival and development.

Can we save the world's ecosystems, and with them the species we value and the other millions of species, some of which may produce the foods and medicines of tomorrow? The answer will lie in our ability to bring our demands into line with nature's ability to produce what we need and to safely absorb what we throw away.



2 – An agreement for action

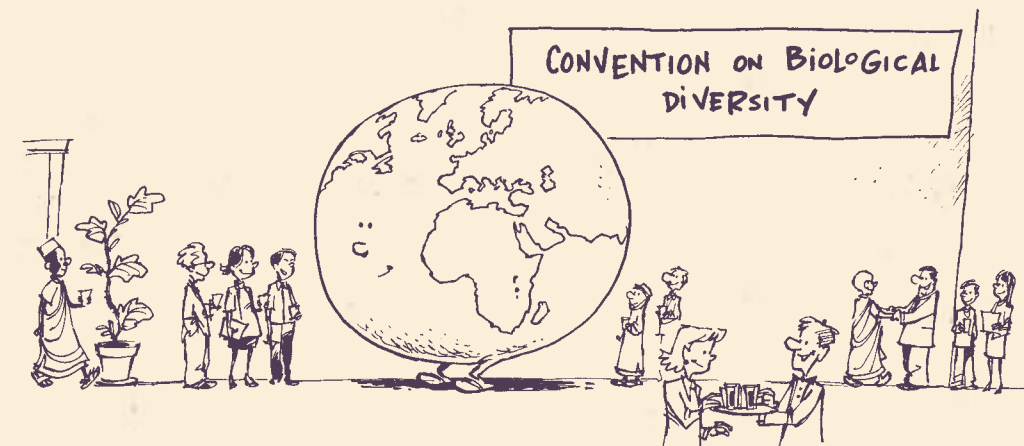
While concern for the environment is constant in history, heightened concern about environmental destruction and loss of species and ecosystems in the seventies led to concerted action.

In 1972, the United Nations Conference on the Human Environment (Stockholm) resolved to establish the United Nations Environment Programme (UNEP). Governments signed a number of regional and international agreements to tackle specific issues, such as protecting wetlands and regulating the international trade in endangered species. These agreements, along with controls on toxic chemicals and pollution, have helped to slow the tide of destruction but have not reversed it. For example, an international ban and restrictions on the taking and selling of certain animals and plants have helped to reduce over-harvesting and poaching.

In addition, many endangered species survive in zoos and botanical gardens, and key ecosystems are preserved through the adoption of protective measures. However, these are stopgap actions. The long-term viability of species and ecosystems depends on their being free to evolve in natural conditions. This means that humans have to learn how to use biological resources in a way that minimizes their depletion. The challenge is to find economic policies that motivate conservation and sustainable use by creating

financial incentives for those who would otherwise over-use or damage the resource.

In 1987, the World Commission on Environment and Development (the Brundtland Commission) concluded that economic development must become less ecologically destructive. In its landmark report, *Our Common Future*, it said that: "Humanity has the ability to make development sustainable – to ensure that it meets needs of the present without compromising the ability of future generations to meet their own needs". It also called for "a new era of environmentally sound economic development".



A new philosophy

In 1992, the largest-ever meeting of world leaders took place at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil. An historic set of agreements was signed at the "Earth Summit", including two binding agreements, the Convention on Climate Change, which targets industrial and other emissions of greenhouse gases such as carbon dioxide, and the Convention on Biological Diversity, the first global agreement on the conservation and sustainable use of biological diversity. The biodiversity treaty gained rapid and widespread acceptance. Over 150 governments signed the document at the Rio conference, and since then more than 175 countries have ratified the agreement.

The Convention has three main goals:

- The conservation of biodiversity,
- Sustainable use of the components of biodiversity,

and

- Sharing the benefits arising from the commercial and other utilization of genetic resources in a fair and equitable way.

The Convention is comprehensive in its goals, and deals with an issue so vital to humanity's future, that it stands as a landmark

in international law. It recognizes – for the first time – that the conservation of biological diversity is "a common concern of humankind" and is an integral part of the development process. The agreement covers all ecosystems, species, and genetic resources. It links traditional conservation efforts to the economic goal of using biological resources sustainably. It sets principles for the fair and equitable sharing of the benefits arising from the use of genetic resources, notably those destined for commercial use. It also covers the rapidly expanding field of biotechnology, addressing technology development and transfer, benefit-sharing and biosafety. Importantly, the Convention is legally binding: countries that join it are obliged to implement its provisions.

The Convention reminds decision-makers that natural resources are not infinite and sets out a new philosophy for the 21st century, that of sustainable use. While past conservation efforts were aimed at protecting particular species and habitats, the Convention recognizes that ecosystems, species and genes must be used for the benefit of humans. However, this should be done in a way and at a rate that does not lead to the long-term decline of biological diversity.

The Convention also offers decision-makers guidance based on the precautionary principle 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.

The Convention acknowledges that substantial investments are required to conserve biological diversity. It argues, however, that conservation will bring us significant environmental, economic and social benefits in return.

Some of the many issues dealt with under the Convention include:

- Measures and incentives for the conservation and sustainable use of biological diversity.
- Regulated access to genetic resources.
- Access to and transfer of technology, including biotechnology.
- Technical and scientific cooperation.
- Impact assessment.
- Education and public awareness.
- Provision of financial resources.
- National reporting on efforts to implement treaty commitments.

3 - National action

The Convention on Biological Diversity, as an international treaty, identifies a common problem, sets overall goals and policies and general obligations, and organizes technical and financial cooperation. However, the responsibility for achieving its goals rests largely with the countries themselves.

Private companies, landowners, fishermen, and farmers take most of the actions that affect biodiversity. Governments need to provide the critical role of leadership, particularly by setting rules that guide the use of natural resources, and by protecting biodiversity where they have direct control over the land and water.

Under the Convention, governments undertake to conserve and sustainably use biodiversity. They are required to develop national biodiversity strategies and action plans, and to integrate these into broader national plans for

environment and development. This is particularly important for such sectors as forestry, agriculture, fisheries, energy, transportation and urban planning. Other treaty commitments include:

- Identifying and monitoring the important components of biological diversity that need to be conserved and used sustainably.
- Establishing protected areas to conserve biological diversity while promoting environmentally sound development around these areas.
- Rehabilitating and restoring degraded ecosystems and promoting the recovery of threatened species in collaboration with local residents.
- Respecting, preserving and maintaining traditional knowledge of the sustainable use of biological diversity with the involvement of indigenous peoples and local communities.
- Preventing the introduction of, controlling, and eradicating alien species that could threaten ecosystems, habitats or species.
- Controlling the risks posed by organisms modified by biotechnology.
- Promoting public participation, particularly when it comes to assessing the environmental impacts of development projects that threaten biological diversity.
- Educating people and raising awareness about the importance of biological diversity and the need to conserve it.
- Reporting on how each country is meeting its biodiversity goals.

Surveys

One of the first steps towards a successful national biodiversity strategy is to conduct surveys to find out what biodiversity exists, its value and importance, and what is endangered. On the basis of these survey results, governments can set measurable targets for conservation and sustainable use. National strategies and programmes need to be developed or adapted to meet these targets.

Conservation and sustainable use

The conservation of each country's biological diversity can be achieved in various ways. "In-situ" conservation – the primary means of conservation – focuses on conserving genes, species, and ecosystems in their natural surroundings, for example by establishing protected areas, rehabilitating degraded ecosystems, and adopting legislation to protect threatened species. "Ex-situ" conservation uses zoos, botanical gardens and gene banks to conserve species.

Promoting the sustainable use of biodiversity will be of growing importance for maintaining biodiversity in the years and decades to come. Under the Convention, the "ecosystem approach to the conservation and sustainable use of biodiversity" is being used as a framework for action, in which all the goods and services provided by the biodiversity in ecosystems are considered. The Convention is promoting activities to ensure that everyone benefits from such goods and services in an equitable way.



There are many examples of initiatives to integrate the objectives of conservation and sustainable use:

- In 1994, Uganda adopted a programme under which protected wildlife areas shared part of their tourism revenues with local people. This approach is now being used in several African countries.

- In recognition of the environmental services that forests provide to the nation, Costa Rica's 1996 Forestry Law includes provisions to compensate private landowners and forest

managers who maintain or increase the area of forest within their properties.

- In different parts of the world, farmers are raising crops within mixed ecosystems. In Mexico, they are growing "shade coffee," putting coffee trees in a mixed tropical forest rather than in monoculture plantations that reduce biodiversity. These farmers then rely entirely on natural predators common to an intact ecosystem rather than on chemical pesticides.

- Tourists, attracted in large numbers by the spectacular beauty of marine and coastal diversity of the Soufrière area of St. Lucia, had a negative impact on the age-old and thriving fishing industry. In 1992, several institutions joined with fishers and other groups with an interest in conservation and sustainable management of the resources and, together, established the Soufrière Marine Management Area. Within this framework, problems are dealt with on a participatory basis with the involvement of all stakeholders.

- Through weekly "farmer field schools," rice farmers in several Asian countries have developed their understanding of the functioning of the tropical rice ecosystem – including the interactions between insect pests of rice, their natural enemies, fish farmed

in the rice paddies, and the crop itself – to improve their crop management practices. This way they have increased their crop yields, while at the same time almost eliminating insecticide use with positive benefits in terms of environmental and human health. About 2 million farmers have benefited from this approach.

- In Tanzania, problems surrounding the sustainable use of Lake Manyara, a large freshwater lake, arose following increased usage in recent decades. The formation of the Lake Manyara Biosphere Reserve to combine both conservation of the Lake and surrounding high value forests with sustainable use of the wetlands area and low-input agriculture has brought together key users to set management goals. The Biosphere Reserve has fostered studies for the sustainable management of the wetlands, including monitoring the ground water and the chemistry of the escarpment water source.

- Clayoquot Sound on the western coast of Vancouver Island, Canada, encompasses forests and marine and coastal systems. The establishment of adaptive management to implement the ecosystem approach at the local level is currently under development with the involvement of indigenous communities, with a view to

ensuring rational use of the forest and marine resources.

- Sian Ka'an Biosphere Reserve in Mexico has great cultural value with its 23 recorded Mayan and other archaeological sites while also being the home of some 800 people, mainly of Mayan descent. The reserve forms part of the extensive barrier reef system along the eastern coastline of Central America and includes coastal dunes, mangroves, marshes and inundated and upland forests. The inclusion of local people in its management helps maintain the balance between pure conservation and the need for sustainable use of resources by the local community.

Reporting

Each government that joins the Convention is to report on what it has done to implement the accord, and how effective this is in meeting the objectives of

the Convention. These reports are submitted to the Conference of the Parties (COP) – the governing body that brings together all countries that have ratified the Convention. The reports can be viewed by the citizens of all nations. The Convention secretariat works with national governments to help strengthen reporting and to make the reports of various countries more consistent and comparable, so that the world community can get a clearer picture of the big trends. Part of that work involves developing indicators for measuring trends in biodiversity, particularly the effects of human actions and decisions on the conservation and sustainable use of biodiversity. The national reports, particularly when seen together, are one of the key tools for tracking progress in meeting the Convention's objectives.

4 - International action

The Convention's success depends on the combined efforts of the world's nations. The responsibility to implement the Convention lies with the individual countries and, to a large extent, compliance will depend on informed self-interest and peer pressure from other countries and from public opinion.

The Convention has created a global forum – actually a series of meetings – where governments, non-governmental organizations, academics, the private sector, and other interested groups or individuals share ideas and compare strategies.

The Convention's ultimate authority is the Conference of the Parties (COP), consisting of all governments (and regional economic integration organizations) that have

ratified the treaty. This governing body reviews progress under the Convention, identifies new priorities, and sets work plans for members. The COP can also make amendments to the Convention, create expert advisory bodies, review progress reports by member nations, and collaborate with other international organizations and agreements.

The Conference of the Parties can rely on expertise and support from several other bodies that are established by the Convention:

- The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA). The SBSTTA is a committee composed of experts from member governments competent in relevant fields. It plays a key role in making



recommendations to the COP on scientific and technical issues.

- The Clearing House Mechanism. This Internet-based network promotes technical and scientific cooperation and the exchange of information.
- The Secretariat. Based in Montreal, it is linked to the United Nations Environment Programme. Its main functions are to organize meetings, draft documents, assist member governments in the implementation of the programme of work, coordinate with other international organizations, and collect and disseminate information.

In addition, the COP establishes ad hoc committees or mechanisms as it sees fit. For example, it created a Working Group on Biosafety that met from 1996 to 1999 and a Working Group on the knowledge of indigenous and local communities.



Thematic programmes and "cross-cutting" issues

The Convention's members regularly share ideas on best practices and policies for the conservation and sustainable use of biodiversity with an ecosystem approach. They look at how to deal with biodiversity concerns during development planning, how to promote transboundary cooperation, and how to involve indigenous peoples and local communities in ecosystem management. The Conference of the Parties has launched a number of thematic programmes covering the biodiversity of inland waters, forests, marine and coastal areas, drylands, and agricultural lands. Cross-cutting issues are also addressed on matters such as the control of alien invasive species, strengthening the capacity of member countries in taxonomy, and the development of indicators of biodiversity loss.

Sharing the benefits of genetic resources

An important part of the biodiversity debate involves access to and sharing of the benefits arising out of the commercial and other utilization of genetic material, such as pharmaceutical products. Most of the world's biodiversity is found in developing countries, which consider it a resource for fueling their economic and social development. Historically, plant genetic resources were collected for commercial use outside their region of origin or as inputs in plant breeding. Foreign bioprospectors have searched for natural substances to develop new commercial products, such as drugs. Often, the products would be sold and protected by patents or other intellectual property rights, without fair benefits to the source countries.

The treaty recognizes national sovereignty over all genetic resources, and provides that access to valuable biological resources be carried out on "mutually agreed terms" and subject to the "prior informed consent" of the country of origin. When a microorganism, plant, or animal is used for a commercial application, the country from which it came has the right to benefit. Such benefits can include cash, samples of what is collected, the participation or training of national researchers, the transfer of biotechnology equipment and know-how, and shares of any profits from the use of the resources.

Work has begun to translate this concept into reality and there are already examples of benefit-sharing arrangements. At least a dozen countries have established

controls over access to their genetic resources, and an equal number of nations are developing such controls. Amongst the examples:

- In 1995, the Philippines required bioprospectors to get "prior informed consent" from both the government and local peoples.
- Costa Rica's National Institute of Biodiversity (INBIO) signed a historic bioprospecting agreement with a major drug company to receive funds and share in benefits from biological materials that are commercialized.
- Countries of the Andean Pact (Colombia, Ecuador, Peru, Bolivia and Venezuela) have adopted laws and measures to regulate access to their genetic resources. The bioprospector is required to meet certain conditions, such as the submission of duplicate samples of genetic resources collected to a designated institution; including a national institution in the collection of genetic resources; sharing existing information; sharing research results with the competent national authority; assisting in the strengthening of institutional capacities; and sharing specific financial or related benefits.

Through the Convention, countries meet to develop common policies on these matters.

Traditional knowledge

The Convention also recognizes the close and traditional dependence of indigenous and local communities on biological resources and the need to ensure that these communities share in the benefits arising from the use of their traditional knowledge and practices relating to the conservation and sustainable use of biodiversity. Member governments have undertaken "to respect, preserve and maintain" such knowledge and practices, to promote their wider application with the approval and involvement of the communities concerned, and to encourage the equitable sharing of the benefits derived from their utilization.

Financial and technical support

When the Convention was adopted, developing countries emphasized that their ability to take national actions to achieve global biodiversity benefits would depend on financial and technical assistance. Thus, bilateral and multilateral support for capacity building and for investing in projects and programmes is essential for enabling developing countries to meet the Convention's objectives.

Convention-related activities by developing countries are eligible for support from the financial mechanism of the

Convention: the Global Environment Facility (GEF). GEF projects, supported by the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP) and the World Bank, help forge international cooperation and finance actions to address four critical threats to the global environment: biodiversity loss, climate change, depletion of the ozone layer and degradation of international waters. By the end of 1999, the GEF had contributed nearly \$ 1 billion for biodiversity projects in more than 120 countries.



The Biosafety Protocol

Since the domestication of the first crops and farm animals, we have altered their genetic makeup through selective breeding and cross-fertilization. The results have been greater agricultural productivity and improved human nutrition.

In recent years, advances in biotechnology techniques have enabled us to cross the species barrier by transferring genes from one species to another. We now have transgenic plants, such as tomatoes and strawberries that have been modified using a gene from a cold water fish to protect the plants from frost. Some varieties of potato and corn have received genes from a bacterium that enables them to produce their own insecticide, thus reducing the need to spray chemical insecticides. Other plants have been modified to tolerate herbicides sprayed to kill weeds. Living Modified Organisms (LMOs) – often known as genetically modified organisms (GMOs) – are becoming part of an increasing number of products, including foods and food additives, beverages, drugs, adhesives, and fuels. Agricultural and pharmaceutical LMOs have rapidly become a multi-billion-dollar global industry.

Biotechnology is being promoted as a better way to grow crops and produce medicines, but it has raised concerns about potential side effects on human health and the environment, including risks to biological diversity. In some countries, genetically altered agricultural products have been sold without much debate, while in others, there have been vocal protests against their use, particularly when they are sold without being identified as genetically modified.

In response to these concerns, governments negotiated a subsidiary agreement to the Convention to address the potential risks posed by cross-border trade and accidental releases of LMOs. Adopted in January 2000, the Cartagena Protocol on Biosafety allows governments to signal whether or

not they are willing to accept imports of agricultural commodities that include LMOs by communicating their decision to the world community via a Biosafety Clearing House, a mechanism set up to facilitate the exchange of information on and experience with LMOs. In addition, commodities that may contain LMOs are to be clearly labeled as such when being exported.

Stricter Advanced Informed Agreement procedures will apply to seeds, live fish, and other LMOs that are to be intentionally introduced into the environment. In these cases, the exporter must provide detailed information to each importing country in advance of the first shipment, and the importer must then authorize the shipment. The aim is to ensure that recipient countries have both the opportunity and the capacity to assess risks involving the products of modern biotechnology. The Protocol will enter into force after it has been ratified by 50 governments.

5 - What are the next steps?

Economic development is essential to meeting human needs and to eliminating the poverty that affects so many people around the world. The sustainable use of nature is essential for the long-term success of development strategies. A major challenge for the 21st century will be making the conservation and sustainable use of biodiversity a compelling basis for development policies, business decisions, and consumer desires.

Promoting the long term

The Convention has already accomplished a great deal on the road to sustainable development by transforming the international community's approach to biodiversity. This progress has been driven by the Convention's inherent strengths of near universal membership, a comprehensive and science-driven mandate, international financial support for national projects, world-class scientific and technological advice, and the political involvement of governments. It has brought together, for the first time, people with very different interests. It offers hope for the future by forging a new deal between governments, economic interests, environmentalists, indigenous peoples and local

communities, and the concerned citizen.

However, many challenges still lie ahead. After a surge of interest in the wake of the Rio Summit, many observers are disappointed by the slow progress towards sustainable development during the 1990s. Attention to environmental problems was distracted by a series of economic crises, budget deficits, and local and regional conflicts. Despite the promise of Rio, economic growth without adequate environmental safeguards is still the rule rather than the exception.



Some of the major challenges to implementing the Convention on Biological Diversity and promoting sustainable development are:

- Meeting the increasing demand for biological resources caused by population growth and increased consumption, while considering the long-term consequences of our actions.
- Increasing our capacity to document and understand biodiversity, its value, and threats to it.
- Building adequate expertise and experience in biodiversity planning.
- Improving policies, legislation, guidelines, and fiscal measures for regulating the use of biodiversity.
- Adopting incentives to promote more sustainable forms of biodiversity use.
- Promoting trade rules and practices that foster sustainable use of biodiversity.
- Strengthening coordination within governments, and between governments and stakeholders.
- Securing adequate financial resources for conservation and sustainable use, from both national and international sources.
- Making better use of technology.
- Building political support for the changes necessary to ensure biodiversity conservation and sustainable use.
- Improving education and public awareness about the value of biodiversity.

BIODIVERSITY

The Convention on Biological Diversity and its underlying concepts can be difficult to communicate to politicians and to the general public. Nearly a decade after the Convention first acknowledged the lack of information and knowledge regarding biological diversity, it remains an issue that few people understand. There is little public discussion of how to make sustainable use of biodiversity part of economic development.

The greatest crunch in sustainable development decisions is the short – versus the long-term time frame. Sadly, it often still pays to exploit the environment now by harvesting as much as possible as fast as possible because economic rules do little to protect long-term interests.

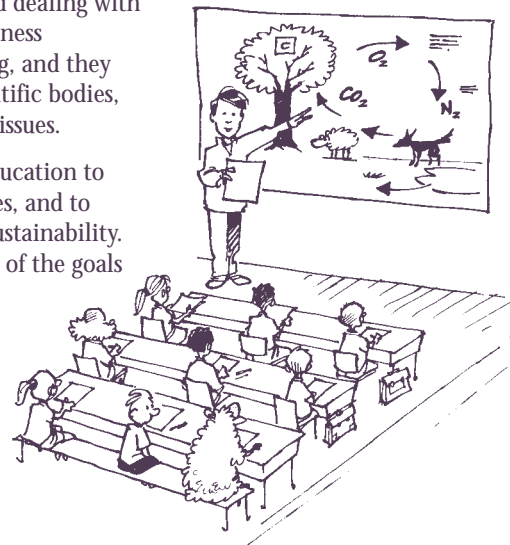
Truly sustainable development requires countries to redefine their policies on land use, food, water, energy, employment, development, conservation, economics, and trade. Biodiversity protection and sustainable use requires the participation of ministries responsible for such areas as agriculture, forestry, fisheries, energy, tourism, trade and finance.

The challenge facing governments, businesses, and citizens is to forge transition strategies leading to long-term sustainable development. It means negotiating trade-offs even as people are clamoring for more land and businesses are pressing for concessions to expand their harvests. The longer we wait, the fewer options we will have.

Information, education, and training

The transition to sustainable development requires a shift in public attitudes as to what is an acceptable use of nature. This can only happen if people have the right information, skills, and organizations for understanding and dealing with biodiversity issues. Governments and the business community need to invest in staff and training, and they need to support organizations, including scientific bodies, that can deal with and advise on biodiversity issues.

We also need a long-term process of public education to bring about changes in behaviour and lifestyles, and to prepare societies for the changes needed for sustainability. Better biodiversity education would meet one of the goals set out in the Convention.



What can I do about biodiversity?

While governments should play a leadership role, other sectors of society need to be actively involved. After all, it is the choices and actions of billions of individuals that will determine whether or not biodiversity is conserved and used sustainably.

In an era when economics is a dominant force in world affairs, it is more important than ever to have **business** willingly involved in environmental protection and the sustainable use of nature. Some companies have revenues far greater than those of entire countries, and their influence is immense. Fortunately, a growing number of companies have decided to apply the principles of sustainable development to their operations. For example, a number of forestry companies – often under intense pressure from environmental boycotts – have moved from clear-cutting to less destructive forms of timber harvesting. More and more companies have also found ways to make a profit while reducing their environmental impacts. They view sustainable development as ensuring

long-term profitability and increased goodwill from their business partners, employees, and consumers.

Local communities play a key role since they are the true "managers" of the ecosystems in which they live and, thus, have a major impact on them. Many projects have been successfully developed in recent years involving the participation of local communities in the sustainable management of biodiversity, often with the valuable assistance of NGOs and intergovernmental organizations.

Finally, the ultimate decision-maker for biodiversity is the **individual citizen**. The small choices that individuals make add up to a large impact because it is personal consumption that drives development, which in turn uses and pollutes nature. By carefully choosing the products they buy and the government policies that they support, the general public can begin to steer the world towards sustainable development. Governments, companies, and others have a responsibility to lead and inform the public, but finally it is individual choices, made billions of times a day, that count the most.

Conclusion

Although still in its infancy, the Convention on Biological Diversity is already making itself felt. The philosophy of sustainable development, the ecosystem approach, and the emphasis on building partnerships are all helping to shape global action on biodiversity. The data and reports that governments are gathering and sharing with each other are providing a sound basis for understanding the challenges and collaborating on the solutions.

Much, much more needs to be done. The passage of the Earth's biodiversity through the coming century will be its most severe test. With human population expected to rise dramatically, particularly in developing countries, and the consumer revolution set for exponential expansion – not to mention the worsening stresses of climate change, ozone depletion, and hazardous chemicals – species and ecosystems will face ever more serious threats. Unless we take action now, children born today will live in an impoverished world.

The Convention offers a comprehensive, global strategy for preventing such a tragedy. A richer future is possible. If governments and all sectors of society apply the concepts embodied in the Convention and make the conservation and sustainable use of biological diversity a real priority, we can ensure a new and sustainable relationship between humanity and the natural world for the generations to come.

For more information about the Convention, please contact:

**Secretariat of the Convention on Biological Diversity
World Trade Centre**

393 St Jacques ouest, Suite 300
Montreal, Quebec Canada H2Y 1N9
Phone: + 1 (514) 288 2220
Fax: + 1 (514) 288 6588
E-mail: secretariat@biodiv.org
Web site: www.biodiv.org

**United Nations Environment Programme
Division of Environmental Conventions/IUC
International Environment House**

15, chemin des Anémones
1219 Châtelaine, Switzerland
Phone : +41-22-917-8242/8196
Fax : +41-22-717-9283
Email : iuc@unep.ch
Web site : www.unep.ch/conventions

To obtain information on national reports submitted by governments under the Convention, contact your national government's focal point, usually with the ministry responsible for environment or natural resources. National reports are also available electronically on the Convention's web site at www.biodiv.org.