information systems, and help make taxonomic expertise and information readily available where needed for the Convention's thematic areas and cross-cutting issues. A major activity at present is informing individuals and groups worldwide of the existence and priorities of the GTI and encouraging their active participation.

Invasive alien species

Invasive alien species are a leading threat to biodiversity. These species can be extremely aggressive when introduced into a new environment. They are known to cause irreversible damage to ecosystems and serious economic loss. Guidelines are being developed under the Convention to help countries control or eradicate invasive alien species and to prevent them from being introduced in the initial stage. Guidelines relating to such matters are based on the precautionary approach, the ecosystem approach, border controls and quarantine measures.

Protected areas

Protected areas are vital to the conservation of the world's natural and cultural resources. They protect natural habitats and their associated flora and fauna while maintaining the environmental stability of surrounding areas. They are the primary means used by countries for conserving biological diversity. In addition they provide opportunities for rural development and the rational use of marginal lands. Their real value and contribution to the Convention's objectives need to be further assessed, taking into account the ecosystem approach.

The world's 30,000 protected areas cover over 13,250,000 km² of the world's land surface. A much smaller proportion of the seas is also protected (source: IUCN-WCPA, 2001). Creating networks of protected areas that adequately preserve the world's biodiversity resources will require nations to collaborate further on managing transboundary ecosystems.

With the development of international efforts for preserving biological diversity, it has become clear that protected areas are at the heart of the global strategy for managing biodiversity effectively. Unless core habitat and their surrounding buffer zones are preserved, the conservation of biodiversity will become more difficult.

The Convention collaborates in this area with the World Commission on Protected Areas (WCPA).

Impact assessment

Impact assessment tools, including environmental impact assessment and strategic environmental assessment, ensure that the adverse environmental consequences of projects, programmes and policies can be identified and then avoided or repaired. In addition, impact assessment provides a link to the private sector as it is widely used by industry as a tool for bringing environmental and social issues to bear on their decision-making.

Recognizing the significance of impact assessments tools, concrete guidelines are being developed under the Convention to assist Parties in incorporating biodiversity-related issues into their impact assessment policies, legislation and procedures.

The Convention is cooperating in this area with the International Association for Impact Assessment (IAIA).

Synergies with other environmental conventions

Over the years, governments have adopted a large number of global and regional treaties for promoting nature conservation and its sustainable use. Some of these agreements, such as the 1979 Bonn Convention on Migratory Species (CMS) and the 1973 Convention on International Trade in Endangered Species (CITES), focus on species. Others, such as the 1971 Ramsar Convention on Wetlands, deal with ecosystems. The Secretariat of the Convention on Biological Diversity is strengthening its cooperation with the secretariats of these treaties through the development of Memoranda of Understanding.

To better exploit the interlinkages between climate change, land degradation and biodiversity, the secretariats of the three Rio Conventions (CBD, CCD and UNFCCC) are exploring ways to enhance the complementarity between their work programmes. This applies in particular to the issue of forest biodiversity. The UNFCCC recognizes that forests play an important role as carbon "sinks" in mitigating climate change. Through the ecosystem approach it should be possible to ensure that forests managed as sinks also retain their full diversity of goods and services. Joint scientific work can ensure that climate change, dryland management and biodiversity policies remain synergetic and not contradictory.

These joint work programmes will reinforce coordination amongst the conventions, enabling us to draw nearer to our common goal.

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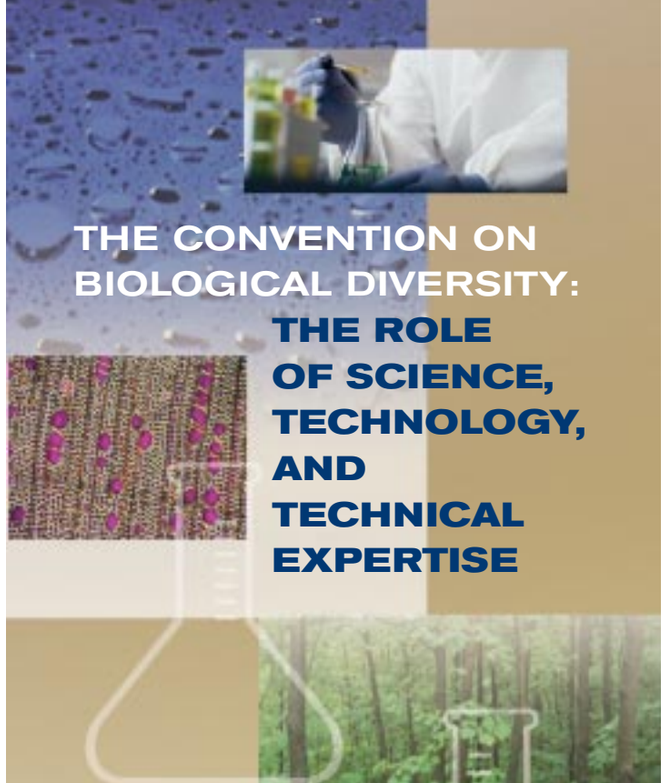

THE CONVENTION ON BIOLOGICAL DIVERSITY: THE ROLE OF SCIENCE, TECHNOLOGY, AND TECHNICAL EXPERTISE

Secretariat of the Convention on Biological Diversity

CBD

UNEP

The 1992 Convention on Biological Diversity (CBD) has greatly enhanced global awareness of biodiversity's importance. The many goods and services it provides are now better appreciated and valued by experts, policy-makers and the public alike.

The Convention contains clear commitments on national policies, programmes and actions for the conservation and sustainable use of biological diversity. At the same time, it provides a global forum where representatives from governments, non-governmental organizations, academic and research institutions, and the private sector can meet to compare strategies and share ideas on best practices. The Convention is overseen by the Conference of the Parties (COP) and boasts some 186 member governments.

The Convention benefits enormously from the significant investments now being made in the study of biodiversity and its conservation. Much has been learned, but more scientific information is needed. While the lack of full scientific certainty is not a valid reason for postponing actions to address biodiversity loss, improved scientific understanding will enable governments and other stakeholders to pursue the goals of the Convention more effectively.

The COP relies for scientific and technical guidance on its Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA). This committee of government-nominated experts from relevant fields also promotes international cooperation on biodiversity science, technical matters and technology.

The SBSTTA agenda relates to the COP's thematic programmes and cross-cutting issues. Thematic, or ecosystem, programmes include inland waters, forests, marine and coastal areas, drylands and agricultural lands. Cross-cutting issues include the control of invasive alien species, taxonomy, the effect of climate change on biodiversity and the development of indicators for biodiversity loss. The following sections describe these programmes and issues in greater detail.

MAIN THEMATIC PROGRAMMES

Biological diversity of inland water ecosystems

Inland waters are among the world's most fragile and threatened ecosystems owing to the growing demands placed upon them by human activities. They perform valuable ecological functions and provide habitat for a large variety of species. Physical alteration, habitat loss and degradation, water withdrawal, over-exploitation, pollution and the introduction of invasive alien species are some of the main threats faced by these ecosystems today. In recent decades, more than 20 percent of the world's 10,000 freshwater fish species have become extinct, threatened or endangered. Forty-one percent of the world's population lives in river basins under water stress.

The Convention's inland water biodiversity programme promotes integrated watershed management for the protection, use, planning and management of inland water ecosystems. The programme identifies actions that Parties need to carry out for mitigating the loss of biodiversity, which include conducting environmental impact assessments of water development projects, developing pollution prevention strategies, preventing and controlling the introduction of invasive alien species, promoting transboundary cooperation and involving local and indigenous communities in ecosystem management.

The Convention's lead partners in this area are the Convention on Wetlands (Ramsar, Iran, 1971) and Conservation International.

Marine and coastal biodiversity

The marine and coastal environment provides diverse habitats that support an abundance of marine life over nearly three quarters of the globe. Moreover, life in our seas produces a third of the oxygen that we breathe, offers a valuable source of protein and moderates global climatic change. However, seas and coastal areas are under threat from pollution, over-exploitation and ill-planned coastal development. Many have been degraded beyond rescue, and the world's fishery resources are severely depleted. Other living resources, such as mangroves, corals and species amenable to bio-prospecting, are also over-exploited. Coral reef ecosystems in particular are being degraded and destroyed worldwide by a variety of human activities including global warming.

The 1995 "Jakarta Mandate on Marine and Coastal Biological Diversity" represents a global consensus on the need for the conservation and sustainable use of marine and coastal biological diversity. Through its programme of work, the Convention focuses on integrated marine and coastal area management, the sustainable use of living resources, protected areas, mariculture and invasive alien species.

The CBD has many partners in this endeavor, including international organizations and initiatives (such as the International Coral Reef Initiative), regional organizations (such as the Regional Seas Conventions and Action Plans), local governments, research facilities and non-governmental organizations.

Agricultural biodiversity

Agricultural biodiversity is crucial to the livelihoods of billions of people and as the basis for all food production and thus food security. The decline in agricultural biodiversity has accelerated throughout the 20th century in parallel with the increased demand for food. Modern agriculture techniques have boosted productivity, but by introducing new and genetically uniform crop varieties into fields, they have displaced local ones. This has reduced the diversity essential for sustainable agricultural development.

The Convention's agricultural biodiversity work programme focuses on identifying and promoting adaptive management practices, technologies, policies and incentives. It promotes the conservation and sustainable use of genetic resources that are of actual or potential value for food and agriculture. The work programme also focuses on various technical and policy aspects of new technologies, such as Genetic Use Restriction Technologies (GURT), and the potential implications of these on agricultural biodiversity, biosecurity, farming, and the global economy.

The CBD cooperates closely in this area with the Food and Agriculture Organization of the United Nations (FAO) and the Centres of the Consultative Group on International Agricultural Research (CGIAR).

Forest biodiversity

Forests are the world's most important terrestrial reservoir of biodiversity. They play a vital role in the lives of many peoples, particularly indigenous and local communities. They also help regulate the planet's climate by, for example, storing large amounts of carbon. However, forest biodiversity, particularly in tropical ecosystems, is being lost through rapid deforestation, forest fragmentation and degradation.

The Convention's forest programme addresses such key issues as forest status and trend assessments, the ecosystem approach to forest management, biodiversity indicators and the integration of socio-economic considerations into the conservation and sustainable use of forests. The work programme also promotes scientific analyses of how human activities and forest-management practices affect biodiversity and investigates methods for minimizing negative impacts.

The Convention seeks to work in cooperation with organizations that have expertise and interest in forests, such as FAO, the UN Forum on Forests, the International Tropical Timber Organization (ITTO), the Center for International Forestry Research (CIFOR) and the United Nations Framework Convention on Climate Change (UNFCCC).

Dry and sub-humid lands

Dry and sub-humid lands have great biological value and are home to many of the world's food crops and livestock. However, these ecosystems are often extremely fragile and suffer from habitat conversion, over-grazing and over-harvesting, invasive alien species, and changes in climate, water availability and natural fire regimes.

The Convention's work programme seeks to fill gaps in our knowledge base by assessing current conditions, trends, opportunities and threats. It supports best management practices through targeted actions in response to identified needs. It also promotes partnerships among countries and institutions.

The work programme further aims to promote synergies and coordination with related conventions, in particular the United Nations Convention to Combat Desertification (UNCCD).

EMERGING THEMATIC PROGRAMMES

Mountain biodiversity

Mountain biodiversity includes a wealth of plant and animal species that are especially adaptable to a wide range of altitudes and climates. Mountain ecosystems continue to be important reservoirs for nutritious and underutilized crops, including genetic resources that offer tremendous potential for agriculture and medicine.

Moreover, research indicates that mountains provide 30 to 60% of downstream freshwater in humid areas and up to 70 to 95% in semi-arid to arid environments. This water is essential not just for drinking and domestic uses but also for agriculture, industry and hydroelectricity. Freshwater issues have drawn attention to the complex interactions that exist between highland and lowland regions and the potential flashpoints for conflict.

Mountain biodiversity loss poses a serious threat to the world's biodiversity and food security. To raise awareness and trigger action on sustainable mountain development, the United Nations has declared 2002 the International Year of Mountains. For its part, the Convention is developing a work programme to probe deeper into the issue.

KEY CROSS-CUTTING ISSUES

Guidelines and tools for policy-makers

Better guidelines and tools will help to strengthen the conservation and sustainable use of biodiversity. With its unique mandate (the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits from the utilization of genetic resources), the Convention seeks nothing less than a revolution in the way humanity relates to biodiversity.

Although some conceptual guidelines exist, there is an urgent need for concrete and implementable policies and instruments that would facilitate bringing biodiversity concerns into the mainstream of national policy-making.

Measurable targets can guide action to achieve the Convention's objectives and identify gaps in the work currently being undertaken. They can provide useful reference points for monitoring progress and for rallying public opinion behind priority issues. Adopting targets at the global level could also stimulate the development of related targets for biodiversity conservation at the regional, national and local levels. Specific indicators are needed to support the development of national biodiversity strategies and action plans.

Ecosystem approach

The ecosystem approach is the primary framework for action on biodiversity conservation and use. There have been major advances in recent years in the scientific understanding of ecosystems, generally defined as dynamic complexes of plant, animal, micro-organism communities and their non-living environment interacting as a functional unit.

The ecosystem approach seeks to manage biodiversity in a way that reconciles immediate societal needs with the long-term integrity of ecosystems and their continued ability to provide goods and services. For example, by viewing a forest and its watershed as part of the same ecosystem, governments can better coordinate forest and water management policies, thus preventing erosion and maintaining flood control while conserving forest and inland water biological diversity.

The Convention's members have developed a set of principles that can provide decision-makers and ecosystem managers with practical guidance on the ecosystem approach to biodiversity management.

Global Taxonomy Initiative

Biological resources are being inventoried through the Global Taxonomy Initiative (GTI).

Not only are most of the estimated 15 million species of animals, plants and microorganisms not yet identified, but those that have been are often difficult to distinguish and identify. Many of the Convention's activities and programmes depend on being able to identify species. However, there is a general lack of information, expertise and infrastructure for doing so, particularly in developing countries.

To remove the so-called "taxonomic impediment", the Parties to the Convention have launched the Global Taxonomy Initiative (GTI). GTI's first priorities are to encourage countries and regions to carry out taxonomic needs assessments, promote and facilitate capacity building where appropriate, encourage the development of taxonomic