A Framework for Action on Biodiversity and Ecosystem Management

WEHAB Working Group
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Contents

Preface and Acknowledgments

The WEHAB initiative was proposed by UN Secretary-General Kofi Annan as a contribution to the preparations for the World Summit on Sustainable Development (WSSD). It seeks to provide focus and impetus to action in the five key thematic areas of Water, Energy, Health, Agriculture and Biodiversity and sustainable ecosystem management that are integral to a coherent international approach to the implementation of sustainable development and that are among the issues contained in the Summit's Draft Plan of Implementation.

The five thematic papers are based on initial consultations with concerned agencies of the UN System and are not intended to be consensus documents reflecting the totality of UN System activities in these areas. They do, however, try to provide a broad view of existing normative and programmatic frameworks in each area, to highlight interlinkages among the sectors, to identify key gaps and challenges and to highlight areas where further action is needed.

The WEHAB initiative also responds to resolution 55/199 of the UN General Assembly that mandated the WSSD preparatory process and decided that the Summit should focus on areas where further efforts are needed to implement Agenda 21 and that action-oriented decisions in those areas should address new challenges and opportunities. In that regard, the initiative takes fully into account the text of the Draft Plan of Implementation agreed at the fourth meeting of the Preparatory Committee for the WSSD in Bali, as well as existing agreed multilateral frameworks. It includes proposals for a number of targeted actions in each of the sectoral areas that are anchored in various intergovernmentally agreed multilateral frameworks on the basis of an incremental approach to meeting broad targets.

The UN General Assembly, in resolution 56/226 on the World Summit on Sustainable Development, also encouraged new initiatives that would contribute to the full implementation of *Agenda 21* and other outcomes of UNCED by strengthening commitments at all levels, including by reinvigorating global commitment and partnerships, both among governments as well as between governments and major groups. Partnerships have thus emerged as an important aspect of the further implementation of *Agenda 21*. While partnerships may involve several actors and be of a broad nature, the WEHAB initiative, drawing as it does on intergovernmental frameworks, could provide a structure for partnerships in these five areas and in this regard could potentially serve as a framework for benchmarking action and monitoring progress in the follow-up to the WSSD.

Due to constraints of time, the initial approach taken in the preparation of the WEHAB initiative was, of necessity, somewhat selective and is not meant to imply any priorities at this stage. If member states believe that a co-ordinated approach to implementation in these areas is required, however, the WEHAB initiative potentially provides a framework for the development of a coherent and co-ordinated follow-up by the UN System based on the intergovernmentally agreed outcome of WSSD. As such, it should be seen as the beginning of a process of follow-up by the UN System.

More than 100 people contributed to the production of these booklets. The list is too long to name everyone here. The names that follow are of individuals who spent a great deal of their time in drafting, providing texts, reading material and giving overall advice. This project would have never been possible without the exemplary joint team work. This is, in fact, an example of the outstanding capacities of the UN System and the World Bank and their capacity to produce team work in record time with very good quality. (The time constraints also precluded producing fully referenced reports, but the publications will be available at the WEHAB Working Group location on the WSSD Web site (www.johannesburgsummit.org), where references will also be supplied.)

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Other staff members of the many agencies listed on the inside back cover provided a number of useful inputs and contributions. Many of them, as in UNEP, FAO and WHO, spent a great deal of time reviewing and providing texts. They are too many to list but we appreciate their timely and valuable inputs. We would like particularly to thank UNEP, UNDP, the World Bank's Environmentally and Socially Sustainable Development Network, UNDESA, UNIDO and WHO for the valuable and substantive support and for placing a large number of the core staff and resources at our disposal.

The project benefited greatly from the contributions of High-Level Advisors who took time to read various drafts and provide useful comments: Margaret Catley-Carlson, Gourisankar Ghosh, Hartwig de Haen, Thomas Johansson, Sir Richard Jolly, Calestous Juma, Izabella Koziell, Stephen Karekezi, Roberto Lenton, Jeffrey McNeely, Peter Raven, Pedro Sanchez and M.S. Swaminathan. The project also benefited from the work of the Millennium Project and its director, Professor Jeffrey Sachs, Director of the Earth Institute of Columbia University.

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Nitin Desai
Secretary-General
World Summit on Sustainable Development

Biodiversity and Sustainable Ecosystem Management: Key Issues and Challenges

The variety of life forms on earth, including genes, species and ecosystems, is known as biological diversity or biodiversity. The immense value of this vast resource remains largely unrecognized. For instance, genetic diversity underpins the development of cultivated food crop varieties and animal breeds. It also helps wild populations adapt to changing environmental conditions. Loss of biodiversity results in serious reductions in the goods (such as food, medicines and building materials) and the services (such as clean water and nutrient cycling) that the earth's ecosystems can provide and that make economic prosperity and human survival possible. In short, biodiversity is the very basis for sustainable development.

Biodiversity includes every form of life—from the smallest microbe to the largest animals and plants—and the interactions between them. This continuum of biological variety and interactions is difficult to imagine, let alone describe in tangible terms. Yet it is best understood as the living world's capacity to change—variability—and the wealth of biological forms and processes that derive as a result—variety. What is important about biodiversity to humans is the choice that it offers, from the perspective of both present benefits of varied and variable life forms and future options associated with variety and the capacity for organisms to adapt. It also provides the potential for change, an inherent capacity to mutate and adapt in an ever-shifting environment.

Biodiversity supports the ecosystem functions essential for life on earth. It provides products such as food, medicines and materials for industry. It is also at the heart of many cultural values. Biodiversity and functional ecosystems give resilience to the biosphere, but as biodiversity is degraded, communities and human society itself become more vulnerable because options for change are diminished. Biodiversity can be seen therefore as a 'life insurance policy for life itself'—something especially needed in this time of fast-paced global change. As the biological underpinnings of economic growth and the potential for prosperity are eroded, the prospects for achieving sustainable development are likewise reduced and global human security will be further threatened.

Properly conserved and wisely used, biodiversity guarantees the effective functioning of ecosystems that deliver a range of services vital for human well-being and ecosystem functioning. As noted in the Convention on Biological Diversity and other biodiversity-related treaties, effective conservation and sustainable use of biodiversity at all levels—genes, species and ecosystems—is a precondition for sustainable development. Similarly, because it underpins the survival and will determine the potential of human societies everywhere, continuing progress towards the goals established in the UN Millennium Declaration will only be possible if biodiversity is conserved and the benefits of its use are distributed equitably.

Activities that reduce biodiversity jeopardize economic development and human health through losses of useful materials, genetic stocks and the services of intact ecosystems. Among the most crucial of these services are air and water purification, waste detoxification and decomposition, climate stabilization, flood and drought moderation, seed dispersal and plant pollination, soil fertility renewal and nutrient recycling. The economic value of such services is enormous. For example, 40 crops in the United States with a total annual market value of US$40 billion are completely dependent on insect pollinators; biological pest control has

- An estimated 40 per cent of the global economy is based on biological products and processes.
- Approximately 20 per cent of the world's freshwater fish species have become extinct, threatened or endangered in recent decades, and some 75 per cent of the major marine fish stocks are either depleted, overexploited or being fished at their biological limit.
- Some 75 per cent of the genetic diversity of crop plants has been lost in the past century.
- More than 50 per cent of the world's wetlands have been drained, and populations of inland water and wetland species have declined by 50 per cent between 1970 and 1999.
- Roughly one-third of the world's coral reef systems have been destroyed or highly degraded.
- About 24 per cent of mammals and 12 per cent of bird species are currently considered to be globally threatened.
- Of the 1.2 billion people living in extreme poverty, approximately 900 million live in rural areas; they are therefore highly dependent on biodiversity for their livelihoods and are most severely affected by biodiversity loss, water pollution and land degradation.

an estimated annual value of US$100–200 billion; and microbial nitrogen fixation has an estimated annual worth of US$50 billion. These services can only be provided through interactions between different organisms, not by one or two species alone; it is the diversity that produces the effects.

Until recently the human enterprise has been astonishingly successful, but society now appropriates as much as 40 per cent of the planet's primary production on land and 50 per cent of accessible water runoff as a result of food production and land conversion. Among the consequences of our success and wastefulness are overexploitation, the introduction of invasive alien species and pollution. Other human activities can also be direct causes of biodiversity loss, including agricultural development, infrastructure development and mining and oil exploration.

In fact, humankind actually has very little knowledge about the world's biodiversity, since fewer than 2 million species have been scientifically described from an estimated 10–15 million (or perhaps far more) species. And the role of these described species in the ecosystem functioning and services upon which society depends is almost completely unknown. Although action to stop the loss must not wait for the gathering of complete knowledge on biodiversity, the current extreme lack of knowledge severely hampers efforts to achieve sustainable development.

The total loss of species through global extinction is a real concern. It has been estimated that current extinction rates among mammals and birds may be more than 100 times the rate expected in the absence of human activities. It is not coincidental that these rates are often matched by the extinction and loss of languages and other forms of cultural diversity.

However, the gradual erosion of genetic diversity, the loss of local populations and the fragmentation of existing species are often of far greater short-term significance. Loss of these elements of biodiversity is liable to have a direct impact on the livelihoods of people, particularly the world's rural poor and disadvantaged. (See Box 1.) And it is the local loss of species populations, along with direct physical modification of the landscape, that contributes most to ecosystem degradation.

For some threatened ecosystems, like coral reefs, freshwater wetlands and tropical forests, the rate of species extinction is now estimated to be 1,000 to 10,000 times the background rate without human interference. But losses in these species-rich systems should not detract from the fact that even species-poor systems—including mangroves, tidal marshes, tundra and coniferous forests—are also suffering in this way, and they are as important in the functioning of the biosphere as species-rich ones.

Box 1: Biodiversity's Contribution to Poverty Reduction, Livelihoods and Human Security

- *Food Security*. Human society is highly dependent on genetic resources, including those from wild and semi-domesticated sources, for the productivity of its agriculture, livestock and fisheries. These resources also provide communities with an adaptation capacity so that varieties can be created that best cope with changing local conditions. Biodiversity associated with agriculture is critical to maintain soil quality, feed livestock and fish, control agricultural pests and diseases and provide critical pollination services. In addition, biodiversity is a source of alternative food products during periods of scarcity.
- *Health Improvements*. Biodiversity is a source of the invaluable information and raw materials that underpin medicinal and health care systems, both for the 'informal' sector that meets local health care needs of some 60 per cent of the world's people, and the 'formal' sector that derives a majority of the world's modern drugs from biodiversity. Poor people also suffer most from scarce or polluted water and air and from diseases associated with disrupted ecosystems. Further, having a variety of sources of foods supports better nutrition and therefore improved health.
- *Income Generation*. Poor people tend to depend the most on the direct use of biodiversity for their livelihoods, and are therefore the first to suffer when these resources are degraded or lost. Biodiversity also offers great potential for marketing unique products, many of which are extremely valuable, but the benefits only infrequently accrue to the poor.
- *Reduced Vulnerability*. Poor people are most often exposed to and are least prepared to cope with unpredictable events such as fluctuations in access to food and other resources or environmental shocks and risks. Ecosystem degradation exacerbates the frequency and impact of droughts, floods, landslides, forest fires and other natural hazards, and can intensify competition and the potential for conflict over access to shared resources such as food and water.
- *Ecosystem Services*. Forests, wetlands, coastal ecosystems and so on provide essential services that contribute in numerous ways to the productive activities of rural and urban poor people, including through the generation of water, cycling of nutrients, replenishment of soil fertility and prevention of erosion. These services are public goods, providing indirect values that are not traded in the market-place but are vital to the livelihoods of all people.

The main underlying causes of these losses originate in some of the most basic social, economic, political, cultural and historical features of society. The driving forces are numerous and interdependent, and although many of them depend strongly on international decisions and activities, the approaches to dealing with them are specific to countries and local settings and will therefore vary. The causes can be local, national, regional or global, transmitting their effects through economic or political actions. They include:

- broad social, economic and political processes such as unsustainable production and consumption patterns, human population growth, inadequate economic valuation of biodiversity, globalization of trade, poverty, inappropriate structural adjustment policies, harmful subsidies and incentives, lack of clear land use rights, lack of political will, political unrest and wars;
- institutional and social weaknesses such as poor governance, lack of intersectoral coordination and effective partnership, fragmented decisionmaking, lack of secure land tenure and uneven distribution of ownership, loss of cultural identity and spiritual value, insufficient scientific and implementation capacities, lack of information, limited use of scientific and local knowledge and lack of awareness and poor understanding of the role of biodiversity in providing goods and services and in defining sustainable development;
- market and economic policy failures such as lack or non-enforcement of appropriate regulatory mechanisms, prevalence of harmful subsidies and incentives, absence of appropriate local and global markets for biodiversity goods and services and lack of clear environmental and development policies and of environmental impact assessments; and
- lack of knowledge, particularly among those directly involved in the management of biodiversity and those who make decisions on economic activities and development projects that affect biodiversity and ecosystems.

People have generally been prepared to accept some local reduction in biodiversity and ecosystem integrity in order to meet short-term development goals. But the benefits of land conversion are not always distributed equitably among social groups, and the costs at the national or global scale are rarely considered. By some estimates, growing demand for food by a wealthier and larger global population could drive the conversion to agriculture of an additional 10 billion hectares of unmodified ecosystem by 2050, with inevitable side effects from increased fertilizer and pesticide use. Managing future uses for development will present many challenges. The precautionary approach, as set forth in Principle 15 of the *Rio Declaration on Environment and Development*, should guide management efforts: although it is impossible to determine 'how much biodiversity is enough' or 'how much more would be better', precaution is always safer for future generations.

We also need to recognize that it is not only biodiversity loss that has exacerbated poverty, but mismanagement of biodiversity through introductions of additional species or misguided efforts to 'protect' biodiversity from people through 'enclosure' (especially in areas where there is weak governance)—whether this has involved the enclosure of resources within protected areas or the enclosure of information and knowledge generated from biodiversity through the privatization of intellectual property rights.

Given the current value of this enclosed biodiversity, the critical challenge must be to facilitate a fair and equitable flow of benefits from it to the poor (it could provide benefits by remaining enclosed if viable and fair benefit-sharing mechanisms are in place). This will, for instance, involve exploring protected areas issues and identifying how the areas can be strengthened while benefiting local people. It must also involve investigating what sort of policies, legislation and institutional issues can promote more positive linkages—for example, by addressing intellectual property rights and incentives issues.

There is an urgent need as well to change the perception, and the policy approach derived from it, that biodiversity conservation is a 'protected area issue'. Protected areas have an important role to play in this matter, but biodiversity is present in all systems, including urban systems, and it plays a significant role everywhere. Thus, biodiversity concerns should be present in the management of all places, and more particularly so in those where human interventions are more severe.

The daunting projections of biodiversity loss need to be seen in the context of the five key areas described by Secretary-General Kofi Annan as critical global challenges of the twenty-first century: water and sanitation, energy, health and the environment, agriculture, and biodiversity and ecosystem management (WEHAB). The remainder of this chapter discusses how biodiversity and sustainable ecosystem management is essential to progress in all four of the other priority areas and how it serves as the basis for sustainable development. (See Figure.)

Biodiversity and Water

The sources of fresh water are in most cases fragile mountain ecosystems. On its way to the sea, fresh water passes through other ecosystems, such as rivers, lakes and wetlands, that play an important role in ensuring the quality and quantity of the resource. The effective management and conservation of

these ecosystems is essential to secure the water supply for human consumption. And conversely, healthy waterways and natural water flows are often required for ecosystems to function and biodiversity to be maintained.

Conversion of natural ecosystems to less diverse agricultural systems or to suburban or urban environments reduces the land's ability to absorb and hold precipitation. Converted areas are often more prone to floods because of increased rates of run-off and more prone to water scarcity during periods of low precipitation.

One of the undervalued services provided by natural ecosystems, particularly wetlands, is the filtration of waste and the detoxification of run-off before it reaches waterways. Because of this important ability to purify water, as well as the critical role played by biodiversity in stabilizing soil and preventing erosion, the loss of habitat has negative effects on water quality both in the immediate vicinity of the wetland and downstream. Similarly, invasive alien species can have a dramatic effect on the availability of surface water by changing water table levels, as is happening in Africa, Australia and Latin America.

The biodiversity of coastal and marine waters, notably fish and shellfish, plays a vital role providing food for many peoples, and healthy coastal ecosystems protect coasts against storms and flooding.

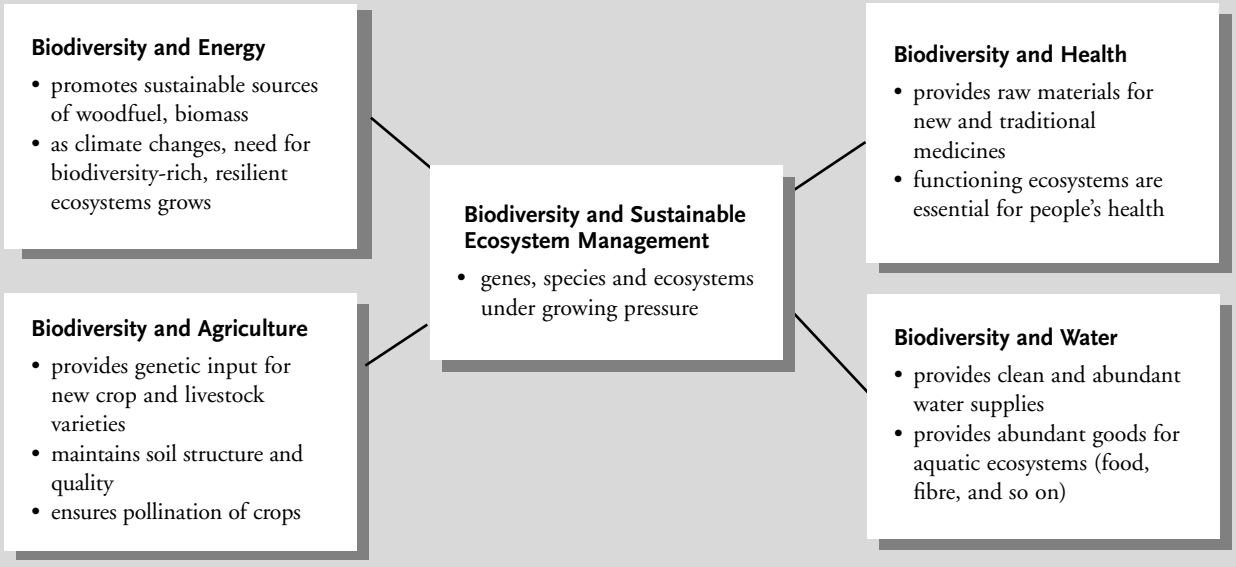
Biodiversity and Energy

Renewable sources of energy, including woodfuel and biogas, depend on biodiversity (for the breeding of fast-growing native fuelwood species, for example). The maintenance of these renewable biological resources also depends on biodiversity that may allow adaptation to climate change. The sustainable harvesting of biomass for energy requires the use of good management practices that minimize the negative impacts on biodiversity, including habitats, and on soils and water.

Decisions about the construction and operation of major energy projects, such as large dams, must take biodiversity impacts into account, since such projects often have the potential to seriously undermine the provision of vital ecosystem goods and services. The extraction, transport and use of fossil fuels can have severe negative impacts on biodiversity and ecosystem functioning. Strip mining for coal, oil tanker spills, oil pipeline leaks and disruption of animal migration patterns by pipelines are serious threats that need to be mitigated.

Climate change resulting from societal dependence on fossil fuel is also having increasingly serious consequences on entire ecosystems—especially highly vulnerable ecosystems such as coral reefs—and possibly on entire human cultures, in the case of certain small island states. Strategies to increase carbon sequestration through afforestation or reforestation efforts must take biodiversity into consideration since, for example, planting monocultures or using alien species can have serious negative consequences. However, the potential exists for climate change mitigation efforts to actually enhance biodiversity if conservation areas are accepted as carbon sinks under the Kyoto Protocol.

Figure: Examples of the Critical Role of Biodiversity and Sustainable Ecosystem Management in WEHAB Priority Areas



Biodiversity and Health

Humans depend on biodiversity and the capacity of ecosystems to provide a multitude of goods and services that underpin a healthy human and natural environment. Many of the factors that threaten human health also threaten biodiversity, such as toxic and hazardous materials and various forms of pollution. Biodiversity is essential for human health, for example, in the provision of the raw materials for medicines. Indeed, some 20,000 species are used in traditional medicine, which forms the basis of primary health care for about 80 percent of the 3 billion people in developing countries. More than half of the world's modern drugs are derived from biological resources, which supports the traditional and modern pharmaceutical sectors. Approximately 5,000 species are potential sources of commercial drugs, while chemicals derived from 90 species are used globally in medicine. Of all useful plant-derived drugs, only 10 are synthesized in laboratories—the rest are still extracted from plants. The value of these plant-derived drugs in the industrial world amounted to US$43 billion in 1985, while the market for herbal drugs stood at an estimated US$47 billion in 2000.

Biodiversity can be seen therefore as a 'life insurance policy for life itself'—something especially needed in this time of fast-paced global change.

With advances in biotechnology and the availability of new and precise screening tools, interest in biodiversity as a source of both raw materials and the chemical information required for developing new medicinal products is expanding. Efforts to assess any potential adverse impacts of living modified organisms on the environment and on human health are also expanding in parallel with the growth in biotechnology applications.

Biodiversity among animals is another important factor for medical research. At the same time, it is vital to ensure that health strategies, especially those for vector control using organochloride compounds, do not have adverse effects on biodiversity and become counterproductive.

In addition to the role it plays in helping people recover from illness, biodiversity also makes a significant contribution in preventing disease and illness, since well-functioning ecosystems can help protect human health. For example, the conservation and wise use of biodiversity helps maintain the resilience of ecosystems and their associated socio-cultural systems, which promotes human well-being and reduced reliance on drugs. Wetlands and other functioning ecosystems can often detoxify water-borne diseases, and natural predators of disease-causing insects can help prevent overuse of organochlorides.

Biodiversity and Agriculture

All forms of agriculture, including mariculture and aquaculture, whether intensive or small-scale, depend on biodiversity both for the supply of plant and animal genetic resources for production and for the provision of essential ecological services, such as the maintenance of soil fertility, nutrient cycling, pollination, erosion control and pest and disease regulation. It is vital to retain these positive functions of biodiversity in relation to agriculture since soil micro-organisms maintain soil fertility, break down waste products and ensure soil structure. Insects, bats and birds provide critical pollination services. Wild predators and diseases of agricultural pests are crucial to control pest damage to crops and livestock. A high proportion of the world's livestock depends on natural vegetation for feed. Accordingly, if it is to be sustainable, agricultural productivity needs to be built on a strong foundation of biological diversity at the gene, species and ecosystem levels. Thus threats to biodiversity often also constitute direct threats to agricultural productivity and food security.

It has been estimated that some 30,000 species are edible and that only about 7,000 of these have been cultivated or collected for food by humans. Between 15 and 20 crops are of major economic importance, and a total of 30 crops meet 95 percent of the energy or protein needs of the world's population. Just three crops—wheat, rice and maize—provide more than 50 percent of the global plant-derived energy intake, while only 40 species of domesticated animals are used in agriculture. Regular infusions of new crop strains are critical to expanding crop yields to meet future food demands.

Estimates of the global value associated with plant genetic resources in agriculture vary from hundreds of millions to tens of billions of dollars per year. For instance, the contribution of landraces from South Asian gene banks is estimated at US$150–200 million per year; the contribution of wheat germplasm from the international maize and wheat research institute ranges from US$300 million to US$11 billion a year; the total annual value of seed sector activities world-wide is estimated at some US$45 billion; and the total output from the world's agroecosystems each year amounts to some US$1.3 trillion.

Indeed, biodiversity—and especially the maintenance of wild relatives of domesticated species—is essential to sustainable agriculture. These linkages transcend national frontiers and clearly illustrate that the maintenance of diversity is a matter of global, not just local, concern. To cite just a few

examples, the benefits of Mexican wild corn crossed with commercial corns to increase resistance have been estimated at US$4 billion a year world-wide; the value of Californian tomatoes increased by US$8 million a year as a result of a flavour gene found in a Peruvian wild tomato; a gene from Ethiopian barley protects Californian barley from viruses, with an estimated value of US$160 million a year; and the annual value of increased resistance given by Turkish wild wheat to American wheat amounts to some US$50 million.

Biodiversity and the Millennium Development Goals

The Millennium Development Goals (MDGs, see inside front cover) adopted by the UN General Assembly in September 2000 provide key targets to address the most pressing development needs. Ensuring environmental sustainability is recognized as one of eight key goals. Because biodiveristy underpins the survival of human societies everywhere, continuing progress towards these goals can only be possible when it is conserved and the benefits of its use are distributed equitably. This goal is closely tied with that of eradicating extreme poverty and hunger. Since the poor are the people most directly dependent on biological diversity and therefore most immediately affected by its loss, the need to stem this loss world-wide as well as in specific locations is central to the goals of eradicating extreme poverty and hunger and of ensuring environmental sustainability. Biodiversity is also important for the development of medicines, and therefore its maintenance is critical to efforts to combat HIV/AIDS, malaria and other diseases.

One of the challenges in ensuring environmental sustainability will be increasing the production of food to meet the needs of a growing population while minimizing the clearing of land for agriculture and dependence on chemical pesticides and fertilizers. Biotechnology has the potential to contribute to enhanced food security and poverty alleviation, but will require careful management through development of sound biosafety frameworks to prevent any adverse effects on people and on biodiversity and ecosystems. Biotechnology issues were addressed in Chapter 16 of Agenda 21 and also by the Commission on Sustainable Development in 1995, when the chair's report called for strengthened emphasis on the ecological, safety, health, socio-economic and ethical aspects of biotechnology.

Biosafety has become an important issue of debate and research in the field of biodiversity, and a new protocol to address the possible risks related to the handling and transfer of genetically modified organisms has been developed to deal with it—the Cartagena Biosafety Protocol. The World Summit on Sustainable Development preparatory committee meeting in Bali agreed to invite countries to ratify the Biosafety Protocol. There is a compelling need for independent, consolidated scientific advice to decision-makers on this issue.

Another MDG is promoting gender equality and empowering women. As women are in many cases the primary custodians of traditional knowledge as well as the main direct users of biodiversity, its loss or degradation can worsen their societal role by limiting their ability to act as managers of natural resources for food production, clothing and medical purposes. Likewise, the possibility of conflicts arising as a result of increasingly scarce natural resources will inevitably diminish prospects for a global partnership for development, one of the MDGs.

Ultimately, however, since social and economic stability is a prerequisite for sustainable development, the continued loss of biodiversity and degradation of natural resources can severely constrain efforts to meet all the MDGs, as they will lead to a reduction in food security. This can only exacerbate problems associated with malnutrition, undernourishment and risk of famine and will increase human vulnerability to diseases, with obvious consequences for maternal health and child mortality rates. Continued biodiversity loss will also result in social disruption as ecosystems are destabilized and become more vulnerable to natural disasters, such as floods, droughts and hurricanes, and to stresses resulting from human activities, such as pollution and climate change.

Given the inextricable link between biodiversity and the achievement of the MDGs, there is a need in the future to consider goals, targets and indicators that are more explicitly related to biodiversity and that are also time-bound.

Addressing the Challenges in Biodiversity and Sustainable Ecosystem Management

Although the world community has achieved significant results in identifying general objectives, principles and priorities for sustaining biodiversity, the results in the field are not yet very encouraging. Approximately 9.5 per cent of terrestrial ecosystems are under some kind of formal protection. Several endangered species have been saved from imminent extinction, including the Arabian orynx, Mauritius kestrel, California condor and a number of species of cetaceans. Challenges continue to confront efforts to conserve and use biodiversity sustainably, as well as attempts to reverse land degradation or to curb the spread of invasive alien species. Unfortunately, most trends related to biodiversity remain negative.

Nevertheless, numerous international treaties and national legal instruments have been established. A range of barriers impede the effective implementation of these treaties, laws and regulations. Blame can seldom be assigned to one single factor, but rather a complex set of interacting causes in most cases will require a multifaceted and site-specific response. And dependable, replicable solutions appear to be rare.

Perhaps the most basic driving force is an unsustainable pattern of production and overconsumption of goods and services by a relatively small proportion of the human family. In addition, the increasing human population is straining the capacity of the earth to meet human needs. The land, water and other resources required to increase food production often conflict with traditional conservation interests. Those who are most affected by the erosion of their environment usually do not derive benefits from either large development projects or from the establishment of classical protected areas.

This illustrates the need for integrating biodiversity concerns and values into overall sustainable development strategies and plans, and the need to approach the management of biodiversity in a socio-economic context. People must be included. Some 900 million of the 1.2 billion people living in extreme poverty are in rural areas and are highly dependent on biodiversity and functioning ecosystems to survive. Fighting poverty in these areas often implies finding new job opportunities based on biodiversity. Biodiversity conservation and ecosystem management must therefore be integrated into local and national economies. An integrated approach to the conservation and sustainable use of biodiversity, and the equitable sharing of benefits derived from such use, is imperative to the achievement of sustainable development.

In the table that forms the remainder of this chapter, the first column identifies challenges and obstacles to biodiversity conservation and sustainable use, as delineated at the Sixth Conference of the Parties of the Convention on Biological Diversity (CBD) held in The Hague in April 2002 (though they apply as well to other international biodiversity-related treaties and national legal instruments). They are grouped into eight categories. Many of these challenges are not easily overcome, and a number need to be addressed outside the traditional environment sector, particularly those dealing with socio-economic factors and natural phenomena and environmental change. Broad international co-operation is also needed, and sectoral integration of biodiversity concerns and responsibilities is equally important at the national level.

The second column, Agreed Measures, contains all the actions on biodiversity agreed to during the final preparatory committee meeting before the World Summit on Sustainable Development, as well as major agreements reached by the Sixth Conference of the Parties of the CBD.

The most pressing needs in order for most developing countries to address these challenges are additional financial resources and capacity development. It is therefore recommended that these resources be made available under various bilateral and multilateral development mechanisms. In addition, however, as shown in the table, there are also a number of obstacles that need to be overcome by improved governance within each country.

Key Challenges and Obstacles (from CBD Strategic Plan, Decision VI/26)	Agreed Measures (from Prepcom IV Draft Implementation Plan and CBD/COP decisions)
Political / Societal Obstacles ■ Lack of political will and support to implement the Convention on Biological Diversity ■ Limited public participation and stakeholder involvement ■ Lack of mainstreaming and integration of biodiversity issues into other sectors, including use of tools such as environmental impact assessments ■ Political instability ■ Lack of precautionary and proactive measures, causing reactive policies	42 (a) [Agreed] Integrate the objectives of the CBD into global, regional and national sectoral and cross-sectoral programmes and policies, in particular in the programmes and policies of the economic sectors of countries and international financial institutions. [Prepcom IV Draft Implementation Plan, 12 June 2002] 42 (l) [Agreed] Promote the effective participation of indigenous and local communities in decision and policy making concerning the use of their traditional knowledge. [Prepcom IV Draft Implementation Plan, 12 June 2002] 42 (t) [Agreed] Invite all states, which have not already done so, to ratify the CBD, the Cartagena Protocol on Biosafety and other biodiversity-related agreements, and for those that have done so, promote their effective implementation at the national, regional and international levels and support developing countries, as well as countries with economies in transition, technically and financially in this regard. [Prepcom IV Draft Implementation Plan, 12 June 2002] The Convention is fulfilling its leadership role in international biodiversity issues. [Strategic Plan for the Convention on Biological Diversity (COP-6, VI/26)] National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention. [Strategic Plan for the Convention on Biological Diversity (COP-6, VI/26)] To promote within the framework of the Convention a just implementation of Article 8(j) 1/ and related provisions, at local, national, regional and international levels and to ensure the full and effective participation of indigenous and local communities at all stages and levels of its implementation. [Programme of work on Article 8 (j) and related provisions of the Convention on Biological Diversity] To provide general advice on incorporation of biodiversity considerations into new or existing environmental impact assessment procedures. [Guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or processes and in strategic environmental assessment (COP-6, VI/7)] To provide guidance to parties on strategic goals, objectives and priorities for implementation and serve as a political document to raise the profile of the Convention in the international arena. [Strategic Plan for the Convention on Biological Diversity (COP-6, VI/26)] Governments to undertake adequate measures with respect to their international obligations, including through the development of mechanisms for assessment and review of implementation and the establishment of compliance regimes. [The Hague Ministerial Declaration of the Conference of the Parties to the Convention on Biological Diversity, para 15 (p)]

Key Challenges and Obstacles (from CBD Strategic Plan, Decision VI/26)	Agreed Measures (from Prepcom IV Draft Implementation Plan and CBD/COP decisions)
Institutional, Technical and Capacity-Related Obstacles ■ Inadequate capacity to act, caused by institutional weaknesses ■ Lack of human resources ■ Lack of transfer of technology and expertise ■ Loss of traditional knowledge ■ Lack of adequate scientific research capacities to support all the objectives	42 (q) [Agreed] Promote practicable measures for access to the results and benefits arising from biotechnologies based upon genetic resources, in accordance with articles 15 and 19 of the CBD, including through enhanced scientific and technical cooperation on biotechnology and biosafety, including the exchange of experts, training human resources and developing research oriented institutional capacities. [Prepcom IV Draft Implementation Plan, 12 June 2002] Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention. [Strategic Plan for the Convention on Biological Diversity (COP-6, VI/26)] Implement an Action Plan for Building Capacities for the Effective Implementation of the Cartagena Protocol on Biosafety with financial support of the Global Environment Facility and other donors. [COP-6, VI/17 Financial mechanism under the Convention]
Lack of Accessible Knowledge/Information ■ Loss of biodiversity and the corresponding goods and services it provides not properly understood and documented ■ Existing scientific and traditional knowledge not fully utilized ■ Dissemination of information on international and national level not efficient ■ Lack of public education and awareness at all levels	42 (e) [Agreed] Promote the wide implementation and further development of the ecosystem approach, as being elaborated in the on-going work of the CBD. [Prepcom IV Draft Implementation Plan, 12 June 2002] 42 (k) [Agreed] Encourage and enable all stakeholders to contribute to the implementation of the objectives of the CBD and recognize in particular the specific role of youth, women and indigenous and local communities in conserving and using biodiversity in a sustainable way. [Prepcom IV Draft Implementation Plan, 12 June 2002] 42 (s) [Agreed] Promote the implementation of the programme of work of the Global Taxonomy Initiative. [Prepcom IV Draft Implementation Plan, 12 June 2002] There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation. [Strategic Plan for the Convention on Biological Diversity (COP-6, VI/26)] To promote the conservation and sustainable use of inland water ecosystems. [Programme of work on the biological diversity of inland water ecosystems (COP-4, IV/4)] To assist the implementation of the Jakarta Mandate on Marine and Coastal Biological Diversity at the national, regional and global levels and identify key operational objectives and priority activities within the five key programme elements: integrated marine and coastal area management, marine and coastal living resources (including coral reefs), marine and coastal protected areas, mariculture and alien species and genotypes. [Programme of work on marine and coastal biodiversity (COP4, IV/5)] To promote the three objectives of the Convention in dry and sub-humid lands. [Programme of work on marine and coastal biodiversity (COP4, IV/5)] To promote the objectives of the Convention in the area of agricultural biodiversity in line with relevant decisions of the Conference of the Parties and to contribute to the implementation of chapter 14 of *Agenda 21* (Sustainable Agriculture and rural development). [Programme of work on agricultural biological diversity (COP5-V/5)] To provide key information required for the implementation of the Convention on Biological Diversity on identification and monitoring, through increasing the fundamental biological data and address the problem of insufficient knowledge of all components of biological diversity and lack of taxonomic capacity. [Programme of work for the Global Taxonomy Initiative (GTI) (COP-6, VI/8)]

Key Challenges and Obstacles (from CBD Strategic Plan, Decision VI/26)	Agreed Measures (from Prepcom IV Draft Implementation Plan and CBD/COP decisions)
	To promote the conservation, the restoration and sustainable use of pollinators diversity in agriculture and related ecosystems. [Plan of action for the international initiative for the conservation and sustainable use of pollinators. (COP-6, VI/5)]
	To help to reach a balance of the three objectives of the Convention through the application of a strategy for the integrated management of land, water and living resources that promotes the conservation and sustainable use in an equitable way. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems. [The Ecosystem Approach (COP-5, V/6)]
	To promote and facilitate technical and scientific cooperation for the implementation of the objectives of the Convention [Clearing-House Mechanism (COP-3, III/4)], and public awareness, education and participation in support of the Cartagena Protocol on Biosafety. [Strategic Plan for the Convention on Biological Diversity (COP-6, VI/26)]
	To determine the needs of Parties to the Protocol and develop procedures for receiving and making information available. [COP Decision V/1 on the Work Plan of the Intergovernmental Committee for the Cartagena Protocol on Biosafety, recalled by COP Decision VI/1]
	To facilitate the exchange of information and the delivery of initiatives on communication, education and public awareness on biological diversity, enhance exchange of knowledge and expertise among professionals and develop Parties' capacity to market and mainstream biodiversity into the work of other sectors. [Global Initiative on Communication, Education and Public Awareness (COP-6, VI/19)]
	To provide a framework of key factors or conditions which governments, resource managers and other interested stakeholders should consider to optimize the sustainability of uses of biological diversity. [Draft principles and practical implementation guidelines for the sustainable use of biological diversity (ongoing)]
Economic Policy and Financial Resources ■ Lack of financial and human resources ■ Fragmentation of GEF financing ■ Lack of economic incentive measures ■ Lack of benefit-sharing	42 (b) [Agreed] Promote the ongoing work under the CBD on the sustainable use on biological diversity, including on sustainable tourism, as a cross-cutting issue relevant to different ecosystems, sectors and thematic areas. [Prepcom IV Draft Implementation Plan, 12 June 2002]
	42 (f) [Agreed] Promote concrete international support and partnership for the conservation and sustainable use of biodiversity, including in ecosystems, World Heritage sites and for the protection of endangered species, in particular through the appropriate channelling of financial resources and technology to developing countries, as well as to countries with economies in transition. [Prepcom IV Draft Implementation Plan, 12 June 2002]
	42 (h) [Agreed] Provide financial and technical support to developing countries, including capacity building, in order to enhance indigenous and community based biodiversity conservation efforts. [Prepcom IV Draft Implementation Plan, 12 June 2002]
	Provide national capacity-building in biosafety, in particular for enabling effective participation in the Biosafety Clearing-House and in the implementation of the Action Plan for Building Capacities for the Effective Implementation of the Cartagena Protocol on Biosafety [COP-6 VI/17. Financial mechanism under the Convention]
	42 (m) [Agreed] Encourage technical and financial support to developing countries, as well as countries with economies in transition, in their efforts to develop and implement, as appropriate, *inter alia*, national sui generis systems and traditional systems according to national priorities and legislation, with a view to conserving and sustainable use of biodiversity. [Prepcom IV Draft Implementation Plan, 12 June 2002]

Key Challenges and Obstacles (from CBD Strategic Plan, Decision VI/26)	Agreed Measures (from Prepcom IV Draft Implementation Plan and CBD/COP decisions)
	42 (n) [Agreed] Promote the wide implementation of and continued work on the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising out of their Utilization of the CBD, as an input to assist Parties when developing and drafting legislative, administrative or policy measures on access and benefit-sharing, and contract and other arrangements under mutually agreed terms for access and benefit-sharing. [Prepcom IV Draft Implementation Plan, 12 June 2002]
	42 (p) [Agreed] Encourage successful conclusion of existing processes under the World Intellectual Property Organization Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, and in the ad hoc open-ended working group on article 8 (j) and related provisions of the CBD. [Prepcom IV Draft Implementation Plan, 12 June 2002]
	To provide a comprehensive set of goals, objectives and activities required for the conservation of forest biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the utilization of forest genetic resources. [Expanded programme of work on forest biological diversity (COP-6, VI/22)]
	To provide Parties and stakeholders with a transparent framework to facilitate access to genetic resources and ensure fair and equitable sharing of benefits arising from their use. [Bonn guidelines on access to genetic resources and fair and equitable sharing of the benefits arising out of their utilization (COP-6, VI/24)]
	To assist Parties to the Convention on Biological Diversity, public authorities and stakeholders at all levels, to apply the provisions of the Convention to the sustainable development and management of tourism activities. [Draft international guidelines for activities related to sustainable tourism development in vulnerable ecosystems—ongoing]
Collaboration and Cooperation ■ Lack of synergies at the national and international levels ■ Lack of horizontal cooperation among stakeholders ■ Lack of effective partnerships ■ Lack of engagement of scientific community	42 (c) [Agreed] Encourage effective synergies between the CBD and other multilateral environmental agreements, *inter alia*, through the development of joint plans and programmes, with due regard to their respective mandates, regarding common responsibilities and concerns [Prepcom IV Draft Implementation Plan, 12 June 2002]
	42 (d) [Agreed] Implement the CBD and its provisions, including active follow-up of its work programmes and decisions through national, regional and global action programmes, in particular the national biodiversity strategies and action plans, and strengthen their integration into relevant cross-sectoral strategies, programmes and policies, including those related to sustainable development and poverty eradication, including initiatives which promote community-based sustainable use of biological diversity. [Prepcom IV Draft Implementation Plan, 12 June 2002]
	42 (g) [Agreed] To effectively conserve and sustainably use biodiversity, promote and support initiatives for hot spot areas and other areas essential for biodiversity and promote the development of national and regional ecological networks and corridors. [Prepcom IV Draft Implementation Plan, 12 June 2002]
	To provide a tool to enhance the ecosystem approach to the conservation and sustainable use of biodiversity, by facilitating harmony between existing initiatives aimed at plant conservation, identifying gaps where new initiatives are required and promoting mobilization of resources. [Global Strategy for Plant Conservation (COP-6, VI/9)]

Key Challenges and Obstacles (from CBD Strategic Plan, Decision VI/26)	Agreed Measures (from Prepcom IV Draft Implementation Plan and CBD/COP decisions)
Legal/Juridical Impediments ■ Lack of appropriate policies and laws	42 (i) [Agreed] Strengthen national, regional and international efforts to control invasive alien species, which are one of the main causes of biodiversity loss, and encourage the development of effective work programme on invasive alien species at all levels. [Prepcom IV Draft Implementation Plan, 12 June 2002] 42 (j) [Agreed] Subject to national legislation, recognize the rights of local and indigenous communities who are holders of traditional knowledge, innovations and practices, and, with the approval and involvement of the holders of such knowledge, innovations and practices, develop and implement benefit-sharing mechanisms on mutually agreed terms for the use of such knowledge, innovations and practices. [Prepcom IV Draft Implementation Plan, 12 June 2002] 42 (r) [Agreed] With a view to enhancing synergy and mutual supportiveness, taking into account the decisions under the relevant agreements, promote the discussions, without prejudging their outcome, with regard to the relationships between the obligations of the CBD and of agreements related to international trade and intellectual property rights, as outlined in the Doha Ministerial Declaration. [Prepcom IV Draft Implementation Plan, 12 June 2002] To facilitate appropriate participation and involvement of indigenous and local communities, taking into account their cultural, environmental and social concerns and interests, and the inclusion of traditional knowledge, innovations and practices as part of impact assessment processes. [Recommendations 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 (COP-6, VI/10)] To contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting form modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity. [Biosafety Protocol] To assist governments to combat invasive alien species as an integral component of conservation and economic development by providing guidance to Parties on how to develop effective strategies to minimize the spread and impact of invasive alien species. [Guiding principles for the prevention, introduction and mitigation of impacts of alien species that threaten ecosystems, habitats or species (COP-6, VI/23)]
Socio-economic Factors ■ Poverty ■ Population pressure ■ Unsustainable consumption and production patterns ■ Lack of capacities for local communities	43 (i) [Agreed] Implement the Convention on Biological Diversity's expanded action-oriented work programme on all types of forest biological diversity in close cooperation with the UNFF, the CPF members and other forest-related processes and conventions with the involvement of all relevant stakeholders. [Prepcom IV Draft Implementation Plan, 12 June 2002]

Natural Phenomena and Environmental Change

- Climate change
- Natural disasters

35 (c) [Agreed] Reduce the risks of flooding and drought in vulnerable countries by, *inter alia*, promoting wetland and watershed protection and restoration, improved land-use planning, improving and applying more widely techniques and methodologies for assessing the potential adverse effects of climate change on wetlands and, as appropriate, assisting countries that are particularly vulnerable to these effects. [Prepcom IV Draft Implementation Plan, 12 June 2002]

35 (e) [Agreed] Encourage the dissemination and use of traditional and indigenous knowledge to mitigate the impact of disasters, and promote community-based disaster management planning by local authorities, including through training activities and raising public awareness. [Prepcom IV Draft Implementation Plan, 12 June 2002]

35 (i) [Agreed] Promote cooperation for the prevention and mitigation of, preparedness for, response to, and recovery from major technological and other disasters with an adverse impact on the environment in order to enhance the capabilities of affected countries to cope with such situations. [Prepcom IV Draft Implementation Plan, 12 June 2002]

Biodiversity and Sustainable Ecosystem Management: Frameworks for Action

The World Summit on Sustainable Development (WSSD) makes a call to action for the international community—governments, the UN System, non-governmental organizations, the private sector, and local communities—to continue to implement the broad objectives of sustainable development. The Summit also provides a unique opportunity for the global community to offer specific initiatives to help translate into action the decisions and recommendations of international agreements over recent years.

During the preparatory process leading up to the WSSD, a number of stakeholders expressed interest in a range of broad areas for action that could be expanded further through appropriate initiatives. Such initiatives are expected to identify partners and to specify clear targets, timetables, co-ordination and implementation mechanisms, methods for monitoring progress, systematic and predictable funding sources and arrangements for technology transfer. This chapter is intended to facilitate this process by providing frameworks for action that include, but are not limited to, the role of partnerships on biodiversity and ecosystem services for sustainable development.

The challenges related to biodiversity loss that are highlighted in the previous chapters are complex but by no means insurmountable. It is, however, urgent to shift focus from the proximate causes of biodiversity loss to the underlying causes described in the preceding chapter. This calls for closer co-operation and integration with the public and private sectors and with civil society at large. A range of types and modes of partnership may offer useful opportunities to address some of these challenges.

Frameworks for Action

Several areas for action are highlighted in this chapter, based on the Millennium Development Goals (MDGs, see inside front cover), the agreed text in the Draft Plan of Implementation from the preparatory committee meeting in Bali, relevant decisions by the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) related to biodiversity and an analysis of key obstacles for the implementation of commitments and the achievement of biodiversity goals. The time frame depends on a number of factors, such as availability of funding, capacity, political commitment and priority given to the activities listed.

The three objectives of the biodiversity convention are interrelated and must be achieved in concert. Poverty alleviation calls for both a long-term perspective where the biodiversity basis for environmental goods and services is maintained to meet the needs of the poor, and a short-term, proactive perspective where sustainable livelihood opportunities for poor people are sought. The ecosystem approach offers a useful means to achieve sustainability. Some areas where actions are needed have been listed in this chapter.

The time frames proposed for the Indicative Targets here are related to the overall target of putting in place measures to halt the loss of biodiversity by 2010, as laid out in The Hague Ministerial Declaration from CBD COP-6. To achieve this target, intermediate time frames are needed to develop and apply new measures, to improve implementation of the CBD and the other biodiversity-related conventions and to make progress on the seventh Millennium Development Goal related to biodiversity. In addition, it is important to develop specific, time-bound quantitative biodiversity-related targets and indicators that contribute to achievement of all eight MDGs.

Action Area 1: Integrate the principles of sustainable development into country policies and programmes, as called for in MDG-7. For biodiversity, this means being integrated, as the living basis for sustainable development, into development programmes and economic sectors' plans, strategies and responsibilities.

Indicative Targets/Milestones

Integrate the objectives of the CBD into global, regional and national sectoral programmes and policies in particular in the programmes and policies of the economic sectors of countries and international financial institutions. (42(a) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

Achieve satisfactory integration into plans and strategies by 2005, and into budgets, laws, policies and practices by 2010.

Examples of Activities

- Involve the various economic sectors in the development and implementation of National Biodiversity Strategy and Action Plans (NBSAPs), and establish mechanisms to this end.
- Integrate biodiversity obligations, through NBSAPs, and concerns into Poverty Reduction Strategy Papers (PRSPs) and sustainable development strategies.

- Integrate biodiversity education into sector education, focusing on developing a better understanding of the links between biodiversity and livelihoods, and also on agriculture, livestock, forestry production and fisheries. Establish training courses for economic sector decision-makers and practitioners.
- Develop horizontal co-operative mechanisms between sectors.
- Develop positive and negative economic incentives and tools to include biodiversity into the economy and socio-economic affairs on a broad scale.
- Integrate biodiversity concerns into budgets and laws in addition to plans and strategies.
- Have international financial institutions develop procedures that ensure biodiversity concerns being properly considered in their financial practices.
- Integrate biodiversity concerns into environmental impact assessment procedures.

Indicative Targets/Milestones

Promote the effective participation of indigenous and local communities in decision and policy making concerning the use of their traditional knowledge. (42(l)(Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002; see also para 42(j))

Active and full participation by 2010.

Examples of Activities

- Actively involve indigenous and local communities in NBSAP development and implementation.
- Promote effective implementation of the work programme on article 8(j) contained in CBD Decision V/16 and actively follow up the elements of Dec. VI/10 on article 8(j) under CBD/COP.

Indicative Targets/Milestones

With a view to enhancing synergy and mutual supportiveness, taking into account the decisions under the relevant agreement, promote the discussions, without prejudging their outcome, with regard to the relationships between the obligations of the CBD and of agreements related to international trade and intellectual property rights, as outlined in the Doha Ministerial Declaration. (42(r)(Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

Co-operative relationship established by 2005. Supportiveness and synergy achieved by 2010.

Examples of Activities

- Have CBD and the World Trade Organization (WTO) establish a co-operative process within a year after WSSD to achieve the targets.
- Have CBD and WTO members work with industry to enhance commitment and capacity to address CBD obligations.

Indicative Targets/Milestones

Encourage effective synergies between CBD and other multilateral environmental agreements, *inter alia*, through the development of joint plans and programmes, with due regard to their respective mandates, regarding common responsibilities and concerns. (42(c) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

Achieve effective synergies by 2008.

Co-operative relationship established by 2005. Supportiveness and synergy achieved by 2010.

Examples of Activities

- Establish a process whereby synergies and co-ordinative and co-operative action between biodiversity-related treaties are enhanced.
- Establish co-operation with a view to rationalize work and avoid possible conflicts in implementation between biodiversity-related treaties and other environmental treaties.
- Co-ordinate biodiversity-related treaties in co-operative efforts with relevant WTO bodies and treaties.
- Find ways to rationalize 'national reporting' of MEAs.

Indicative Targets/Milestones

Promote the wide implementation and further development of the ecosystem approach, as being elaborated in the ongoing work of the CBD. (42(e) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

Review, evaluation and revision of the approach on the basis of new knowledge and lessons learned, by 2010.

Examples of Activities

- Integrate the ecosystem approach into NBSAPs, into the national implementation of thematic work programmes, and into PRSPs and strategies for sustainable development.
- Select case study areas where the ecosystem approach is being applied or could be, and compare the results to find successful cases.

- Identify preconditions for successful implementation of the various principles.
- Establish ecological networks and corridors with the implementation of the ecosystem approach and principles.
- Pursue agricultural development and research within the ecosystem approach.

Indicative Targets/Milestones

Promote the wide implementation of and continued work on the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising out of their Utilization of the CBD, as an input to assist Parties when developing and drafting legislative, administrative or policy measures on access and benefit-sharing. (42(n) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

Achieve broad application of the guidelines by 2006.

Examples of Activities

- Seek active implementation of the Bonn Guidelines, with selection of test cases and identification of case studies for evaluation.
- Identify further innovative ways of benefit-sharing among providers, producers and users of genetic resources.
- Promote practical measures for access to the results of and the benefits arising from biotechnologies based on genetic resources, including through enhanced scientific and technical co-operation and co-operative capacity building.

Indicative Target/Milestones

Encourage technical and financial support to developing countries and countries with economies in transition in their efforts to develop and implement, as appropriate, *inter alia*, national sui generis systems and traditional systems according to national priorities and legislation, with a view to conserving and sustainable use of biodiversity. (42(m) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

See also para 42(h) and decision VI of CBD COP-6.

Implementation support and capacity-building strategy developed by 2003.

Significantly improved financing of biodiversity programmes and actions by 2005.

A proactive system for capacity building and implementation support functioning by 2010.

Examples of Activities

- Develop an implementation support and capacity building strategy for biodiversity-related treaties (reference to Dec SS.VII/I on International Environmental Governance decision by UNEP Governing Council), including a regional network of resource centres and proactive transfer mechanisms for knowledge and technology on the basis of needs identified in NBSAPs.
- Explore with interested partners "opportunities of developing a global initiative on banking, business and biodiversity" (part of decision VI of CBD COP-6), *inter alia*, to explore and promote innovative and sustainable funding for biodiversity conservation and sustainable use.

Indicative Targets/Milestones

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 11 of CBD)

Significant improvement of development and adoption of sound measures by 2005.

Significant integration of biodiversity and ecosystem services into the overall economy by 2010.

Examples of Activities

- Develop new economic tools and measures for integrating biodiversity and ecosystem services into the economy.
- Develop partnerships for creating new market opportunities for biodiversity-based products and services, especially focusing on those that benefit the poor.
- Establish new ways of capturing the values of biodiversity and its conservation and sustainable use at the community level, as well as at the national level.
- Promote integration of biodiversity costs and benefits into development projects.
- Develop valuation methodology and complete valuation studies for biodiversity and ecosystem services that include both economic and other values. The results should be used to adjust national accounting systems and economic incentives accordingly.
- Develop new incentives for integrating biodiversity concerns into agricultural practices.

Action Area 2: Reverse the loss of environmental resources, as called for in MDG-7. For biodiversity, this means halting the loss of biodiversity and restoring, if at all possible, biodiversity in degraded areas, as endorsed by the CBD COP-6.

Indicative Targets/Milestones

Agreed text from Ministerial Declaration of the Hague: We acknowledge that life is on the line and therefore resolve to strengthen our efforts to put in place measures to halt biodiversity loss, which is taking place at an alarming rate, at the global, regional, sub-regional and national levels, by the year 2010. (The text, target and activities here must take into consideration the WSSD decision in the chapeau of para 42 (the biodiversity section) in the final Plan of Implementation.)

Examples of Activities

- Develop methodologies for establishing baselines and indicators for biodiversity status and threats, for monitoring the trends in biodiversity in a selected number of habitats and ecosystems and for selected biodiversity taxa under various conservation and sustainable use regimes by 2005, and start applying these to measure and monitor the achievement of the overall target of halting the loss of biodiversity.
- Launch a global-level initiative to develop time-bound, quantitative biodiversity-related goals by 2004 needed to achieve the 2010 Hague Declaration objective, drawing on Millennium Ecosystem Assessment data and other sources.
- Establish a global consolidated initiative by 2003 to halt the loss of biodiversity within the various biomes, building, *inter alia*, on the adopted work programmes for the thematic areas under the CBD.
- Develop further the protected area system and protected area management, including for areas where local communities can sustainably use biodiversity, and establish time lines and targets for this type of measure to reach the 2010 target.

Indicative Targets/Milestones

Promote the ongoing work under the CBD on the sustainable use of biological diversity, including on sustainable tourism, as a cross-cutting issue relevant to different ecosystems, sectors and thematic areas. (42(b) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

Achieve criteria and guidelines for sustainable use by 2005 and sustainability in practice by 2015.

Examples of Activities

- Establish mechanisms to involve local communities and all relevant stakeholders in efforts to achieve sustainable use.
- Support further research that will identify how to practice sustainable use of critical economic species (such as fish) and what technologies are best.
- Establish criteria for sustainable use of biodiversity in various ecosystems, sectors and thematic areas.
- Establish monitoring systems for early warning of unsustainable use practices and be able to find the right incentives to make them sustainable.
- Establish sustainable use areas together with corridors and protected areas as part of ecological networks for biodiversity, and enhance capacity of agriculture and livestock production to contribute to these corridors.

Indicative Targets/Milestones

Strengthen national, regional and international efforts to control invasive alien species, which are one of the main causes of biodiversity loss, and encourage the development of effective work programme on invasive alien species at all levels. (42(i) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002)

Effective implementation of CBD COP decisions on introduced alien species (IAS) by 2005. Significant reduction in spread of IAS by 2010.

Examples of Activities

- Integrate IAS concerns and CBD COP decisions into NBSAPs and national strategies for sustainable development.
- Establish co-operative partnerships between the key vectors trade, transport, travel and tourism to reduce the spread of IAS.
- Establish a programme for assistance and capacity-building on IAS in developing countries.
- Establish a research programme on best available technologies for preventing the spread of IAS.
- Establish rules and regulations to implement CBD COP decisions on IAS.
- Establish regional and cross-border partnerships for fighting IAS.

Indicative Targets/Milestones

Invite all states, which have not already done so, to ratify the CBD, the Cartagena Protocol on Biosafety and other biodiversity-related agreements, and for those that have done so, promote their effective implementation at the national, regional and international levels and support developing countries, as well as countries with economies in transition, technically and financially in this regard. (42(t) (Agreed) Prepcom IV Draft Implementation Plan, 12 June 2002)

The Cartagena Protocol (CP) to enter into force by 2003, and satisfactory implementation of CBD and CP by 2010.

Examples of Activities

- Develop and implement further capacity-building programmes on biosafety, enabling countries to ratify and implement the Cartagena Protocol on Biosafety.
- Establish an international research programme to improve general knowledge on the possible risks and benefits related to genetically modified organisms and their handling and transfer.
- Develop improved risk assessment methods and procedures for genetically modified organisms.

Indicative Targets/Milestones

Greatly improved knowledge basis for biodiversity-relevant decisions by 2010. (Note: This is a multidimensional challenge that is not covered fully by any single decision or agreed commitment by Prepcom IV, CBD COP or any of the other biodiversity-related treaties, but it is underlying a number of decisions made in these fora. The most relevant decisions of the CBD in this regard are Decisions IV/4a, IV/7.12; V/2, IV/4; IV/5; Annex to Decision IV/7; VI/7: Identification, Monitoring, Indicators and Assessment.)

Examples of Activities

- Develop further an effective assessment mechanism for biodiversity status and trends, its links to human well-being, and the efficiency of measures taken to improve on the biodiversity situation, building on the experience from ongoing assessments like the Millennium Ecosystem Assessment.
- Find means to link existing biodiversity assessments and priority areas and to fine-tune information to maximize value of global assessments for use in more localized decision-making.
- Promote improved research co-operation globally and regionally through existing mechanisms and networks, including improved usage of the Clearing House Mechanism of the CBD, and co-operation between the scientific bodies of the biodiversity-related conventions.
- Promote the establishment of biodiversity research programmes at the national level, including projects with special emphasis on agriculture and sustainable ecosystem management at the local level.
- Establish programmes to use existing knowledge better, *inter alia*, through improved co-operation with the scientific community, and also promote the inclusion of traditional knowledge in this regard.

Indicative Targets/Milestones

The COP decided to adapt the programme of work for a Global Initiative on Communication, Education and Public Awareness (CEPA) contained in decision IV 19 of CBD COP-6.

Full implementation of the Global Initiative on CEPA by 2006.

Examples of Activities

- Develop practical information and awareness-raising tools and activities to improve the biodiversity situation and the impacts it has on possibilities for achieving sustainable development and poverty reduction—and how development and poverty influence biodiversity, based on decision VI 19 of CBD COP-6.

Indicative Targets/Milestones

To effectively conserve and sustainably use biodiversity, promote and support initiatives for hot spot areas and other areas essential for biodiversity and promote the development of national and regional ecological networks and corridors. (42(g) (Agreed) PrepCom IV Draft Plan of Implementation, 12 June 2002; see also para 42(f))

Satisfactory ecological networks for conservation and sustainable use of biodiversity established in a significant number of countries by 2010.

Examples of Activities

- Establish criteria for selection of various types of network elements, including protected areas, corridors and sustainable use areas, and create a comparative effort and study on the efficiency of various types of networks in three regions.
- Establish a research and development programme on: which types of ecological networks are most effective; the size of protected areas in relation to number of areas; how to establish protected areas that maximize benefits to local people; and so on.
- Have each country develop a national blueprint of critical areas that together constitute an ecologically representative portfolio requiring appropriate management.

Building and Implementing Partnerships

The international community has a vital role to play in helping developing countries achieve objectives in biodiversity and sustainable ecosystem management. Clearly, various co-operative actions are needed on the part of governments, businesses, civil society, international organizations and other relevant stakeholders to address the challenges. Forging partnerships among all stakeholders therefore constitutes a key component of this action agenda. This section provides a brief summary of some of the critical elements required for building and implementing partnerships in biodiversity and sustainable ecosystem management.[1]

The CSD, based on the preparatory process leading up to the WSSD, has envisaged that forming and promoting new and innovative partnerships will be critical to meet the challenges articulated in this paper. These partnership initiatives are foreseen to be basically of a voluntary nature—agreed on through mutual consultations among the stakeholders. The main focus of these initiatives will be to supplement and complement the WSSD-negotiated outcome and the ongoing work by governments and other stakeholders in the implementation of *Agenda 21*. As such, the partnership initiatives will give rise to a series of commitments and action-oriented coalitions focused on deliverables and would contribute to translating the political commitments into action. In response to a wish for additional guidance on the elaboration of partnerships expressed during the informal meetings on partnerships in PrepCom 3, an addendum to the Chairman's explanatory note, entitled "Further Guidance for Partnerships/Initiatives", has also been provided.[2]

The critical issue is how to translate the idea of partnership building from global or regional-level discussions and advocacy campaigns into local actions. New and innovative partnerships will have to be formed that may involve a wide range of stakeholders and may have many different kinds of ways for partners to participate.

A framework is proposed here to facilitate this process without which individual partnership initiatives devised by a wide range of actors may result in duplication of efforts and restrictions on resource inputs by stakeholders:

Consultative process. All partnerships begin with a dialogue. This can be initiated by a lead partner or partners, by a global consensus or by some other catalyst. The role of a champion or lead partner in moving the partnership forward in the early stages is critical. A broad consultative process for partnerships may also be necessary to assist in sharing experiences and learning at all levels (local, national, regional and global), as individual initiatives will not be isolated but can be informed by and grow from broader processes and initiatives.

Definition of objectives. The next step is scoping and definition of objectives, targets, activities and implementation and co-ordination arrangements associated with the partnership. This requires consultation among different actors in order to harmonize the views and needs of all stakeholders—donors, participating institutions, technical groups and recipients. Underlying principles around which partnership objectives could be defined are: ensuring mutuality of interests, promoting a shared sense of purpose, and engendering respect for all stakeholders.

Mobilization of resources. This stage in the process is crucial to the overall success of the partnership, as it results in the provision of actual (financial, institutional and human) resource inputs. This stage often needs to be initiated in conjunction with the task definition work done by stakeholders.[3]

Implementation of partnerships. All partnerships are dynamic processes or works in progress, and the stage at which the partnership is actually launched or implemented provides all stakeholders with an opportunity to see partnership activities and organizations in operation. Partners can also use this as an opportunity to examine whether additional skills and resources are needed to strengthen the partnership.

Tracking progress and results. At this stage, the partnership initiative is already under way and all stakeholders can now review and evaluate existing operations and experiences. The tracking of short-, medium- and long-term results is crucial in the evolution and growth of a partnership and should allow for modifications and further refining of tasks and activities based on results/targets achieved.

Scaling-up of partnership initiatives. Once a partnership initiative has been established, appropriate steps are needed to scale up and link with other activities in contiguous areas. Going to scale requires the adoption of partnership strategies and linkage mechanisms that can meet challenges involved in achieving agreed objectives.

All initiators of partnerships were invited to complete and submit an Information Sheet related to a specific initiative to the WSSD Secretariat.[4] The Secretariat has posted on its Web site all partnership proposals received. Detailed information on these may be obtained from the official Web site of the Summit. A number of proposals for partnerships have been developed, and many more are still in the process of being developed.

Endnotes

Time constraints precluded producing a fully referenced document; full references will be available at the WEHAB Working Group location on the WSSD Web site, at www.johannesburgsummit.org.

[1] A listing of some selected partnerships is available in Annex K of the World Bank document (2001) "Making Sustainable Commitments: An Environment Strategy for the World Bank," at http://gefweb.org/Documents/Council_Documents/GEF_C17/C.17.Inf15.Annexes.pdf.

[2] The document entitled "Further Guidance" is a two-page addendum available at http://www.johannesburgsummit.org/html/documents/prepcom3docs/summary_partnerships_annex_05040.doc.

[3] Different financing mechanisms, such as those related to regional development banks, the World Bank and the Global Environmental Facility, are potential sources of finance. In addition, an active role for commercial banks and investment companies is envisaged.

[4] The Information Sheet is available at http://www.johannesburgsummit.org/html/sustainable_dev/partnerships2_form.doc.

Major Agreements on Biodiversity and Sustainable Ecosystem Management and Their Objectives

Over the last 30 years, a comprehensive and multifaceted framework of international environmental law in the form of a series of multilateral environmental agreements (MEAs) related to biodiversity has been developed. The principal comprehensive treaty on biodiversity is the Convention on Biological Diversity (CBD), with 183 Parties. This was one of the 'Rio Conventions' and was particularly important, as it enshrined the concept of sustainable development in a legal framework for the first time. Other global treaties are also key instruments for dealing with specific dimensions of biodiversity. The most closely linked to the CBD are the Ramsar Convention on Wetlands, the Bonn Convention on Migratory Species and its related regional agreements, the World Heritage Convention, the Convention to Combat Desertification, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. In addition, there are a number of important treaties for regions and specific groups of species or ecosystems.

This framework represents a significant achievement by the global community. There is considerable ongoing work at the international level to develop synergies among the various MEAs and to harmonize reporting frameworks, as well as to develop legal agreements further. However, the major challenge remains the implementation of these agreements at the national level.

In addition to the development and implementation of legally binding instruments, many decisions that are important for biodiversity are made by governments participating in the governing bodies of UN System organizations—decisions, for example, on guidelines, guiding principles, action plans and work programmes that may not be linked to any specific treaty. A crucial aspect of the role of the UN System in safeguarding biodiversity is the fact that the governing bodies of various UN organizations continue to play a proactive role in policy development in the field of biodiversity. In this regard, many of the existing MEAs were established as a result of the work of these organizations.

It is important to mention here the crucial role that conservation and development non-governmental organizations (NGOs) and other members of civil society have played in biodiversity. Without their advocacy, support and on-the-ground activities, it is likely that many of these treaties would never have been established. And to maximize the effective implementation of these treaties, and of agreements reached at the World Summit on Sustainable Development, the UN System must develop even further its co-operation and concrete partnerships with civil society organizations and with governments.

The implementation of biodiversity treaties and agreements, as well as other agreements that have an impact on biodiversity, must be better co-ordinated at the national level in order to achieve their objectives. Through the ratification of these treaties and through a number of follow-up decisions on their work programmes, the Parties to the conventions have committed themselves to a wide range of actions to change the negative trends on biodiversity and ecosystem functioning and services.

The remainder of this chapter presents a set of treaties and agreements related to biodiversity and ecosystems. It should be noted that some of the earlier conventions listed have since been overtaken by newer conventions that cover a broader range of issues.

In spite of the importance of the range of existing biodiversity-related treaties and agreements, the underlying causes of biodiversity loss are often under the influence of other, 'non-biodiversity-related' agreements (such as those on trade, financing or transport). It is therefore essential that biodiversity and sustainable development concerns are integrated into economic sectors, development plans, policies, laws and budgets at local, national and international levels alike.

In addition, issues addressed by the CBD, such as the transborder spread of invasive alien species and intellectual property rights systems, are covered under other agreements, such as the one on Sanitary and Phyto-Sanitary measures and the agreements on Trade-Related Aspects of Intellectual Property Rights and on intellectual property rights under the World Intellectual Property Organization Convention. Co-operation and agreement between the CBD and these other organizations and conventions is critical. Although these other important agreements are not listed here, the framework for action proposed in this publication emphasizes the integration of biodiversity concerns into these other sectors and agreements. The UN System with its range of agencies and diversity of mandates should be well positioned to help facilitate this 'mainstreaming' of issues.

Conference/Agreement: **Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere**

Date: October 1940

Date of entry into force/membership: 1 May 1942/19 Parties (as of 1 August 2002)

Main Focus: Protection and preservation of flora and fauna and natural areas of aesthetic value. Identify and protect national parks, national reserves, national monuments and strict wilderness.

http://sedac.ciesin.org/pidb/texts/wildlife.western.hemisphere.1940.html

Conference/Agreement: **International Convention for the Regulation of Whaling**

Date: December 1946

Date of entry into force/membership: 10 November 1948/48 Parties (as of 1 August 2002)

Main Focus: To establish regulations for purposes of conservation and utilization of whale resources.

http://sedac.ciesin.org/entri/register/reg-004.rrr.html

Conference/Agreement: **International Convention for the Protection of Birds**

Date: October 1950

Date of entry into force/membership: 17 January 1963/9 Parties (as of 1 August 2002)

Main Focus: To protect birds in the wild state.

http://sedac.ciesin.org/pidb/texts/protection.of.birds.1950.html

Conference/Agreement: **International Plant Protection Convention**

Date: December 1951 (amended 1979, 1997)

Date of entry into force/membership: 3 April 1952/117 Parties (last amendment not yet in force).

Main Focus: Promotes co-operation in the reduction of plant and plant product loss through pests and disease. Introduces controls on imports and exports of produce and provides for the introduction of plant organizations within each state responsible for inspection.

http://sedac.ciesin.org/pidb/texts/intl.plant.protection.1951.html

Conference/Agreement: **International Convention for the Protection of New Varieties of Plants**

Date: December 1961

Date of entry into force/membership: 10 August 1968/50 Parties (as of August 2002)

Main Focus: Define and control the property rights of the creator of a new plant variety. Institute the International Union for the Protection of New Varieties of Plants, in Geneva.

http://www.upov.int/eng/index.htm

Conference/Agreement: **Convention on Wetlands of International Importance, Especially as Waterfowl Habitat**

Date: February 1971

Date of entry into force/membership: December 1975/133 Parties (as of 1 August 2002)

Main Focus: A framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. Identify, designate and protect at least one wetland of international importance in each contracting party. Wise use of wetlands. Consultation around shared wetlands and water systems.

http://www.ramsar.org

Conference/Agreement: **Convention Concerning the Protection of the World Cultural and Natural Heritage**

Date: November 1972

Date of entry into force/membership: 17 December 1975/170 Parties (as of 1 August 2002)

Main Focus: Protect resources, both human-made and natural, that hold "outstanding universal value". Duty to identify, protect and preserve sites of cultural and natural heritage. Present and transmit that heritage for future generation.

http://sedac.ciesin.org/pidb/texts/world.heritage.1972.html

Conference/Agreement: **Convention on International Trade in Endangered Species of Wild Fauna and Flora**

Date: March 1973

Date of entry into force/membership: 1 July 1975/158 Parties (as of 1 August 2002)

Main Focus: Protect endangered species from over-exploitation through a licensing system in international trade.

http://sedac.ciesin.org/pidb/texts/cites.trade.endangered.species.1973.html

Conference/Agreement: **Agreement on the Conservation of Polar Bears**

Date: November 1973

Date of entry into force/membership: 26 May 1976/5 Parties

Main Focus: Protect the ecosystems of which polar bears are a part. Manage polar bear populations in accordance with sound conservation practices based on the best available scientific data.

http://sedac.ciesin.org/pidb/texts/polar.bears.1973.html

Conference/Agreement: **Regional Seas Conventions**

Date: From 1976 to 1992

Date of entry into force/membership: 14 Conventions in force

Main Focus: 14 Conventions and 3 Action Plans have been developed to promote regional co-operation for the protection and development of the marine environment and its biodiversity.

http://www.unep.org/DEC

Conference/Agreement: **Bonn Convention on the Conservation of Migratory Species of Wild Animals**

Main Focus: Conserve terrestrial, marine and avian migratory species throughout their range.

Date: June 1979

http://www.wcmc.org.uk/cms/

Date of entry into force/membership: 1 November 1983 / 80 Parties (as of 1 August 2002)

Conference/Agreement: **World Charter for Nature**

Date: October 1982

Date of entry into force/membership: General Assembly Resolution 37/7; non-binding

Main Focus: Sets out principles to prevent the earth's genetic resources from being compromised. Through management and maintenance of ecosystems, sustainable productivity and the proper functioning of ecosystems are achieved.

http://www.netspace.net.au/~jnevill/World_charter_for_nature_1982.htm

Conference/Agreement: **United Nations Framework Convention on Climate Change**

Date: May 1992

Date of entry into force/membership: 21 March 1994/186 Parties (as of 1 August 2002)

Main Focus: Achieve a stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

http://www.unfccc.org

Conference/Agreement: **Convention on Biological Diversity**

Date: May 1992

Date of entry into force/membership: 29 December 1993/183 Parties (as of 1 August 2002)

Main Focus: Calls for the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of 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 technologies, and by appropriate funding.

http://www.biodiv.org/

Conference/Agreement: **International Tropical Timber Agreement**

Date: January 1983 (renegotiated 1994)

Date of entry into force/membership: 1 January 1997 (renegotiated)/57 members (as of 1 August 2002)

Main Focus: Promote through the International Tropical Timber Organization research and development to improve forest management to contribute to the process of sustainable development.

http://sedac.ciesin.org/pidb/texts/tropical.timber.1983.html

Conference/Agreement: **United Nations Convention to Combat Desertification**

Date: June 1994

Date of entry into force/membership: 26 December 1996/179 Parties (as of 1 August 2002)

Main Focus: Combat desertification and mitigate the effects of drought in countries experiencing serious drought or desertification.

http://www.unccd.int/main.php

Conference/Agreement: **Kyoto Protocol**

Date: December 1997

Date of entry into force/membership: Not yet in force / 77 ratifications and accessions (as of 1 August 2002)

Main Focus: The Protocol contains greenhouse gas reduction targets for most industrial countries, ranging from 8 to 10 per cent. Collectively, industrial countries are required to reduce aggregated emissions to at least 5 per cent below the 1990 level in the period 2008–12. The Protocol allows collective implementation of obligations by means of the Kyoto mechanisms, including the Clean Development Mechanism.

http://www.unfccc.org

Conference/Agreement: **Cartagena Protocol on Biosafety**

Date: January 2000

Date of entry into force/membership: Not yet in force / 22 ratifications and accessions (as of 1 August 2002)

Main Focus: In accordance with the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development, contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on trans-boundary movements.

http://www.biodiv.org/biosafety/

Conference/Agreement: **United Nations Forum on Forests**

Date: October 2000

Date of entry into force/membership: Economic and Social Council Resolution E/2000/35; non-binding

Main Focus: Promote the management, conservation and sustainable development of all type of forests.

http://www.un.org/esa/sustdev/unff_2001.htm

Conference/Agreement: **International Treaty on Plant Genetic Resources for Food and Agriculture**

Date: November 2001

Date of entry into force/membership: 8 ratifications

Main Focus: Aims to ensure better use of plant genetic diversity to meet the challenge of eradicating world hunger. The treaty takes into consideration the particular needs of farmers and plant breeders, and aims to guarantee the future availability of the diversity of plant genetic resources for food and agriculture on which they depend, as well as the fair and equitable sharing of the benefits.

http://www.fao.org/ag/cgrfa/News.htm

UN System Capacities in Biodiversity and Sustainable Ecosystem Management

A number of UN System organizations work on challenges associated with conserving and using biodiversity sustainably and sharing benefits from such use. The UN System is in a unique position to help co-ordinate efforts to address these challenges due to the multidimensional nature of this work and the importance of integrating biodiversity and ecosystem services issues into global efforts to achieve sustainable development. With their range of mandates and expertise, the various UN agencies provide a significant resource base to help countries fulfil any commitments agreed to at the World Summit on Sustainable Development (WSSD) in Johannesburg.

Addressing the underlying causes of biodiversity loss requires the integration of remediation activities from the local to the international level. Here the UN has a major role to play, both within the UN System itself as well as by providing a co-ordinating and facilitating platform for partnerships among governments, non-governmental organizations (NGOs), the business community and civil society at large. New mechanisms and tools to address the serious challenges facing biodiversity at the global level are likely to emerge after Johannesburg, and the convening and facilitation role of the UN System could be further developed based on the WEHAB-initiative and the WSSD decisions.

The central role of biodiversity for the achievement of sustainable development is becoming better understood, but challenges remain in mobilizing sufficient financial and political support to counteract the biodiversity crisis. The WEHAB initiative has strong potential to help deepen inter-agency collaboration within the UN System towards identifying and filling key gaps related to conserving and using biodiversity sustainably. The Ecosystem Conservation Group also provides a mechanism that facilitates collaboration among UN agencies and several major NGOs in their work on biodiversity.

This chapter outlines work being carried in the field of biodiversity and ecosystem management by several UN entities, including main focus areas and key initiatives. Its purpose is to give World Summit participants an overview of the work of the UN family as a whole as well as an indication of the breadth and depth of the organizations' programmes in this area. It also provides a basis for proposing new initiatives and improved co-ordinated action. It is not a comprehensive or authoritative listing of all UN System activities in the biodiversity area since the information was gathered primarily from the Web sites of the organizations featured. Any omissions or errors were inadvertent and are sincerely regretted.
It is important to note that although this chapter is focused on UN efforts in biodiversity, NGOs and other members of civil society throughout the world have played an absolutely vital, substantial and leadership role in this area for decades. Their contributions will continue to be essential for global progress in the coming years.

Convention on Biological Diversity (CBD) Secretariat

http://www.biodiv.org/programmes

The CBD is the main international instrument for policy-making and implementation related to the conservation and sustainable use of biological diversity, as well as access to genetic resources and sharing of the benefits of their use. Its provisions apply to all types of biomes and ecosystems—inland waters, marine and coastal zones, agricultural areas, forests, drylands and mountains—as well as a number of cross-sectoral issues, such as alien species, traditional knowledge, economic and social incentives, technical and scientific co-operation, technology transfer, education and awareness-raising, taxonomy, ecosystem approach and indicators. The CBD also addresses the safe transfer of genetically modified organisms through a distinct agreement, the Cartagena Biosafety Protocol, negotiated under the aegis of the convention. A Clearing-House Mechanism has been established within the Secretariat to promote and facilitate technical and scientific co-operation for the implementation of the objectives of the convention. The work of the convention is pursued through a network of bodies under the authority of the conference of the parties. The secretariat, hosted by the United Nations Environment Programme, supports these bodies, assists parties in the implementation of decisions and co-ordinates the efforts of UN organizations and NGOs in support of the convention.

The main framework for action under the CBD is the ecosystem approach, which is intended to help reach a balance of the three objectives of the Convention through the application of a strategy for the integrated management of land, water and living resources that promotes their conservation and sustainable use in an equitable way. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems. Principles and operational guidance for the ecosystem approach have been approved by the Conference of the Parties.

Under the Convention, Parties have adopted programmes of work on five thematic areas: marine and coastal biodiversity; the biodiversity of inland waters; agricultural biodiversity; forest biodiversity; and the biodiversity of dry and sub-

humid lands. Follow-up on protected areas and the programme of work for mountain ecosystems are to be agreed at the next meeting of the Conference of the Parties, in 2004.

Several initiatives are under way relating to cross-cutting issues, including:

- the programme of work for the Global Taxonomy Initiative;
- the programme of work on Article 8 (j) and related provisions of the Convention on Biological Diversity;
- the Global Strategy for Plant Conservation;
- guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation or processes and in strategic environmental assessment;
- the Bonn guidelines on access to genetic resources and fair and equitable sharing of the benefits arising out of their utilization;
- the guiding principles for the prevention, introduction and mitigation of impacts of alien species that threaten ecosystems, habitats or species;
- the Global Initiative on Communication, Education and Public Awareness;
- proposals for the design and implementation of incentive measures;
- the design of national-level monitoring programmes and indicators;
- the development of principles and practical implementation guidelines for the sustainable use of biological diversity; and
- the development of international guidelines for activities related to sustainable tourism development in vulnerable ecosystems.

Under the Cartagena Protocol on Biosafety, action has been taken to prepare for implementation of the Protocol, including:

- an Action Plan for building capacities for the effective implementation of the Protocol;
- launch of the pilot phase of the Biosafety Clearing House, designed to promote the exchange of information on living modified organisms;
- identification of basic elements for appropriate procedures and mechanisms to facilitate decision-making by Parties of import;
- development of procedures and mechanisms on compliance under the Protocol as well as monitoring and reporting;
- a process to elaborate international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms; and
- development of modalities with regard to handling, transport, packaging and identification of living modified organisms.

Cooperation on themes of common interest is developing between CBD and other environmental conventions, notably through joint work plans with the Bonn Convention on Migratory Species, which acts as the lead partner on migratory species; the Convention on International Trade in Endangered Species of Wild Fauna and Flora, which deals with regulation of trade in endangered species, and the Ramsar Convention on Wetlands, which acts as a lead partner on wetlands. (The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. There are presently 133 Contracting Parties to the Convention, with 1,180 wetland sites, totalling 103.2 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance; see http://www.ramsar.org.)

Consultative Group on International Agricultural Research (CGIAR)

http://www.cgiar.org

Created in 1971, the CGIAR is a 58-member strategic alliance (including 22 developing and 21 industrial countries) supporting a network of 16 Future Harvest Centers that mobilize cutting-edge science to promote sustainable development by reducing hunger and poverty, improving human nutrition and health and protecting the environment.

The CGIAR has long recognized that biodiversity is essential for food, income and environmental security. CGIAR scientists have played major roles in collecting, characterizing and conserving plant genetic resources. Currently, gene banks at 11 of the 16 Future Harvest Centers hold in public trust under FAO oversight more than 530,000 samples of crop, forage and agroforestry genetic resources. The collection includes farmers' varieties and improved varieties and, in substantial measure, the wild species from which those varieties were created. In fulfilling its stewardship obligations, CGIAR invests US$6 million every year to maintain these valuable resources for the benefit of humanity. CGIAR efforts are supportive of the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture, which recognizes CGIAR collections as a central pillar of global conservation efforts.

Extensive research is under way in CGIAR centres such as ICRAF, CIFOR, CIAT and IITA on the interactions of wild biodiversity with domesticated crops and livestock, and major programmes focus on soil biodiversity and its relationship to agricultural productivity. Many important research activities are exploring how agricultural systems can be improved in ways that also protect wild biodiversity by reducing pollutants, providing more compatible management systems and making agricultural systems that mimic the functions of natural ecosystems.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

http://www.cites.org

CITES is an international agreement between governments that entered into force on 1 July 1975. It is among the oldest conservation agreements in existence, with 158 Parties to date. CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The trade regulated by CITES is diverse, ranging from live animals and plants to a vast array of wildlife products derived from them, including food products, exotic leather goods, wooden musical instruments, timber, tourist curios and medicines. Annually, international wildlife trade is estimated to be worth billions of dollars and to include hundreds of millions of plant and animal specimens.

The CITES Appendices I, II and III contain lists of species afforded different levels or types of protection through trade regulations. CITES accords varying degrees of protection to more than 30,000 species of animals and plants, whether they are traded as live specimens, fur coats or dried herbs. Not one species protected by CITES has become extinct as a result of trade since the Convention entered into force.

Convention on the Conservation of Migratory Species of Wild Animals (CMS)

http://www. wcmc.org.uk/cms

The CMS, also known as the Bonn Convention, aims to conserve terrestrial, marine and avian migratory species throughout their range. It does this by providing strict protection for the endangered migratory species listed in Appendix I of the Convention, by concluding multilateral agreements for the conservation and management of migratory species listed in Appendix II and by undertaking co-operative research activities. CMS presently has 85 endangered species listed in Appendix I, including, among others, the Siberian crane, White-tailed eagle, Hawksbill turtle, Mediterranean monk seal and Dama gazelle.

Appendix II lists migratory species that require or would benefit significantly from international co-operative agreements under the CMS. These range from legally binding treaties to less formal memoranda of understanding. The more formal agreements provide for co-ordinated species conservation and management plans; conservation and restoration of habitat; control of factors impeding migration; co-operative research and monitoring; and public education and exchange of information among Parties. Several agreements have been concluded to date under the auspices of CMS. They aim to conserve:

- bats in Europe;
- cetaceans of the Mediterranean and Black Seas;
- small cetaceans of the Baltic and North Seas;
- seals in the Wadden Sea;
- African-Eurasian migratory waterbirds;
- the Siberian Crane;
- the Slender-billed Curlew; and
- marine turtles.

Food and Agriculture Organization (FAO)

http://www.fao.org/biodiversity/

FAO was founded in 1945 with a mandate to raise levels of nutrition and standards of living, to improve agricultural productivity and to better the condition of rural populations. Today, FAO is one of the largest specialized agencies in the United Nations System and the lead agency for agriculture, forestry, fisheries and rural development. It provides advice to governments, development assistance, information and a neutral forum where all nations can meet to discuss and formulate policy on major food and agriculture issues.

It addresses biological diversity in food and agriculture through activities in:

- ecosystems management, focusing not only on biological organization (interactions between organisms and their environment) but also on the human interactions that shape and influence them, with a view to promoting responsible and sustainable practices;
- genetic resources, protecting the biological basis of world food security that supports the livelihoods of every person on earth; and
- the socio-economic dimensions of managing biodiversity, promoting intersectoral co-operation and decentralization of management to the lowest level appropriate, equitable and gender-sensitive distribution of benefits and the use of adaptive management tools and policies to deal with uncertainties.

Global Environment Facility (GEF)

http://www.gefweb.org/Projects/focal_areas/focal_areas.html

A wide spectrum of efforts to conserve and use the earth's biological diversity sustainably makes up nearly half of all GEF projects. As the financial mechanism for the Convention on Biological Diversity, GEF receives guidance from the Conference of the Parties on policy, strategy, programme priorities and eligibility criteria related to the use of resources for purposes of the CBD. Projects generally deal with one or more of four critical ecosystem types and the human communities found there: arid and semi-arid zones; coastal, marine, and freshwater resources; forests; and mountains.

Between 1991 and 1999, GEF allocated US$991 million in grants and mobilized an additional US$1.5 billion in co-financing for biological diversity projects.

United Nations Conference on Trade and Development (UNCTAD)

http://www.unctad.org/

UNCTAD's BIOTRADE Initiative aims to stimulate trade and investment in biological resources to further sustainable development in line with the objectives of the CBD. The initiative has established partnerships with national and regional organizations to enhance the capability of developing countries to produce value-added products and services derived from biodiversity for both domestic and international markets. These partner organizations, in turn, have their networks of local organizations working in the field, which allows them to address all aspects of the value chain of natural products in a cost-efficient manner. The programme focuses on country and regional programmes, policy development, trade facilitation and Internet services.

United Nations Development Programme (UNDP)

http://www.undp.org

UNDP is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. It is on the ground in 166 countries, working with them on their own solutions to global and national development challenges. In the area of biodiversity, UNDP facilitates a worldwide in-country network to convene stakeholders and foster best practices, South-South exchange, advocacy and policy impact for biodiversity conservation and poverty reduction from the community to the global level. As 'campaign manager' on behalf of the UN System for the Millennium Development Goals, UNDP particularly focuses on the contribution that biodiversity conservation, sustainable use and benefit sharing can make to poverty reduction, livelihoods and global human security.

Over the past decade, UNDP has channelled over US$1 billion to developing countries in support of their biodiversity conservation and sustainable use efforts. More than US$200 million of UNDP's core resources have been allocated in this period to biodiversity activities, including agrobiodiversity, sustainable forestry and fisheries, freshwater and marine ecosystems, protected areas and support to indigenous peoples. In addition to the US$430 million allocated to biodiversity through UNDP-GEF projects, UNDP has leveraged US$600 million of co-financing from other sources, including the private sector. UNDP is actively partnering with some 200 NGOs in the implementation of these projects. Through the GEF Small Grants Programme, UNDP has managed the allocation of approximately US$40 million to more than 2,100 local-level community-based biodiversity projects. Grants are made to NGOs and community-based organizations for activities that reconcile biodiversity conservation with sustainable livelihoods. These projects have catalysed more than 600 partnerships with other NGOs, governments, foundations, academia and the private sector.

Designed as a partnership programme in support of WSSD and the Convention on Biological Diversity, the Equator Initiative (http://www.undp.org/equatorinitiative) is building a world-wide movement to reduce poverty and sustain biodiversity by identifying and rewarding innovative local partnerships, fostering community-to-community learning and capacity development and contributing to knowledge generation for policy impact. The Equator Prize honours community projects that represent outstanding efforts to reduce poverty through the conservation and sustainable use of biodiversity. UNDP is joined in the Equator Initiative by BrasilConnects, the Government of Canada, IDRC, IUCN, The Nature Conservancy, Television Trust for the Environment and the UN Foundation.

UNDP is also assisting countries to manage their biological resources for sustainable development through the Dryland Development Centre, the Water Programme, the Climate Change and Adaptation Programme, the Poverty-Environment Initiative and the Indigenous Peoples' Programme. UNDP is also one of the founders and sponsors of the Millennium Ecosystem Assessment.

UNESCO

http://www.unesco.org/mab/

UNESCO's Programme on Man and the Biosphere (MAB) develops the basis, within the natural and the social sciences, for the sustainable use and conservation of biological diversity, among other things, through the World Network of Biosphere Reserves. Biosphere reserves—408 in 94 countries—are sites established by countries working with the UNESCO-MAB Programme to promote biodiversity conservation and sustainable development, based on local com-

munity participation and sound science. As places that seek to reconcile economic development, social development and environmental protection through partnerships between people and nature, they are ideal sites to test and demonstrate approaches to sustainable development at a regional scale. Biosphere Reserves are also ideal sites to see the CBD ecosystem approach in action.

UNESCO also hosts the Secretariat for the World Heritage Convention, which promotes in situ conservation through the identification and inscription of important biodiversity sites on the World Heritage List (http://www.unesco.org/whc). And UNESCO is one of the founders and sponsors of the Millennium Ecosystem Assessment.

United Nations Environment Programme (UNEP)

http://www.unep.org/themes/biodiversity/

UNEP serves as a global policymaking forum on environmental issues; addresses biodiversity assessment, monitoring, research and information sharing; develops appropriate policy instruments; provides critical environmental policy advisory services for decision-makers; and enhances synergy among conventions related to biodiversity. UNEP has helped broker, and provides the secretariat for, some of the most important global and regional treaties in this field, including CITES; the Bonn Convention on Migratory Species of Wild Animals and several of its species-specific agreements; and the Convention on Biological Diversity and its Cartagena Protocol on Biosafety. In addition, UNEP has supported the negotiations of 12 conventions and action plans for the protection of various regional seas, and continues to support their implementation. Other notable programmes include the following:

- The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities provides practical guidance on prevention, reduction, control and elimination of marine degradation from land-based activities.
- The International Coral Reef Action Network, a joint initiative by several partners of the International Coral Reef Initiative, is designed to reverse the decline in health of the world's coral reefs through the co-ordination of research and management efforts across all relevant partner institutions.
- UNEP's role in the GEF is to catalyse the development of scientific and technical analysis and advance environmental management in GEF-financed activities, including the protection of biological diversity. One project helps some 100 countries develop National Biosafety Frameworks so that countries fulfil their obligations under the Cartagena Protocol on Biosafety.
- The Global Invasive Species Programme provides a framework for national-level interventions to address the second largest threat to biodiversity after habitat alteration, the spread of invasive alien species.
- UNEP is undertaking a capacity-building initiative on access to and fair and equitable sharing of benefits arising from the use of genetic resources, in collaboration with the CBD and the United Nations University, among others.
- GEO, the Global Environment Outlook, provides a global overview of environmental developments over the past three decades and how social, economic and other forces are driving the changes that have occurred.
- The Millennium Ecosystem Assessment (http://www.millenniumassessment.org) is a multi-institutional project founded and supported by The World Resources Institute, UNEP and other UN agencies, governments and others to measure the ability of global ecosystems to supply the goods and services that future generations will need. It will provide decision-makers with authoritative scientific knowledge about steps that can be taken to restore the productivity of the world's ecosystems.
- The UNEP World Conservation Monitoring Centre concentrates on building a global overview of species and ecosystems and assisting nations world-wide in implementing biodiversity-related conventions and programmes.
- Through GRASP (the Great Apes Survival Project), UNEP—together with a number of partners—endeavours to bring world-wide attention to the ape crisis, raise funds for conservation and develop a global conservation strategy for all great ape populations.

World Bank

http://lnweb18.worldbank.org/ESSD/essdext.nsf/48ByDocName/Biodiversity

The World Bank is the world's largest financier of biodiversity. Over the last decade, World Bank funding for biodiversity has involved more than 226 projects with about US$1 billion of IBRD/IDA resources, more than US$450 million of GEF funds and an additional US$1.2 billion in co-funding from other donors, governments, NGOs, foundations and the private sector—for a total Bank-managed biodiversity portfolio of US$2.6 billion. Since 2000, the rapidly growing number of 'fast track' projects (involving medium-sized GEF grants) has added strength, innovation and diversity to the portfolio and has enhanced the Bank's ability to engage new partners.

Analytical tools and skills allow the Bank to measure the extent of resource use, translate it into economic and social impact terms and over time monitor the state of environmental resources and the benefits they generate. Methodological toolkits also seek to improve the quality with which biodiversity is dealt with in environmental assessments. All these activities help to inform policymakers and guide those who design and implement development programmes and projects.

World Bank support in the area of biodiversity involves the establishment and strengthening of protected areas (including activities in buffer zones), the sustainable use of biodiversity outside protected areas, eradication of alien species and biodiversity conservation through improved management and sustainable use of natural resources in the production landscape. All these activities have important links to poverty alleviation initiatives. In the future, it is expected that the Bank's activities in support of conservation and the sustainable use of biodiversity will further emphasize mainstreaming of biodiversity in the production landscape, including agriculture, fisheries and other rural development activities.