



**CONVENTION ON
BIOLOGICAL DIVERSITY**

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**The Importance of Biological Diversity and Impacts of Its
Loss**

STATEMENT BY

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CONVENTION ON BIOLOGICAL DIVERSITY

TO

**The Tenth Meeting of the International Organization of Supreme
Audit Institutions Working Group on Environmental Auditing**

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Honorable minister,
Distinguished participants,
Dear friends and colleagues,

It is a great pleasure to participate in the tenth meeting of the Working Group on Environment Auditing of the International Organization of Supreme Audit Institutions (INTOSAI). This meeting brings together key players in the effective national implementation of multilateral environmental agreements such as the Convention on Biological Diversity. It is therefore an equal honor to provide introductory remarks for the session of this eminent gathering on biodiversity issues.

National audit offices, represented by INTOSAI, and the Convention on Biological Diversity and its Secretariat are natural partners. They play crucial and complementary roles in enhancing the quality of what we may call biodiversity governance at all levels.

Striving for good governance is one core element of the mission of national audit offices, and improving biodiversity governance is an important task of the Convention, in accordance with the usual criteria for good governance you are certainly all familiar with:

- The effectiveness and efficiency of resource management;
- The clear accountability of all relevant actors, including through effective reporting;
- High transparency of decision-making and of its consequences;
- The legitimacy and consistency of decision-making; and
- The clear rule of law.

Let me start by providing you with some background information on the Convention on Biological Diversity and its rationale.

It is important to stress the issue that underlines the work done under the auspices of the Convention on Biological Diversity – global change, the forces which drive it and our reactions to this change. If life on this planet is to thrive we need to come both to an understanding of the changes occurring on a global scale, as well as an understanding that unsustainable human practices are the drivers of these changes, and then accordingly take responsibility and action to address these.

It is now widely recognized that people are having a major and growing impact on the Earth's physical and biological systems (land, atmosphere and oceans), the long-term consequences of which are feared by many but are in fact not at all well understood. These systems are extremely complex and inter-related to the point that a change in even one component of any of the systems affects the other components and even the entire planet. Despite their in-built resilience, these systems are now approaching the point where they may not be able to meet human demands for adequate food, clean water, energy supplies, medicines and a healthy environment. As a result, the world is experiencing a number of global environmental changes: depletion of the stratospheric ozone layer, climate change, loss of biological diversity, land degradation and desertification, pollution of fresh and marine waters and accumulation of persistent organic pollutants. These changes are intensifying and are beginning to have a serious impact on the development goals and needs of a growing human population.

The costs of these global changes and responsibility for them are not distributed equitably. The rich contribute disproportionately to global change, while the poor and disadvantaged are most vulnerable to it. Ironically, it is poverty and inequity which in fact exacerbate global change.

The changes we are facing in the 21st century are the products of major global revolutions whose impacts on human activities is just being felt. First, a new phase of economic and cultural globalization, driven by the liberalization of markets around the world, is promoting a greater level of communication and exchange than ever before. This is also fed by a innovations in information technology and biotechnology, which permit faster and more profound interventions in the ecosystems that surround us. A revolution in communications technology is both the product and catalyst of both of these phenomena, and increases the speed and volume of communications, with a resultant increase in human activities.

Biodiversity Value:

Of those changes, the loss of biodiversity is both the most dramatic and the least appreciated. It is generally accepted that the current loss of ecosystems, species and gene pools is faster than any time since the extinction of the dinosaurs 65 million years ago. What is not generally recognized is how much is at stake.

Biological diversity - or biodiversity - is the term given to the variety of life on Earth. The biodiversity we see today is the result of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. Biodiversity is the web of life, of which we are an integral part and upon which we entirely depend for our well-being and survival.

Biodiversity is often understood in terms of the number of different species of plants, animals, and micro-organisms in existence. However, biodiversity also includes genetic differences within each species - for example, between varieties of crops and breeds of livestock. Yet another aspect of biodiversity is the variety of ecosystems and habitats covering the planet, such as deserts, forests, wetlands, grasslands, lakes, rivers, coastal areas, oceans, and agricultural landscapes. In each of these ecosystems and habitats, living creatures, including humans, form

communities, interacting with one another and with the air, water, and soil around them.

It is the combination of life forms and their interactions with one another and with the physical environment that has made Earth a habitable place for humans and provides a large number of goods and services that sustain our lives. Ecosystems directly or indirectly provide the basic materials necessary for life (e.g., food, water), offer protection from natural disasters and disease (e.g., regulating climate, floods and pests), and underpin important aspects of human culture (e.g., spiritual needs, knowledge systems and traditional use of natural resources). Ecosystem services also maintain the essential life processes of the planet, such as primary production and nutrient recycling. These supporting services are provided at all levels –local, regional and global –and every one makes crucial contributions to human well-being. Biodiversity is essential for the ecosystem functioning and hence for ensuring the sustained provision of ecosystem’s goods and services.

The Millennium Ecosystem Assessment groups these services into four categories:

- **Provisioning services** such as food, fiber, fuel and fresh water, other genetic resources.
- **Regulating services** such as pollination, climate regulation, pest, disease and pollution Control; ecosystem resilience to the potential shocks associated with, for instance, climate change or extreme weather events.
- **Supporting services** such as habitat provision, nutrient and water cycling and soil formation.
- **Cultural services** that form the very basis for our spiritual and religious values as well as our knowledge systems, and provide education and inspiration, as well as recreational and aesthetic values.

The economic value of these goods and services is enormous. It has been estimated that 40% of the world economy is derived directly from biodiversity. The aggregated annual value of ecosystem services worldwide is estimated to be between US\$ 18 trillion to US\$ 61 trillion, which is similar to figures resulting from all goods and services that are produced by people. To cite some specific examples: global benefits from coral reefs including tourism, fisheries and coastal protection are estimated at some US\$30 billion per year; soil microbial services such as converting nitrogen into a usable form for crops, pastures, forests and natural vegetation are estimated at US\$ 33 billion annually and insect pollination of over 40 commercial crops in the United States alone at US\$ 30 billion per year. Total seed-sector activities worldwide are estimated at US\$45 billion annually. The market for herbal drugs amounted to US\$47 billion in 2000.

From the recreational standpoint, more than 400,000 jobs and US\$28 billion a year are generated by the 350 million annual visitors to United States national parks, wildlife refuges and other public lands under the Department of the Interior and Department of Agriculture through expenditures on fishing, hiking, hunting, whale watching and wildlife photography.

More than US\$200 million in revenue from commercial and sport fishing was lost because of the destruction of estuaries in the United States between 1954 and 1978. The total annual ocean fish catch is worth some US\$2.5 billion to the United States.

At the genetic level, traits from wild crop varieties introduced to domestic agricultural crops in the United States produce an added value of some US\$8 billion a year, and 1990 sales in the United States of prescription drugs

containing ingredients taken or derived from wild plants stood at more than US\$15 billion.

At a more local level, the flood control services provided by marshlands near the Charles River in Boston, Massachusetts, are estimated to be worth US\$72,000 per acre of marshland.

The contribution to the United States economy of products from natural and managed forests, including timber, fuel wood, game, fruits, nuts, mushrooms, honey, and so forth, is estimated at between US\$3 billion and US\$8 billion a year.

The importance of biodiversity for medicine is enormous.

In the future, more of these goods and services will be needed. There are currently well over six billion people on the planet, and the human population is expected to reach 7.5 billion by the year 2020 and nine billion by mid-century. Each person has the right to expect adequate food, clean water, safe shelter and energy, the provision of each of which has profound ecological implications. Food must be grown on land or in water, water must be clean to drink, shelter must be constructed from ecosystem-derived materials, and energy must be harnessed from natural processes.

These minimum needs multiplied by a growing world population translate to increasing demands on the planet's productive capacity. This minimum demand is massively amplified however, by the wasteful consumption of resources over and above the level needed to meet basic human needs. This growing demand for luxury products among a relatively small segment of the world population is leading to a greater loss of biodiversity, with dire consequences for all. As

biodiversity is lost, the provision of ecosystem goods and services may also be undermined, with a negative effect on human well-being. Recently, the Millennium Ecosystem Assessment concluded that—of the ecosystem services it assessed, and that make a direct contribution to human well-being—15 of 24 were in decline.

Biodiversity Loss:

These figures and projected future needs provide a clear and compelling economic case for the conservation of biological diversity. However, at present, natural habitats and ecosystems are being destroyed at unprecedented rates in history as a result of human activities. This includes the loss of species and the services they provide. The root causes of biodiversity loss relate to demographic, economic, socio-political, cultural and religious, and technological factors.

The main direct drivers of biodiversity loss all stem from human activities.

According to a number of recent analyses, including the Millennium Ecosystem Assessment, the main direct drivers of biodiversity loss are:

- habitat conversion – primarily from expansion of agricultural production.
- climate change – stemming from a variety of sources including the use of fossil fuels, habitat conversion and nitrogen fixation.
- invasive species – as a result of growing international commerce and trade, an increasing number of species are becoming introduced to environments and disturbing ecosystems.
- pollution – particularly the increased use of fertilizers which lead to increases in atmospheric and biologically available nitrogen. This has not only the impact on climate as I indicated above, but can also lead to eutrophication in certain aquatic ecosystems.
- over-exploitation of species – leading to their extinction. In recent years, this has been most evident in the case of marine fisheries.

At the global level, land-use change is the dominant driver of biodiversity loss in terrestrial ecosystems followed by changes in climate and nitrogen deposition (largely from agricultural fertilizers as well as fuel use). In marine systems, over-exploitation through fishing is the main driver. Important drivers of biodiversity loss in freshwaters are water abstraction, invasive alien species, and eutrophication due to excess nitrogen or phosphorus. The latter is also an important cause of biodiversity loss in coastal zones. It is forecast that these drivers will continue to dominate over the coming decades.

These direct causes are fed by other indirect drivers from a variety of directions and sources. The five main indirect drivers are:

- demographic (population growth),
- Economic (to grow further 3 to 6 fold by 2050),
- sociopolitical (decentralized and democratic-adaptive management),
- cultural and religious (perceptions and values),
- and scientific and technological (can improve efficiency but also increase exploitation of natural resources).

Demographic factors such as population growth affect the demand for food and goods and services, impelling more changes. Economic frameworks and institutions, including global trade have an impact on human activities. Governance, institutional and legal frameworks set the socio-political context for human action, while cultural and religious practices structure human choices about consumption. Science and technology provide the tools for greater human control of and intervention in ecosystems.

The decline in important components of biological diversity was more rapid in the past 50 years than at any time in human history. Some scientists believe we could be on course for what is being termed the sixth extinction event, a mass extinction of nearly all the species on the Planet. While previous mass

extinctions can be linked to natural phenomena, the present threat lies in the activities of the human race. Projections and scenarios indicate that the corresponding rates will continue or even accelerate their decline in the future. Let me give you a few examples that illustrate these trends:

- Scientists believe that under natural extinction rates, the Earth should be losing one species every four years; however present estimates put the loss at about 17,000 species each year.
- IUCN has estimated that one in four species of mammal, one in eight species of bird, 25% of reptiles, 20% of amphibians and 30% of fish species are now at risk of extinction.
- Distribution of species is becoming more homogenous and the population size or range (or both) of the majority of species across a range of taxonomic groups is declining. More land was converted to cropland in the 30 years after 1950 than in the 150 years between 1700 and 1850. In the scenarios of the Millennium Ecosystem Assessment, roughly 10–15% of plant species are expected to be lost as a result of habitat loss over the period 1970–2050.
- 20% of the world's coral reefs were lost and 20% degraded in the last several decades.
- 35% of mangrove area has been lost in the last two decades.
- Some nine million hectares of forests are lost every year, 50% of the world's wetlands were lost in the past century and 80% of grasslands are suffering from soil degradation.

Second only to habitat destruction, invasive alien species represent a major threat to biodiversity, with consequential economic loss. One study documents that the economic damage associated with such species in six selected countries total more than US\$ 336 billion per year and assumes that similar costs of damage worldwide from invasive species would be more than US\$ 1.4 trillion per year. Since 1600, 39% of species extinctions are believed to have been caused by invasive alien species.

Anthropogenic changes in the atmosphere also threaten to accelerate global rates of extinction. In 2004 an international team of scientists published a report entitled “Extinction Risk from Climate Change” in the scientific journal “Nature”. It stated that among the risks from climate change alone, one million of species of mammals, birds, reptiles, frogs, invertebrates, and plants are likely to become extinct by the year 2050.

Consequences of Biodiversity Loss:

There is no doubt that many people have benefited over the last century from the conversion of natural ecosystems to human-dominated ecosystems, in particular for agricultural purposes, and from the exploitation of biological resources. At the same time, however, the loss of biodiversity has in many cases dire consequences for human well-being, that is, for material wealth, security, health, social relations and/or the freedom of choice and action.

Reduction of biodiversity together with the associated traditional knowledge entails a reduction of options for ensuring more diverse nutrition, enhancing food production, improving health, raising incomes, coping with environmental changes and managing ecosystems.

Biodiversity loss can have indirect effects on human well-being as well. By disrupting ecosystem function, biodiversity loss leads to ecosystems that are less resilient, more vulnerable to shocks and disturbances, and less able to supply humans with needed services. The damage to coastal communities from floods and storms, for example, increases dramatically following conversion of wetland habitats, as the natural protection offered by these ecosystems—including regulation of water run-off—is compromised. Recent natural disasters in Asia and North America serve to underline this reality.

Healthy ecosystems have a critical role to play outside of times of catastrophe as well. Keeping with the example of wetlands, inland wetlands are the principal supply of renewable fresh water for human use, as they not only store water but

also purify it by removing excess nutrients and other pollutants. The disruption of wetlands purification processes can have devastating impacts at the source and further downstream; the loss of wetlands in the Mississippi watershed of the United States, for example, combined with high nutrient loads from intensive agriculture in the region, has led to the creation of a low-oxygen ‘dead zone’ extending hundreds of kilometres into the Gulf of Mexico.

The loss and degradation of natural capital has consequences for national economies, though these are poorly reflected in conventional indicators of economic growth, such as GDP. Existing studies of changes in economic value associated with local changes to biodiversity (such as clear-cutting of forests, or draining of wetlands) have shown the total economic cost of ecosystem conversion (i.e., including both market and non-market values of ecosystems services) to be significant and to sometimes exceed the benefits. Applying the concept of total economic value to national economies would thus reveal—for many countries, and in a number of sectors—that economic gains, as traditionally measured, are illusory.

The consequences of biodiversity loss and ecosystem disruption are often harshest for the rural poor, who depend most immediately upon local ecosystem services for their livelihoods, and are among the least able to access or afford substitutes. The real costs of biodiversity loss are already recognized to pose a significant barrier to the achievement of the Millennium Development Goals (MDGs). Yet many of the actions that could be implemented most quickly to promote economic growth and reduce hunger and poverty—for example, intensification of agriculture, or conversion of forests—are harmful to biodiversity, and would undermine the long-term sustainability of any development gains. Therefore, for many of the development goals to be achieved, it will be essential to recognize the trade-offs and complementarities that exist between poverty alleviation and biodiversity conservation.

The loss of biodiversity should be of concern regardless of the usefulness of ecosystems, species and genes to human well-being. Every life form is the result of a unique evolutionary pathway, never to be repeated. The loss of any aspect of biodiversity is, in that sense, incalculable and, insofar as it is the result of human action, unconscionable.

Global Response to Biodiversity Loss:

Sustaining that biodiversity, in the face of considerable threats from human activities, constitutes one of the greatest challenges of the modern era. The importance of this challenge was universally acknowledged at the Earth Summit held in Rio de Janeiro in 1992. The Convention on Biological Diversity arose from this summit and entered into force in 1993. There are now 188 Parties to this international legally binding treaty, reflecting a virtually universal participation.

The objectives of the Convention are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The Convention sets out broad commitments by Governments to take action at the national level for the conservation and sustainable use of biological diversity. Since its entry into force, the Parties have developed a series of programmes of work and elaborated a series of guidelines and other tools to aid implementation of the Convention.

Action at national level is essential to addressing the challenges of biodiversity loss and in achieving the objectives of the Convention. Under the Convention on Biological Diversity, most countries have now developed national biodiversity strategies and action plans (NBSAPs). A key challenge is for these to be fully integrated into national sectoral and cross-sectoral policies, plans and strategies as required under the Convention, and for adequate resources to be mobilized for their implementation.

At the international level, the Conference of the Parties has developed a series of thematic programmes of work. Each programme of work establishes a vision for, and basic principles to guide, future work, identifies goals, objectives and activities, determines potential outputs and suggests a timetable and means for achieving these outputs.

The Conference of the Parties has also adopted a series of programmes on cross-cutting issues as well as a number of principles, guidelines and other tools to facilitate implementation of the Convention.

In January 2000, the Conference of the Parties adopted the Cartagena Protocol on Biosafety to address potential risks posed by living modified organisms (LMOs) and to ensure an adequate level of protection in the transfer, handling and use of LMOs resulting from modern biotechnology, taking into account risks to human health. The Protocol breaks new ground through its practical application of the precautionary approach—the idea that lack of absolute scientific certainty is no reason to delay action to prevent potential risks. It also promises to make a real contribution to promoting technology transfer and to enabling developing countries to gain access to information and technology from the biotechnology industry.

In 2002, ten years after the entry into force of the Convention, the Parties to the Convention acknowledged the continued threat to biodiversity from human activities. They reaffirmed that biodiversity is the living foundation for sustainable development, that the rate of loss is still accelerating, that threats must be addressed, and that the Convention remains a key tool for sustainable development.

For these reasons, the Conference of the Parties adopted a Strategic Plan, in which Parties committed themselves to a more effective and coherent implementation of the three objectives of the Convention in order to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level, as a contribution to poverty alleviation and for the greater benefit of all life on earth. This target was subsequently endorsed by the World Summit on Sustainable Development in 2002.

Parties recognized that in order to achieve the Strategic Plan, and its 2010 biodiversity target, they decided to focus on implementation and required a framework to facilitate an assessment of progress made—a framework within which national and regional targets could be set, and indicators of progress identified. The resulting framework is structured around seven focal areas, which together represent both responses to the drivers of biodiversity loss, and the means to achieve the three objectives of the Convention. The focal areas are:

- 1) Reducing the rate of loss of the components of biodiversity, including: (i) biomes, habitats and ecosystems; (ii) species and populations; and (iii) genetic diversity;
- 2) Promoting sustainable use of biodiversity;
- 3) Addressing the major threats to biodiversity, including those arising from invasive alien species, climate change, pollution, and habitat change;
- 4) Maintaining ecosystem integrity, and the provision of goods and services provided by biodiversity in ecosystems, in support of human well-being;
- 5) Protecting traditional knowledge, innovations and practices;
- 6) Ensuring the fair and equitable sharing of benefits arising out of the use of genetic resources; and;
- 7) Mobilizing financial and technical resources, especially for developing countries, in particular, least developed countries and small island developing states among them, and countries with economies in transition, for implementing the Convention and the Strategic Plan.

In addition, the Conference of the Parties, responding to an invitation contained in the Johannesburg Plan of Implementation of the World Summit on Sustainable Development, initiated in 2005 a process to elaborate and negotiate the nature, scope and elements of an international regime on access to genetic resources and benefit sharing.

The Role of Supreme Audit Institutions:

The primary tool used by the international community to focus collective action to reduce the loss of biological diversity has been the Convention and its Biosafety Protocol. Those two instruments incorporate mechanisms that encourage nations to undertake commitments and provide means for fulfilling them. For the Convention to accomplish its objectives there is a need to ensure that Parties to the Convention actually carry out their obligations. However, lack of compliance mechanisms and compliance information presents serious constraints. For the governments to fulfil their obligations, they will need good planning, robust partnerships, strong science, sustained funding, national legislation and monitoring mechanisms. They need to outline responsibilities, commitments, prepare and implement national biodiversity strategies and action plans (NBSAPs), report to the Conference of the Parties to the Convention, their parliaments and the public on the status of biodiversity, deliver programmes aimed at increasing awareness of biodiversity at risk and conserving and protecting it. They need to adopt legislation outlining government responsibilities at all levels (central, regional and local) and to develop and use performance indicators.

There is a need to coordinate implementation at the national level. Accurate and understandable reports are required. There is a need to report on efforts to implement the Convention as backbone of compliance. There is a need to establish new mechanisms to promote compliance (e.g. financial assistance, technology transfer and information exchange of environmentally sound

technology), trade measures to encourage trade with Parties, trade sanctions and joint or shared implementation.

Implementation of the Convention and its Biosafety Protocol must take place primarily at the national level. National Supreme Audit Institutions have an important role to play in promoting and facilitating such implementation. In particular, because of their expertise and authority, they can greatly assist in ensuring that obligations of the Convention are respected, and the necessary policies and programmes, and monitoring mechanisms are put in place, and budgetary resources are available to achieve the targets.

We therefore welcome your project “Moving Towards Auditing Biodiversity” and trust that it can be shaped in such a way that it can help Parties monitor progress made in moving towards the 2010 target. It would indeed be very useful if the project reflected the indicators adopted by the Conference of the Parties and could feed into national reporting under the Convention.

The Convention and associated national biodiversity strategies and action plans, as well as the programmes of work adopted by the Conference of the Parties to the Convention, provide a wide scope for auditing. Auditing should not be confined to financial audits but should cover performance or comprehensive auditing using standards and evaluation criteria. Auditing is required to see what governments are doing about threats and pressures facing biodiversity including from population growth, over consumption, urban development, changes in technology, industry, agriculture, tourism, etc.

In many countries, biodiversity issues have low profile in national policy agendas. Policy and legislative frameworks are underdeveloped; relevant agencies are under-funded and under-staffed; there is often poor enforcement and lack of monitoring mechanisms; and biodiversity concerns are not integrated into

sectoral and cross-sectoral policies and programmes, in particular socio-economic policies and programmes. National Supreme Audit Institutions can contribute towards the elevation of biodiversity concerns in national policy, legislative and budgetary frameworks. They can support the formulation and the implementation of national biodiversity strategies and action plans (NBSAPs), as well as their updating and adaptation to changing circumstances, including through ensuring that the funds available through the national budget are sufficient and used to greatest effect. Critically, National Supreme Audit Institutions can assist in ensuring that national biodiversity strategies and action plans are fully integrated into national sectoral and cross-sectoral policies, plans and strategies such as those dealing with agriculture, forestry and fisheries, transport, trade, energy and infrastructure, and planning. Biodiversity concerns should also be an integral component of poverty reduction strategy papers and development assistance frameworks, as well as strategies for sustainable development.

National Supreme Audit Institutions could require the publication and laying before parliament of periodical reports on the state of biodiversity nationally and on measures taken to promote implementation of the Convention. Through parliamentary committees and similar mechanisms, National Supreme Audit Institutions can ensure independent review of activities that are taken in support of Convention implementation with a view to improving their effectiveness.

They can also promote a well-orchestrated legislative programme, including for example, specific legislation, as necessary, for: rules on sustainable use; the establishment of protected areas; requirements for the use of environment impact assessments and strategic environment assessments that include biodiversity criteria; the protection of traditional knowledge, innovations and practices; biosafety; and measures to ensure compliance with the Convention's provisions on access to genetic resources and benefit-sharing.

Finally, they can help to bring about an increased level of awareness among policy makers and the general public on the importance of biodiversity and the imperative of taking urgent action to implement the Convention.

Many ecosystem goods and services are not traded in the marketplace. In consequence, their economic benefits are not reflected in national economies or market prices. National Supreme Audit Institutions can play a role in encouraging national Governments to undertake necessary measures in that regard.

In conclusion, I would like to reiterate that achieving the 2010 biodiversity target will require a concentration of efforts. It will require the setting of measurable targets at the national level. It will require priority-setting and the efficient and effective allocation of funding. Most of all, it will require effective and continuous monitoring to measure progress, identify deficiencies and make the necessary adjustments in a timely manner. National Supreme Audit Institutions can play a vital part in this endeavour.

Your interest in the subject is most encouraging and I wish you success in your work.
