

Global Governance of Biological Diversity

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Introduction

Biological diversity or biodiversity refers to the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity at three levels, namely genetic, between species and of ecosystems. It provides critical human needs for food, fibre, and fuelwood, and provides essential services such as water purification and carbon storage. Biodiversity is therefore critical to sustainable development.

Yet recent human activities are eroding this biological capital at an alarming rate. One study suggests that humans today annually mobilize approximately 40% of the total primary production on land. More than 60% of the world's major fisheries will not be able to recover from overfishing without restorative actions. Natural forests continue to disappear at a rate of some 14 million hectares each year. The magnitude of human impacts on ecosystems, combined with growing human population and consumption, means that the challenge of meeting human demands will grow.

The underlying causes of loss of biodiversity stem from changes in attitudes toward nature; growth in human population and natural resource consumption; the impact of global trade; economic system that fail to value the environment and its resources; and inequity in the ownership, management and flow of benefits from both the use and conservation of biological resources.

Global Initiatives on Biological Diversity

The loss of biodiversity has been a major pre-occupation of the global scientific community for several decades. However the initiatives taken by the World Conservation Union (IUCN), in particular its Commission on Environmental Law, since the early 1970s and throughout the 1980s gave institutional backing to the worldwide concern for the erosion of biological diversity.

The United Nations Conference on the Human Environment in Stockholm in 1972 granted the issues of biodiversity political and legal legitimacy at an international level, and emphasized the link between development and conservation.

In 1983 the United Nations General Assembly established the World Commission on Environment and Development (WCED) and in a landmark publication entitled "Our Common Future" released in 1987, the WCED pointed out that for "sustainable development" to be achieved there is a need to integrate environmental considerations into economic programmes. The WCED brought to the public domain the critical issues

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of biodiversity loss and conservation, which had for a long time been confined almost exclusively to scientific and technical discussions.

The United Nations Environment Programme (UNEP) took the global concerns regarding the management of biodiversity several steps further. Its Governing Council proposed strong international measures to protect biodiversity and by decision 14/26 of June 1987 established an ad hoc Working Group of Experts on Biological Diversity. After holding three sessions, between November 1988 and July 1990, it was transformed by the Governing Council of UNEP into the ad hoc Working Group of Legal and Technical Experts on Biological Diversity. In 1991 the Group of Legal and Technical Experts was re-established and named the Intergovernmental Negotiating Committee (INC) for a Convention on Biological Diversity (CBD). It was this intergovernmental body that carried through the actual negotiation of the text of the Convention.

The Convention on Biological Diversity

The Negotiating Process

The process of negotiation lasted from March 1991 to May 1992. The CBD was meant to be part of the agenda of the United Nations Conference on Environment and Development (UNCED) scheduled to take place in Rio de Janeiro in June 1992. Hence despite the difficult and at times confrontational moments in the five formal sessions of ten working days each, there was this sense of urgency prevailing that the treaty needed to be concluded urgently.

According to Ambassador Vicente Sanchez, the Chairman of the INC, the process, that led to the adoption of the Convention was initiated with the perception – particularly among developed countries – that it would be an all-encompassing convention on the conservation of species: a convention on parks and reserves. This notion proved to be unsustainable right from the start and the discussion began evolving to include aspects of the complex environment/development interphase. Consequently, as negotiations progressed, the character of the proposed convention was modified, and the process became much more complicated than had originally been planned. Certain questions and issues became central aspects of the negotiations:

- The cost of taking measures to conserve biodiversity versus the cost of not taking any such measures;
- Access to genetic resources and the different possibilities of regulating it;
- Whether the focus should be only on wild species or whether it should include both wild and domesticated species;
- Access to and transfer of technology – including biotechnology – which must be considered for conservation and rational use of the components of biodiversity;
- Eventual sources and methods of funding the costs of the measures that would have to be agreed upon;
- The consequences and impact of biodiversity conservation on trade and development.

The CBD was signed by more than 150 governments during the Earth Summit in June 1992 and it entered into force on 29 December 1993 when the minimum 30 countries became Parties to it. At the end of 1999, some 175 countries had ratified, making it one of the most widely ratified international treaties on any environmental issue.

Fundamental Issues Covered by the CBD

The objectives of the Convention (Article 1), namely the conservation of biodiversity, the sustainable utilization of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources reflects the compromise reached by the negotiators, in particular the need to balance conservation of biodiversity per se with the rights of countries to utilize those resources in a sustainable manner. Further, Parties should endeavor to undertake collaborative efforts to develop products from genetic resources.

The CBD marked the departure from the earlier concept of treating biodiversity as a “common heritage” of humankind to that of a “common concern” since most components of biodiversity are located in areas under national jurisdiction. Article 3 literally reproduces Principle 21 of the Stockholm Declaration, recognizing that states have the sovereign right to exploit their own resources pursuant to their own environmental policies. As pointed out by Sanchez, an important principle, that had a merely political, non-binding character changed after 20 years, into an international norm, at least in the field of biodiversity.

On the issue of conservation and sustainable use, The CBD contains a number of significant obligations. For instance, Articles 6 and 10 require Parties to develop national strategies and plans, to integrate biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies, as well as into national decision-making. Article 7 obliges Parties to identify important components of biodiversity and to identify priorities which may need special conservation measures, or which may offer the greatest potential for sustainable use. There is also a need to identify and monitor processes and categories of activities, which have significant adverse effects on conservation, and sustainable use of biodiversity.

There is also an obligation to implement *in situ* conservation (Article 8) as well as *ex situ* conservation (Article 9).

Sustainability is now viewed as the guiding principle for development. Article 10 of the CBD deals specifically with obligations of Parties to sustainably use components of biodiversity.

The role of indigenous and local communities in conserving biodiversity and the importance of traditional knowledge is recognized in Article 8 (j).

The importance of public education and awareness and the need for research and training are respectively dealt with in Articles 13 and 12. Article 15 of the Convention establishes

rules concerning access to genetic resources, stating that the regulation of this access is in the hands of national governments and subject to national legislation and also that Contracting Parties will create conditions to facilitate other Contracting Parties access to genetic resources leading to adequate utilization and not to impose restrictions contrary to the objectives of the Agreement. Also, it establishes that Contracting Parties will endeavor to carry out scientific research based on genetic resources provided by Contracting Parties, with their full participation and, if possible, within their territories.

Closely related to the above, Article 16 regulates the access to technology and technology transfer, including biotechnology, establishing the compromise of each Contracting Party to secure and/or facilitate to other Contracting Parties the access to pertinent technologies for the conservation and sustainable utilization of biodiversity as well as the transference of those technologies. The access and transfer of technology to developing countries is a matter of special regulation within the same article, where it is specified that it will be secured and/or facilitated under fair and most favorable terms, including on concessional and preferential terms where mutually agreed and, where necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms, which recognize and are consistent with the adequate protection of intellectual property rights. These articles pay particular attention to the matter of Contracting Parties, which provide genetic resources also obtaining access to and transfer of technology, which makes use of those resources.

Regarding biotechnology and the distribution of the benefits arising from its use, it is established (Article 19) 'that each Contracting Party will take legislative, administrative or political measures as appropriate,' to secure the effective participation in its research activities on biotechnology of the Contracting Parties that provide genetic resources for such research, and to ensure that those activities take place, whenever feasible, in the same country that provides the resources. Furthermore, the article establishes that each Contracting Party will adopt all applicable measures to promote and foster, in fair and equitable conditions, priority access of the Contracting Parties, in particular developing countries, to results and benefits derived from the biotechnology based on genetic resources given by said Parties.

With respect to the financial arrangements, Article 20 establishes that each Contracting Party undertakes to provide, in accordance with its capabilities, financial support and incentives for the activities which are intended to achieve the objectives of the Convention, as well as the commitment of the Parties which are developed countries to provide new and additional financial resources so that the Parties which are developing countries can meet the agreed full incremental costs to them of implementing measures in fulfillment of the obligations of the Convention and to benefit from its provisions. On the other hand, Article 21 stipulates that a mechanism will be established for the provision of financial resources to the Parties, which are developing countries, on a grant or concessional basis. While the mechanism is established, its functions shall be performed by the Global Environment Facility (GEF) (Article 39), provided that this fund has been fully restructured according to the criteria spelled out in Article 21.

The Impact of Globalization on Biological Diversity

As we move towards global economic integration and a world economy characterized by the liberalization of trade, globalization of capital markets, and rapid diffusion of advanced technologies and consumption there will be *three* issues that would be most affected as far as biodiversity is concerned. These are biotechnology, biosafety and bioprospecting.

Biotechnology

The importance of biotechnology in the conservation and sustainable use of biodiversity has received considerable international attention particularly in the context of the CBD. Biodiversity provides raw materials for various biotechnology industries in the agricultural, pharmaceutical and chemical sectors. The growth of the biotechnology industry in the past two decades has been closely associated with the systematic search for genetic material and the transformation of this into new products i.e. chemicals and drugs. New biotechnological techniques have made it relatively easy to search, screen and store genetic material. Genetic resources have increased in value with a major resurgence in screening of genetic resources for their medicinal and biochemical properties.

Biotechnology is science-intensive. It involves the use of scientific knowledge and expertise from a wide range of disciplines such as botany, genetics, biochemistry and molecular biology. For example, prospecting for new genetic material with certain biochemical properties require interdisciplinary expertise and involves a series of procedures including search, collection, identification of plant material, preparation of extracts, bioassay of each fraction of the extracts, verification of isolated compounds, elucidation of the chemical structures, and large sample isolation of compounds for pharmacological and toxicological tests.

Although the CBD does not make express provision for a trade-off between access to genetic resources and access to transfer of technology, it established a clear link between the supply of genetic resources (from developing to developed countries), and access to and transfer of technology (from developed to developing countries), which makes use of those resources. This link can be forged through collaboration between various partners so as to allow industrialized countries to gain access to genetic resources while enhancing the technological competence of the developing countries.

Juma and Sanchez (1994) argued that under such a venture, the developing country would not have to give away evaluated and characterized genetic material to a foreign enterprise interested in further development and eventual commercialization of derived products. The foreign enterprise would bring into the partnership its advanced technological know-how especially in the field of biotechnology. The genetic material

and technology would respectively pose as assets belonging to each contributor, while both partners would share any new or improved material or product generated through the collaboration.

Mugabe and Clark (1996) pointed out that while the role of biotechnology in the conservation and sustainable use of genetic resources has been recognized, the nature of the technology has not been well understood. International discussions on transfer of biotechnology to the developing countries have not been based on understanding differences between biotechnology and other technologies. Biotechnology has often been perceived as comprising hardware or machinery. Its tacit nature has largely been ignored or not understood. Due to its science-intensive nature, its development, acquisition and transfer do not involve the use of massive mechanical equipment but the acquisition and application of scientific knowledge.

Therefore to effectively apply biotechnology to realize the objectives of the CBD, it is imperative that countries put in place appropriate measures to facilitate its development and transfer. Apart from the physical infrastructure, it is important that a long-term programme on human resource development be initiated with emphasis on the acquisition of scientific knowledge and skills in subjects like molecular biology, biochemistry and genetics. Developing countries must invest in education and training and it would be helpful if financial assistance could also be extended by international funding agencies to realize this goal.

The ability of the developing countries to benefit from their biological resources will depend largely on the extent to which they integrate biotechnology development into their development strategies. Each developing country needs to determine its national needs and decide how much to invest in biotechnology development in relation to other development activities. Juma and Sanchez (1994) emphasized that there is a need to give priority to biotechnology development as a strategic sector that would enable the developing country to derive economic benefits from the conservation of biological resources. This should include specific measures that build on the technological competence already available in the country as well as the acquisition of foreign technology.

Biosafety

Recent development have shown that biotechnology can significantly contribute to national development such as enhancing the performance of plants, animals and microorganisms, by reducing the cost of health care and of agricultural and industrial products, and by ensuring conservation and sustainable use of biodiversity. It is however important to note, particularly now as products developed through modern biotechnology are entering the market-place, that biotechnology poses some risks because techniques such as genetic engineering modify genes and genetic materials in ways that do not occur naturally by mating or natural recombination.

Safety in biotechnology has always been a sensitive issue in international fora, considering the potential short and long-term risks posed once organisms resulting from modern biotechnology applications are released in the environment, for example through international trade. There are significant knowledge gaps in the field of interaction between LMOs and the environment, particularly in centres of origin and genetic diversity. Developing countries are thus concerned that some LMOs imported into their countries deliberately or unintentionally, might be harmful to humans and the environment. On the other hand, there are fears that international biosafety regulations might hinder the development and application of biotechnology and prevent the bio-industry that has already invested a lot in biotechnology from reaping the results of its investments.

Many countries at present have not sufficiently developed their capabilities for taking advantage of the new opportunities in biotechnology applications, nor for building the regulatory framework that is essential for its safe application. A basic preoccupation of many countries and regions is still how to gain access to the new applications of biotechnology. Unfortunately, this will not be a simple task since such access needs to be built upon appropriate biosafety regulatory mechanisms. Paradoxically, regulations cannot be developed in a vacuum without the technology that brings about experience and creates stewardship, commitment and motivation through ownership.

A further complication is that in the past, technologies were largely in the public domain, whereas today, fewer and fewer technologies that developing countries may want to transfer, adapt and adopt are public, and this is likely to decline even further in the future. As a result, another new dimension to biotechnology transfer and biosafety has emerged, namely international relations. The entering into force of the Convention on Biological Diversity has partly brought about this latter aspect.

Paradoxically, the attention to biosafety within the Convention on Biological Diversity is a reflection of existing concerns rather than the emergence of a new issue. Although there are two Articles in the Convention that deal specifically with biosafety (8[g] and 19.3), biosafety really enters into the process of the Convention as a result of the agreements stipulated in Article 16 for facilitating access to the methods and products of biotechnology (technology transfer). Thus the connection of biosafety with biodiversity is two-fold. First, for appropriate biotechnology applications to be transferred in a safe and effective way presupposes – and should presuppose – that biosafety regulatory mechanisms are in place. Second, the saving and protection of biodiversity is a complex endeavor that requires, on the one hand, protecting natural habitats (for example from the invasion of alien species), and, on the other hand, alleviating pressure on land extension into natural habitats.

One of the most significant events in the future development of biotechnology, including the innovation, commercialization and market availability of products, will be the creation of an internationally agreed biosafety protocol.

Article 19.3 of the CBD provides for Parties to consider the need for and modalities of a protocol setting out procedures in the field of the safe transfer, handling and use of LMOs that may have an adverse effect on biodiversity and its components.

An Ad Hoc Working Group of Experts on Biosafety was established by the Conference of Parties of the CBD in 1994. Elements which have initially been favored unanimously to be included in the Biosafety Protocol are: all activities related to LMOs that may have adverse effects on biodiversity; transboundary movement of LMOs; release of LMOs in centres of origin/genetic diversity; mechanisms for risk assessment and management; procedures for advance informed agreement (AIA); facilitated information exchange; capacity-building and implementation; and definition of terms. Elements with partial support included: socio-economic considerations; liability and compensation, and financial issues.

The Working Group has convened six times between July 1996 and February 1999, including an extraordinary meeting of the COP but due to the contentious nature of some of the issues, it has not completed its work up to now. Outstanding issues include the scope of the protocol and as to whether to include/exclude “products thereof” of LMOs; the procedure of advanced informed agreement; the process of notification; handling, transport, packaging and identification (or labeling); relationship with non-Parties, and socio-economic considerations.

While some may assert that the protocol was not related to trade, its implications for transport of commercial products across political boundaries and provision of proprietary information cannot be ignored. Indeed some have suggested that the biosafety negotiations could not be concluded on schedule partly because they dealt essentially with international trade issues that were deemed to be in the jurisdiction of WTO.

Bioprospecting

In September 1991, Costa Rica’s National Biodiversity Institute (INBio) – a private, non-profit organization – and the US-based firm, Merck Pharmaceuticals, announced an agreement under which INBio would provide Merck with chemical extracts from wild plants, insects and micro-organisms from Costa Rica’s conserved wildlands for Merck’s drug-screening programme in return for a two-year research and sampling budget of US\$1,135,000 and royalties on any resulting commercial products. INBio agreed to contribute 10 per cent of the budget and 50 per cent of any royalties to the government’s National Park Fund for the conservation of national parks in Costa Rica, and Merck agreed to provide technical assistance and training to help establish drug research capacity in Costa Rica.

This agreement represents a watershed in the history of ‘biodiversity prospecting’ – the exploration of biodiversity for commercially valuable genetic and biochemical resources. For decades, ecologists and environmentalists have been arguing that pharmaceutical and other commercial applications of biodiversity should help justify its conservation. However, industry investment in natural product research since the mid-1960s has been

small, and it actually declined in the pharmaceutical industry during the 1960s and 1970s. Clearly, the INBio-Merck agreement demonstrates a shift in industry focus and the true economic potential of these resources.

This groundbreaking agreement also shows how companies can return a portion of the benefits of pharmaceutical development to the developing country where the chemical compounds originated. Further, it ensures that some of these proceeds will directly finance conservation while the remainder will indirectly finance conservation through biodiversity research, development and industry in association with the national parks. Coming as it did during the final negotiations of the International Convention on Biological Diversity, the Merck-INBio agreement validated what was becoming – after heated debate – an underlying tenet of the Convention: the fair and equitable distribution of the benefits of the use of genetic resources among *all* those who invest in their continued existence.

Although its close link to conservation efforts has earned it exceptional attention, the Merck-INBio agreement is just one of a rapidly growing number of biodiversity prospecting ventures. Japan has launched a major biodiversity research programme in Micronesia, the US National Institute of Health is screening wild species for compounds active against HIV and cancer, both Indonesia and Kenya are establishing inventory programmes similar to INBio's.

This flurry of interest and enthusiasm in biodiversity prospecting is taking place in a policy vacuum. Virtually no precedent exists for national policies and legislation to govern and regulate wildland biodiversity prospecting. Yet, the 166 countries that signed the Convention in 1992 now must pass implementing legislation that establishes just such a policy framework.

The stakes are high as countries begin to fill this policy vacuum. Done well, biodiversity prospecting can contribute greatly to environmentally sound development and return benefits to the custodians of genetic resources – the national public at large, staff of conservation units, farmers, forest dwellers and the indigenous people who maintain or tolerate the resources involved. Carried out in the mould of previous resource – exploitation ventures, biodiversity prospecting can have a negligible or potentially harmful effect on biodiversity conservation and environmentally sound development.

The value of biodiversity as a raw material for pharmaceutical and biotechnology industries is only a portion of its value to society. It makes good economic sense – and often meets ethical norms – for countries and communities to conserve biodiversity whether or not they become biodiversity prospectors. Indeed, it is entirely possible – and sometimes highly appropriate – for nations to invest in biodiversity conservation without ever seeking to commercialize genetic and biochemical resources. The normative question of whether or not countries should commercialize genetic and biochemical resources is not addressed here, but the urgent need to ensure that the commercialization already under way supports conservation and development is.

Key (Policy) Challenges In The Short And Medium Terms

For developing States the key issues in the biodiversity negotiations were: a) the establishment of special systems of intellectual property rights and appropriate mechanisms for compensating developing countries for the biological resources provided by it; b) the establishment of mechanisms giving developing countries access to the technologies that are developed through the use of genetic resources that it provides; c) additional funding to facilitate implementation of the CBD and access to technology. In essence developing countries were seeking to implement a new way of business: a state of affairs where the flow of benefits arising from biodiversity were more equitable.

The flow of benefits

The three levels of biodiversity – ecosystem, species and genetic variability – are all used in quite different ways and consequently have different benefit flows. So, for instance, ecosystems are relied upon as a means to protect watersheds, to stabilize climate and for eco-tourism. Species variability on the other hand is not only used for eco-tourism but is used to provide variety in our diets and ultimately to guarantee food security. Genetic variability also provides food security, by providing the basis upon which farmers and scientists are able to develop resistance in crops to new pathogens. Genetic variability also provides the source of new ideas and drugs in the pharmaceutical industry. The advent of biotechnology has meant that the use and importance of genetic resources has increased dramatically. Thus, other industries such as the waste disposal industry, the cosmetics industry and the horticultural industry are all starting to focus on the natural genetic diversity as means by which to develop new products and expand markets.

Although, the flow of benefits arising from the use of biodiversity are complex and multidirectional, with every country receiving benefits of one sort or another from the world's biodiversity, they have in the past generally been to the advantage of the developed countries. The use of genetic resources illustrates this general flow and is representative of the other uses of biodiversity. The technology to apply genetic resources is largely held in the developed world, whereas the resource is largely located in the developing world. Ownership of the genetic resources and access to the resources was, prior to the CBD, dependent upon the type of genetic resource. Wild or natural genetic resources, those which the developing world is rich in, were considered the common heritage of mankind and hence un-ownable. For example, the 1983 International Undertaking on Plant Genetic Resources ("IUPGR") which, as far as the use of genetic resources is concerned, was until the CBD the most important international instrument, embodied this attitude. The object of the Undertaking is to "ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and for scientific purposes". The Undertaking is grounded on the "universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction".

The Consultative Group on International Agriculture Research (CGIAR), which holds the largest international *ex-situ* collection of genetic resources, operated on the basis that all its genetic stock was available on a free and unrestricted basis for *bona fide* users. It held these resources “on trust for the whole world community”. CGIAR stated that “The CGIAR recognizes that the Centres’ gene bank’s collections cannot be considered amongst the Centres’ assets As trustees of international germplasm collections, the Centres have an obligation to manage them for the benefit of the world community ... This management responsibility includes ... a guarantee of unrestricted access for the benefit of the world community”. If, however, genes had been altered or by biotechnology or “improved”, then ownership was permitted through the concept of intellectual property rights (“IPRs”). For example, microbial genetic resources, which have been purified, are patentable and plant varieties that have been developed by biotechnology or advanced agricultural technology can be owned through the system of plant breeder rights developed under the UPOV Convention.

Distinguishing between natural genes and “improved” genetic resources in such a way contributed to a lack of equitable distribution of the benefits of use. It allows different type of control over access and the extent that providers can appropriate the benefit or value of the resource. The different treatment of genetic resources is commonly referred to as asymmetric access to genetic resources.

Many industries from developed countries benefit enormously from this asymmetric access. Numerous studies have shown that pharmaceutical companies have made significant profits from developing drugs based upon pharmacologically active biochemicals of wild flora found in developing countries. An often cited example of this is the case of two cancer drugs which Eli Lilly, a large American pharmaceutical company, developed from Madagascar’s Rosy Periwinkle which earned \$100 m per year during the life time of the patent. Rarely have pharmaceutical companies paid any compensation for this type of use of genetic resources of developing countries. They have in the past considered natural genetic resources as a public good and one, which they have a right of free access to. In some instances the inequity is exacerbated by the fact that the drug which the pharmaceutical company develops is then sold in the developing country where the genetic lead came from.

Similarly inequitable distribution of benefits is evident in the use of other aspects of biodiversity. For example, with regard to the use of ecosystems, the developed world effectively receives free and uncompensated from the developing world such benefits as the sequestration of carbon dioxide that takes place in the forests of the developing world or the use of the ecosystem diversity of the developing world by international ecotourism.

The Reasons for Equitable Distribution of Benefits

Apart from the moral imperative to address the imbalance in the flow of benefits there are good policy reasons why this imbalance needs to be addressed.

Regulatory measures used in international regimes to protect biodiversity, such as the establishment of protected areas, setting quotas, hunting seasons, prohibiting the taking of certain species, have almost without exception failed to ensure conservation of living resources. One instructive example of this failure is the attempts to regulate whaling. Under the 1948 International Convention for the Regulation of Whaling, the International Whaling Commission has tried for nearly 50 years to implement a regulatory regime, which managed whaling on a sustainable basis. Yet, despite the numerous attempts to develop quite sophisticated management plans, none has so far been successful. The only approach which has had some success in conserving whales is the moratorium on all commercial whaling, which has been in force since 1985: an approach which can hardly be described as sustainable use of a resource. Indeed, even at the national level, where quotas and other regulatory techniques are underpinned by sanctions, (and therefore capable of being enforced in a manner unlike the consensual nature of international regulation) the purely regulatory approach to sustainable use has rarely been successful. National attempts to ban the taking of endangered species represents an example of such a policy failure, which is relevant for almost every country in the world.

The inadequacies of the traditional legal approach to the problem of conserving biodiversity or living resources means that policy makers have increasingly turned to different approaches. A popular alternative in recent years is the use of economic instruments, which rely upon persuasion and incentives as opposed to duties and obligations. Economic instruments work on the basis that they motivate conservation by creating financial incentives. They provide those that bear the burden of conservation with non-altruistic reasons for undertaking this burden. They also provide the resources to undertake the burden. In economic parlance these instruments seek to internalize the external cost and benefits of an activity. This means empowering those who live with and have control over biodiversity to receive just compensation for the use of this resource by others. In legal parlance this is what is meant by equitable distribution of benefits.

Finally and perhaps most importantly, creating a more balanced and equitable distribution of benefits not only provides more resources for developing countries to undertake more conservation measures, but also reconciles the divergent interests of developed countries who wish to conserve biodiversity and developing countries who wish to develop their economies. To the extent that this occurs the principle of equitable distribution of benefits bridges the gap and resolves the tensions between the developed and the developing world and provided the basis for a compromise which allowed the adoption of the Convention.

Implementing Equitable Distribution of Benefits

There are numerous techniques for redistributing the flow of benefits. Trade development rights, debt for nature swaps, correction of trade distortions, elimination of perverse incentives, international resource taxes and commodity cartels are all examples

of techniques which at their heart are about making those that use a resource pay for that use, or in the words of the economists to internalize the externalities.

The mechanisms which negotiators considered in respects to creating a more balanced flow of benefits and the way that the CBD attempts to develop the guiding principle of equitable distribution of benefits into a legally binding commitment are: a) providing financial assistance through the financial mechanism; b) sustainable use of biodiversity; c) technology transfer; and d) controlling access to genetic resources.

During the negotiations of the CBD each one of these issues was dominated by strong North/South tensions. Access-related issues were on the whole some of the most difficult in the negotiation of the CBD. In order to be willing to discuss and eventually take on the conservation obligations, developing countries made certain demands of their own. Not only did they press for the Convention to become more directly use-oriented, but many made their participation in the negotiations conditional on the inclusion in the CBD of obligations and measures on three types of access: access to genetic resources, which they wished to have recognized as subject to national authority; access to relevant technology, stressing that it includes biotechnology; and access for the providing States to benefits ultimately gained from the use of genetic material in the development of biotechnology.

The Manner in Which National Governments and The International Community Might More Broadly Address the Challenges

The onus of conserving and sustainably using biodiversity lies at the national level. This responsibility is linked to the principle of sovereign rights of States over their natural resources which has been one of the important tenets of the CBD. The detailed responsibilities and obligations on these matters are reflected in the relevant articles of the CBD such as General Measures for Conservation and Sustainable Use (Article 6), *In situ* Conservation (Article 8) and Sustainable Use of Components of Biological Diversity (Article 10).

National governments have much to do, considering the spectrum of actions Parties have to undertake and the wide range of policies they have to review. By the same token, the notion that conservation of biodiversity is a “common concern” of humankind implies a common responsibility to the issue based on its paramount importance to the international community as a whole.

The effectiveness of any international treaty is dependent upon the extent to which it is respected and implemented by its Parties. Already this is happening in the CBD. For instance, many countries are currently taking measures to translate and implement plans on access and equitable sharing of benefits of genetic resources. The importance of national level implementation for the Convention has meant that the CBD process has moved rapidly to put into place structure which will be crucial for ensuring its provisions are implemented by its Parties. It is therefore important that assistance to developing

country Parties to implement the provision of the CBD through the financial mechanism be simultaneously followed-up.

The success of national action, seen from a global perspective, will depend on the will of both the developed and the developing country Parties to meet their obligations.

The Comparative Advantage the UN Might Have In Working with the International Community in Addressing the Challenges

In so far as biodiversity is concerned, the question is academic whether the UN has a comparative advantage in addressing the challenges. It is inevitable that the governance of such a global issue like biodiversity needs the direct involvement of this organisation.

It is interesting to note the level of interest and commitment shown by countries toward the CBD. Signed by more than 150 governments at the UNCED in Rio de Janeiro in June 1992, it came into force barely eighteen months later. Today with 175 country Parties to it, it must be one of the biggest treaty ever ratified to in the UN system.

The CBD presents an opportunity to realize important goals. Immediately after UNCED one might have anticipated further progress would have been made by now. However the recently concluded UNGASS was an awkward reminder how hard it has been to sustain enthusiasm, much less secure funding and institutional commitments. Moreover, of all the commitments to come out of UNCED, the CBD has proven the hardest to market to politicians and the public. Biological diversity is consistently ranked last in public awareness among all environmental issues, ranging from wildlife to climate change. Indeed, the constituency for biodiversity has to be considered soft even among many who consider themselves environmentalists. It is easier to rally support for particular biological assets, tigers or wetlands, than for a relatively abstract biodiversity.

Parties to the CBD cannot ignore that they are launching an uphill campaign at an unpropitious time, just when the environmental movement's momentum appears to be plateauing. For the Parties, merely educating the public and world leaders about the stakes, much less agreeing among themselves, will itself consume considerable effort. In this context, the process needs to be realistic about its goals.

From its inception, the CBD has been burdened with a lack of clarity and potential conflict in its institutional mission. On the one hand, there are those whose primary motive is to conserve Nature for future generations. On the other, there are those for whom conservation must be subordinate to development. Of course, there is an important range of policy options in which the two aims are congruent, where "sustainable development" is more than a motto; there, cooperation will be easiest to achieve. But when the path of conservation departs from that of economic benefits, when the Parties consider proposals that would preserve valued assets, but at a cost to development, which course will they take?

Even within the ambit of conservation, institutional tensions persist that need to be resolved. Those whose predominant concern is loss of species and ecosystems are tempted to seize upon this new framework convention as an opportunity to attack all biology-related problems on all fronts. But there is already a host of treaties, agreements and institutions that address biodiversity. Some believe that is part of the problem, that the present fragmentation of effort is too “piecemeal”, and that all these diverse efforts require coordinated or consolidation. There is no way to draw clear lines between biodiversity, on the one hand, and most of the problems that beset mankind, on the other. Desertification, rivers, toxic waste, and ocean management all impact biodiversity, as do weapons testing, trade, agriculture, mining and auto emissions. Moreover, there is little evidence that great umbrella agencies are in any way more effective or efficient than moderately sized institutions with more sharply focused mandates.

It is clear that biodiversity cannot be safeguarded without advancing into areas already addressed by other regimes, and that the CBD should avoid duplicating any ongoing efforts that are moderately well working. Where other agencies have already initiated biodiversity-advancing policies, the COP should restrict its role to identifying problems that have been overlooked, and recommend improvements.

Even this limited role will, however, inevitably create tensions. For example, to what extent should the Convention pursue its own agenda concurrently and independently? How far can the CBD withdraw from forest management, and still maintain credibility? Where trade-related matters are concerned, should the Parties to the CBD try to influence the WTO, or do their best to withdraw trade-related matters (for example, in genetic resources) from the WTO or place them under a competing regime? Even though the answers to these questions and other raised by the overlapping mandates of various processes have no immediate answer one can be sure that the CBD cannot take on all issues before it. The underlying question must be, in which areas is a commanding role worth developing? In light of alternative institutional competencies, of UNEP and CSD, and of so many other agencies, what can the CBD contribute uniquely or preeminently? To what extent can it even fill the role of institutional steward?

Even if the Parties steer a clear path away from other institutions, and take up only the tasks most clearly within the purview of the Convention, they will have to give some aims priority over others, if only because of budgetary and institutional constraints. A core agenda for the aims of the Convention has already been laid out in a series of first-rate studies going back to the 1980 World Conservation Strategy, through Conserving the World’s Biological Diversity and Global Biodiversity Strategy. At this point, the question is not, what *should* be done? There is more to do than can be handled. The question is one of focus: which of many worthwhile objectives take precedence? Perhaps it is possible to identify and prioritize projects that are win-win: those that can enjoy the support of conservationists and developmentalists alike. The worst tragedy would be for the Parties to bog down over relatively remote and peripheral issues while the central needs that inspired the Convention continue to be postponed. Consider the amount of total effort that has gone into biosafety. Supporters justify the attention by labeling the issue “crucial”. But it is possible to suppose that bio-safety has been labeled “crucial” because

it is something the Parties have been able to agree to spend time on, putting off discussion of problems that are far more consequential.

Potential for Partnerships among States, International Organizations, Commercial Organizations and Civil Society Actors in Collectively Addressing These Challenges

Given the nature of the issues, which the Convention seeks to address, the Convention is heavily dependent for its effectiveness on the actions of Parties and other institutions. The need to develop institutional links with other international bodies, to develop cooperative relationship with such bodies and hence mechanisms for coordinating these relationship, is fundamental to the implementation of the Convention. Each COP has reaffirmed the importance it attaches to cooperation and coordination between the CBD and other conventions, institutions and processes of relevance. Consequently, it is not possible to simply think of the institutional structure of the Convention in terms of those institutions established by the process itself.

The most important example of the role that external bodies play in the institutional structure of the Convention is the financial mechanisms which in institutional terms is largely housed in the Global Environment Facility, and its Implementing Agencies: UNEP, UNDP and the World Bank.

Institutional links have been established with a wide range of other bodies. The Secretariat of the CBD has participated in the Inter-Agency Task Force of the Intergovernmental Panel on Forest and the Inter-Agency Committee on Sustainable Development (IACSD) of the United Nations. Agreements to provide a framework for developing institutional links and cooperation with other bodies have been concluded between the Secretariat of the CBD and the secretariats of the Ramsar Convention on Wetlands; the Convention on International Trade in Endangered Species of Fauna and Flora; the Convention for the Protection of the World Cultural and Natural Heritage; the Convention on Migratory Species; the Intergovernmental Oceanographic Commission, the World Bank, IUCN, UNCTAD and the FAO amongst others.

The COP has regularly adopted decisions directed towards other processes and invited them to take an active role in the implementation of aspects of the Convention. For example, the third meeting of the COP invited the Convention on Wetlands of International Importance to cooperate as a lead partner in the implementation of activities under the Convention on Convention on Biological Diversity related to wetlands. Consequently, the Ramsar Bureau has played an important role in the preparations for the consideration of the biological diversity of inland waters for the forthcoming COP. As a result it is expected that the programme of work which the COP may establish to address the issue will invite the full and active participation of the Convention on Wetlands of International Importance process.