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LEGAL IMPLICATIONS CONCERNING THE IMPLEMENTATION
OF THE CONVENTION ON BIOLOGICAL DIVERSITY
IN DEVELOPING COUNTRIES: PERU */

*/ This document was prepared by Mr. Andreas B. Hardeman, Consultant, Division of Natural Resources and Energy. The views expressed herein are those of the author and do not necessarily reflect those of the Organization.

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Summary

With the adoption of the 1992 Convention on Biological Diversity in Rio de Janeiro ^{1/} the world community acknowledged the need of conservation of what is probably nature's most valuable asset for humanity, viz. biodiversity. The concept of biodiversity is multidimensional and can be linked to almost any aspect of society, whether it be social, economic, industrial, cultural, scientific, educational or even recreational or aesthetic. Analyzing this concept therefore, is a challenging and complicated task, but above all an absolutely necessary one.

In this paper, following some general remarks essential for a better understanding of the text, first a short outline shall be given of the concept of biodiversity, indicating its function within the global ecosystem and its potential to make a valuable contribution to scientific progress, industrial development, economic growth and social improvements in industrialized and developing countries.

Chapter 2 analyses the international legal framework as represented by the Convention on Biological Diversity. This document provides the guidelines upon which regional and national policies should be based and along which they should be carried out. In the light of the current situation concerning the use and exploitation of the components of biodiversity (the biological and genetic resources), a brief analysis of the Convention's relevant regulations will be made in order to examine whether this document enables governments to adopt sustainable and effective conservation policies.

Having done this, it comes to the point where international regulations actually have to be transformed into national legislation and, what is more, into national policies and coordinated activities. In Chapter 3 the situation of Peru will be examined to see which difficulties this country is likely to encounter with respect to the implementation of the Convention's regulations in its national legislative system.

^{1/} On September 30, 1993, Mongolia became the thirtieth country to ratify the Convention, which went into force 90 days later on December 29, 1993. (*World Resources 1994-95 (a guide to the global environment)*). World Resources Institute, p. 156.

Chapter 1

THE CONCEPT OF BIODIVERSITY, ITS VALUE AND ITS USE

A. SOME GENERAL REMARKS

Before addressing a complicated matter as the implementation of specific international legislation into national legal systems of developing countries, we must try to make an assessment of the factors that are involved in this process.

- A legal concept

Assuming that legislation is drafted in order to regulate existing practices - for laws cannot efficaciously address future practices - in a way that these practices are being carried out justly, efficiently and consistent with other regulations, two factors can be discerned on which any legal concept (convention, law, regulation, decree, etc.) is based, viz. the common practice in casu and the ideological principles that apply to this practice. *Thus the combination of existing activities in a specific field of society and an ideological concept of how these activities should be undertaken, lead to the drafting of a specific legal text.*

- The effects of implementation

As always, however, the actual effects of regulations tend to differ from the effects that were initially aimed at. Good intentions do not necessarily lead to satisfactory results. Especially when taking into consideration that international legislation often addresses many societies with completely different structures, it is obvious that the actual effects brought about by this legislation are strongly dependant upon the in-country situation. *The domestic effects of international regulations are largely determined by the capabilities of each individual country to implement these regulations effectively.*

Implementation in this sense does not only consist in the incorporation of the international regulations in the national legal framework, but also in the physical capability of carrying out, maintaining and if necessary enforcing the provisions set out in the regulations. Economy, geographic conditions, poverty, political stability, human resources, institutional organization, infrastructure, etc. are all determinant elements for the ultimate effectiveness of international regulations.

- Consistent use of essential notions

Another determinant element for the effectiveness of international regulations - and legal texts in general - which is of a different kind but therefore no less important, is the consistent use of essential notions. A uniform description of essential notions should be used by those who (have to) work with these notions. And while the Convention on Biological Diversity serves as a starting-point for further negotiations and developments, essential notions, like those described in Article 2 of the Convention, will have to be used consistently throughout the discussions concerning the Convention. This is also what will be done in this text. *The essential notions of a legal text must be clearly defined and have to be used uniformly in order to attain the highest possible effectiveness.*

(NB a glossary of the used terminology is included in Annex 1. At the same time the notions included in the glossary are marked with a *) where they first appear in the text.)

Yet another source of inefficiency, on which I will not elaborate here, are translations of legal texts from one language into another, which can cause many problems as a result of different linguistic interpretations.

- Developing Countries*)

Where reference in the text is made to "developing countries", this qualification has been made according to the World Bank classification of economies, which distinguishes four groups:^{2/}

- low income (GNP per capita \$ 675 or less)
- lower-middle income (\$ 676 - \$ 2.695)
- upper-middle income (\$ 2.696 - \$ 8.355) and
- high income (\$ 8.356 or more).

^{2/} *Social Indicators of Development 1994*, The World Bank, Washington D.C., 409 p.

Except for countries in the high income group,^{3/} which shall be referred to as "industrialized countries", all the others are considered developing countries.

- The environment^{*)}

To give a definition of "environment" that covers every thinkable interpretation seems to be impossible as well as unnecessary. In this paper the notion of "environment" will have a broad scope and shall encompass *the natural and social surroundings that have or can have an influence on the quality of life*. The environment as referred to in this text therefore, does not only consist in the vegetation, the wildlife and the soil, water and air that surrounds us. It also comprises e.g. rural and urban settlements, sanitary provisions, infrastructure, human populations and human rights. The absence or presence, the quality and the quantity of these elements determine the quality of life and thus the environment in a given situation.

Now, let us take a closer look at the subject of this paper, bearing in mind the aforementioned general aspects. The legal concept which forms the basis of regulatory actions is, in casu, the Convention on Biological Diversity^{*)} which was adopted on 5 June 1992 in Rio de Janeiro by almost all the countries of the international community.^{4/} To comprehend the full ambit of the Convention it is necessary to know its origins. We must know why it was deemed necessary to regulate the activities in casu at an international level (i.e. the ideological concept) and how the situation was prior to these regulations (i.e. the common practice). The latter aspect shall be dealt with first, in point 2. of this chapter.

^{3/} This group includes all the OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom and United States) as well as several other developed Non-OECD countries (Andorra, Bahamas, Bermuda, Brunei, Channel Islands, Cyprus, Faeroe Islands, French Polynesia, Greenland, Hong Kong, Israel, Kuwait, Qatar, San Marino, Singapore, Taiwan, United Arab Emirates and Virgin Islands (US)).

^{4/} See table 24.1 "Participation in Major Global Conventions-Wildlife, Habitat, and Oceans, 1993" in *World Resources 1994-95 (a guide to the global environment)*, World Resources Institute, on p. 374. States that have neither signed nor ratified the Convention include: Albania, Cambodia, Equatorial Guinea, Georgia, Israel, Kyrgyzstan, Lao People's Dem. Rep., Saudi Arabia, Tajikistan and Uzbekistan.

B. COMMON PRACTICE PRIOR TO THE CONVENTION

Until recently unimproved genetic resources⁵⁾ - to be distinguished from artificially modified genetic resources - were considered the "common heritage of mankind", under which regime these resources, as a *res publicus*, were to be available to anyone without any restrictions. As a consequence free exchange of genetic material⁶⁾ took place between countries and, as could have been expected, industrialized countries took full advantage of this situation by exporting valuable samples to their own countries, to be used as raw materials for their biotechnological⁷⁾ industries. And because the common heritage of mankind principle did not apply to biotechnically modified genetic material, the industrialized countries could easily make their profits without sharing any of it. In hindsight these practices might well be seen as a *de facto* expropriation from developing countries of natural resources⁸⁾ within the limits of their jurisdiction, in this way constituting a serious infringement of their sovereignty.

Examples of unsuccessful attempts by developing countries to protect their genetic resources are abundant. Brazil's once flourishing rubber-industry is now practically non-existent because of the export, 20 years ago, of rubber tree seeds to Malaysia and Singapore. Also attempts by various Andean countries to prevent the export of the anti malarial compound Cinchona became fruitless when British explorers exported samples.^{5/}

As developing countries began to question this practice of exploitation without costs of their natural resources by industrialized countries, this eventually lead in 1983 to the adoption of FAO's International Undertaking on Plant Genetic Resources (Resolution 8/83) which held that *all* genetic resources, natural (i.e. unimproved) and modified, should be considered common heritage of mankind, thereby trying to eliminate the unjust privilege of industrialized countries by giving developing countries access to the biotechnologically modified genetic material. It is needless to say that only very few industrialized countries signed the Undertaking, for the obvious reason that they found it simply unacceptable to give free access to valuable commercial goods that took large investments to develop.

The turning-point in the approach of rights regarding the use and exploitation of genetic resources only came in 1991 when, at a workshop on property rights, biotechnology and genetic resources in Nairobi, it was acknowledged that application of the common heritage of mankind principle might jeopardize the conservation of

^{5/} See: W. Reid *et. al.*: *Biodiversity Prospecting: using genetic resources for sustainable development*, p.20

biological diversity^{6/}, because it does not provide any incentive whatsoever for developing countries to take conservation measures. As long as governments and rural populations of developing countries can obtain more profits from a non-sustainable use^{7/} of their biological and genetic wealth than they can from the preservation of it, it is obvious that they will opt for the solution that provides instant profits. Therefore it has got to be made worthwhile for developing countries to preserve their genetic and biological resources^{7/} instead of consuming them in a non-sustainable manner in order to obtain short term profits. The question to be answered here is: how can this be done? In the analysis of the convention's articles in Chapter 2 will be discussed how the "sharing in a fair and equitable way (of) the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources",^{6/} can be pursued.

By now it has been generally recognized that the common heritage of mankind principle, as put forward by Arvid Pardo some 25 years ago, cannot be effectively applied to the concept of the use and exploitation of biological and genetic resources. However, two of the three ideas on which the principle was originally based^{7/} still hold and, in fact, form two of the cornerstones of the Convention, viz. the need for management of the use of the resources and the sharing of benefits.

Before turning to the text of the Convention itself, however, in Chapter 2, a look is taken at the underlying principles which inspired the drafting of the text.

C. THE IDEOLOGICAL PRINCIPLES

In identifying the ideological principles that eventually led to the adoption of the Convention, the following question has to be answered:

What exactly is the value of biological diversity that makes it worth the effort of conservation through the drafting, adoption and implementation of an international convention?

^{6/} See Article 15(7) of the Convention.

^{7/} See: A. Pardo: *The Common Heritage (selected papers on oceans and world order 1967-1974)*. I.O.I. Occasional Papers No.3, Malta University Press 1975.

As biological and genetic resources constitute a significant part of the environment, it hardly needs explanation in what way the sustainable use and exploitation of these resources adds to the amelioration or improvement of the environment as a whole. Apart from the immediately visible values, however, that the conservation of biodiversity has for the preservation of the environment, like the provision of a great variety of resources and the mere presence of a diversity of landscapes, wildlife, etc., its most fundamental value - which is not immediately discernable - lies in the key-role that it plays in the function of ecosystems^{8/}. Ecosystems are intricate mechanisms of living and non-living elements, within which no living element (animal, plant or microbial) functions alone; they all depend on each other in one way or another although some are more dependant than others. With a decline in the diversity of species, ecosystems will adapt themselves to the new circumstances if possible but inevitably some ecosystems will vanish, which means that valuable, or at least potentially valuable, biological and genetic resources might be lost for good.^{8/}

Some figures might give an indication of the need for conservation of our biological and genetic resources, bearing in mind that they, as §15.2 of Agenda 21 puts it, "feed and clothe us and provide housing, medicines and spiritual nourishment".

Habitat^{9/} loss is considered the biggest current threat to biodiversity.^{9/} Tropical rain forest systems, which are believed to shelter at least half the planet's life forms (some scientists estimate the total number to be as high as between 10 and 80 million) have been reduced by nearly half their original area. Deforestation annually claims 17 million hectares (= 170.000 km²) of wet and dry tropics, with the highest annual deforestation rate being found in Brazil, probably the most biodiversity rich country in the world.^{10/} Damage to wetlands, like tropical forests important storehouses of biological diversity, has been severe in industrial nations, with losses in Italy, New Zealand, and California exceeding 90 percent. Mangrove

^{8/} See: WRI, *World Resources 1994-95 (a guide to the global environment)*, figure 8.1 on p.149.

^{9/} Ibidem, p.149.

^{10/} For an overview of deforestation in so-called megadiversity countries, see Table 1 in: John C. Ryan: *Life Support: Conserving Biological Diversity*, Worldwatch Paper 108 (April 1992), p.8. Table 2 at p.11 gives a list of selected animal species that are in jeopardy.

systems, i.a. vital for the protection of inland habitats from marine erosion, in India, Pakistan and Thailand are reduced to one quarter of their original size.^{11/}

A lack of sustainability in the use of biological resources during the last few decades, apparent in habitat destruction, over-harvesting, pollution and the inappropriate introduction of foreign plants and animals, has led to the diminution of the world's biodiversity at all three levels that are normally distinguished, viz. the variety of ecosystems, the variety of species and the variety within these species themselves, the genetic variety. Degradation of tropical forests, wetlands, mangrove swamps and coral reefs already has led to the extinction of valuable plant and animal species and at the same time has put in danger many more species. The disappearance of species means the disturbance of the equilibrium of food chains, which will inevitably lead to the disappearance of more species. Negative effects may not always be immediately visible, but it is known that extinction or even reduction of certain local plant or animal populations can have serious impacts on nature and human society. This is, for instance, illustrated by higher rates of malaria linked to a decline of bullfrog populations in West Bengal.^{12/} Other examples are rat and rabbit explosions brought about by the destruction of their predators and the elimination of herbivores' grass resources caused by the diminution of elephants.^{13/}

In accordance with the twenty-seven principles set out in the Rio Declaration on Environment and Development, Chapter 15 of Agenda 21 expresses the general need for the conservation of biological diversity and supports the Convention on Biological Diversity. The preamble of the Convention briefly reflects these Agenda 21-principles and together they provide a clear insight into the ideological foundation on which the Convention has been built.^{14/}

Through the adoption of Agenda 21 and the Convention, the Contracting Parties express their awareness of the significance of the conservation of biological diversity because of its evolutionary importance and its many values for society. It is stated that the planet's essential goods and services depend on the variety and variability of genes, species, populations and ecosystems and that these biological

^{11/} Ibidem p.9.

^{12/} Ibidem p.13.

^{13/} See: José Olivares, *Biodiversity Conservation: Ethical and Practical Issues*, p.4.

^{14/} See also infra p. 22 and 25, paragraph B. point 1.

resources therefore constitute a capital asset with great potential for inter alia yielding sustainable social, economic and scientific benefits.

It is made clear that a sensible use of biological resources not only is a prerequisite for the preservation of a diverse, healthy and enjoyable environment but that it also can stimulate biotechnical and other scientific progress, which in turn enhances industrial development. The benefits that can be obtained in this way can eventually lead to economic growth and social improvements in both industrialized and developing countries.

In paragraphs 1. to 3 it will be pointed out what precisely is the role of biodiversity in this process.

1. Biotechnical and other scientific progress enhances industrial development

Scientific research and progress in many fields of science depend on the diversity of biological and genetic material and the information derived from it. Its availability is essential for biologists, biochemists, pharmacologists^{15/}, taxonomists, geneticists, virologists, oncologists and many other professionals. Especially important for the contribution of biodiversity to industrial development, is the role of biotechnology ^{15/} (See Textbox 1).

Although there already exist numerous applications of biotechnically modified products, it is expected that the demand for genetic resources for pharmaceutical, agricultural and other applications will only grow as techniques for genetic manipulation are improved. It can therefore safely be said that sustainable use and exploitation of biological resources in general, and of genetic resources in particular, can, through application of i.a. biotechnological processes, yield considerable profits for various industrial sectors.

^{15/} UNEP/Bio.Div/SWGB.1/3 *Biotechnology and Biodiversity*, p. 2 : "The UNIDO/WHO/UNEP Working Group on Biotechnology Safety defined biotechnology as the application of biological systems and organisms to scientific, industrial, agricultural, medical and environmental processes and uses", with organisms including "plants, animals and microbes that occur naturally or that have been genetically modified".

- The agricultural sector

By means of biotechnological adaptation of traditional crop species to natural circumstances that would normally have negative effects on the production (like periods of draught, plagues, diseases, etc.), it is estimated that crop production can be increased by 30 percent without extension of cultivation areas at the cost of forests. Examples of this sort of adaptation are inter alia the transfer of pest-resistant genes from the *Bacillus thuringiensis* to tobacco, tomatoes, potatoes and cotton and the transfer to tobacco plants of genes that produce natural antifreeze elements in order to protect the plant from freezing temperatures. Also, attempts are being made to transfer an insect-resistant gene from the cowpea to the potato.^{16/}

Developments like this might also prove to be valuable as compensation for the increased vulnerability of crop species to pests and diseases, brought about by the widespread introduction of high-yielding cultivated crop varieties^{17/}, which in itself forms yet another threat to biodiversity. An example in this context is the introduction of *Phytophthora*-resistant genes from a Peruvian wild potato species into potatoes used for the Dutch potato seed industry, thereby preventing an annual loss of millions of dollars. A comparable routine of transferring pest resistance genes from primitive species to cultivated species, is applied by industrialized countries in their tomato industry.^{18/} If an increase in crop production through

Textbox 1

● Biotechnology

When speaking of biotechnology, a differentiation is normally made between classic and modern biotechnology. The former is the sole use of existing microbes, bacteria, etc. to initiate or influence certain natural processes, for example fermentation. This sort of biotechnology might be referred to as mere *bio application*. The latter, however, consists of the use of new techniques, based on the modification of existing microorganisms, bacteria, genes, germplasm, etc., in order to adapt and control natural processes for specific use. This can be thought of as biotechnology through *bio engineering* and it is this kind of biotechnology that is likely to become one of the more prominent factors of new industrial developments.

^{16/} See W. Reid et. al.: *Biodiversity Prospecting: using genetic resources for sustainable development*, p.14.

^{17/} See: John C. Ryan: *Life Support: Conserving Biological Diversity*, Worldwatch Paper 108, p.14.

^{18/} See: FAO/UNCED Doc. RLAC - CDS3 *Conservación y Manejo de la Bioversidad*, p. 19.

biotechnological adaptation can be realized, this would be a sustainable way of economic growth. Large-scale clearing of tropical forests for agricultural purposes, which is counterproductive in the long run, could be reduced and the promotion and maintenance of traditional agricultural systems can help to conserve biodiversity ^{19/} (See Textbox 2).

The conservation of diversity of biological resources, including genetic resources is, however, not only important for the maintenance and progression of the agricultural industry. Also the pharmaceutical sector can profit from it.

- The pharmaceutical sector

Because of its economic potential, interests of the pharmaceutical industry in biological and genetic resources mainly focus on the development of new drugs. Sources of information for these developments are "rational drug design", based on screening techniques applied on biologically active chemicals from plants, insects, marine invertebrates, fungi and bacteria, and "ethnopharmacological" research", based on the use of plants or animals in traditional medicine. Both sources of information completely rely on the diversity of biological and genetic resources.

The market value of drugs based on plants, in the industrialized countries is estimated at 43 billion US\$, while approximately 80 % of the world population uses drugs, based on indigenous knowledge of medicinal plants.^{20/} Probably the most

Textbox 2

• Agriculture in Forested Areas

Talking about conservation of biodiversity is talking about conservation of tropical forests. Rapid population growth and severe pressure on forested areas for agriculture, livestock grazing, fuelwood and other domestic needs of the rural population, together with deforestation for economic gain by industrial countries, has ended in over-exploitation of biological resources and the steady erosion of tropical habitats. Studies have pointed out that the conditions under which e.g. a high diversity of plants is found (i.e. infrequent human and natural disturbances with low productivity) are unlikely to support productive agriculture or forestry. Nevertheless, forests of maximum biological diversity are being destroyed for very little economic gain, with no hope of establishing sustainable, productive agriculture, as illustrated by e.g. experiments in Rondonia and other parts of the Brazilian Amazon, like the Jari Project in eastern Brazil.

^{19/} See: Michael A. Huston: *Biological Diversity and Human Resources*, in: *Environment and Development* No. 166 (Vol. 42, No. 2) 1992, p. 121-130.

^{20/} See: *Diario "El Espectador": Florece la Biodiversidad* (Sunday 30 January 1994).

well-known plantbased drugs are aspirin, antibiotics and most cardiac/blood prescriptions, while infant leukaemia and Hodgkin's disease are being treated with an extract derived from the "rosy periwinkle", a small plant from Madagascar.^{21/} Another example is the *epibatidina* extract, which the US National Health Institute found in the tropical forests of Chocó, Colombia and which proved to be a far more effective painkiller than morphine.^{22/} One of the most recent promising examples is the use of taxol, which was isolated from the Pacific yew, as an effective treatment for ovarian cancer control.^{23/}

- Other sectors

Other uses with great potential and based on genetic manipulation include: the manufacturing of natural insecticides and biodegradable plastics, micro organic wastewater treatment and chemical soil detoxification.^{24/}

Apart from the use of biodiversity components to attain industrial developments by means of bioscientific advances and applications, another form of biological resource utilization is ecotourism. This branch of national industry, which is generating more and more income for a lot of developing countries, relies entirely on the conservation of biodiversity and at the same time can provide strong incentives to this conservation. Biodiversity and ecotourism have a mutual interest in each other and policies in these fields should therefore be developed in close cooperation.

2. Transfer of funds and technology

According to the provisions of the convention, the profits and benefits derived from the utilization of genetic resources, like e.g. in agricultural and pharmaceutical industries as mentioned above, must be shared on a fair and equitable basis with the country that provided these resources. These profits and benefits can be monetary (profits) or non-monetary (R&D results) or, in other words, their sharing can exist in the transfer of funds or the transfer of technology.

^{21/} Agencia de Noticias Prensa Verde (12 april 1993), p. 8.

^{22/} See supra note 20.

^{23/} See: Olivares, p.6.

^{24/} See: UNEP/Bio.Div./SWGB.1/3 *Biotechnology and Biodiversity*, p.22 Table 1, which gives a list of potential applications of genetically engineered organisms, including environmental, agricultural as well as medicinal applications.

Funding can, according to Chapter 33 of Agenda 21, i.a. be provided by multilateral development banks and funds (IDA, GEF and (sub)regional institutions), bilateral assistance programmes, debt relief, increase of private funding and exploration of so-called innovative financing methods, like debt swaps, the use of economic and fiscal incentives and mechanisms and the reallocation of resources at present committed to military purposes.

With regard to the transfer of technology (described by UNCTAD as the transfer of systematic knowledge for product manufacturing, process application or the performance of a service) a distinction is generally made between hard and soft technology, the former being tangible (computers, field equipment, modified genetic samples, etc.), the latter being intangible, consisting of e.g. etnobotanical data, education and training programmes or pharmacological research information.

Transfer of environmentally sound technology is addressed in Chapter 34 of Agenda 21 and it stressed that the transfer should not just include individual technologies, but total systems of which include know-how, procedures, goods and services, and equipment as well as organizational and managerial procedures.

Apart from the fact that the profits and benefits have to be shared, the user of genetic resources will of course have to pay for the access to the resources itself. In their contract, parties are free to decide upon monetary or non-monetary forms of compensation. As a monetary compensation, the parties could for example agree on the payment of sample and extract prices. Prices per kilo can range from US\$ 50 to sometimes as much as US\$ 1.500 for samples and for extracts generally a sum between US\$ 200 and US\$ 250 per 25 gram has to be paid. Another element that could be included in a contract is royalties. A royalty reflects the value of the biological and intellectual information provided by a collector, balanced by the relative amount of intelligence and financial investment a company must make to develop a useful product. Also advance payments can be used in this context.

Non-monetary compensation can include any form of technology transfer. Interesting is for example the at cost distribution of drugs in developing countries, that are developed from their genetic and biochemical resources.^{25/}

An issue that is closely linked to the transfer of funds and technology, whether based upon the convention's provisions or on a contractual agreement, is the

^{25/} For more detailed information, see Chapter 4 "Contracts for Biodiversity Prospecting" of W. Reid *et.al.*: *Biodiversity Prospecting using genetic resources for sustainable development*.

participation of local and indigenous populations in biodiversity conservation projects. A basic condition for successful protection of natural areas and conservation of biological diversity is the alleviation of poverty of these populations that inhabit many biodiversity rich areas of major importance. Through restrictive regulations introduced by governments for preservation purposes, local and indigenous people are often deprived of their primary resources such as water, food and fuelwood. As a compensation for this, paid jobs shall have to be offered to them. To this end, education programmes could be initiated and equipment could be provided to local institutes for the training of these people to become e.g. professional guides, sample collectors, researchers or assistants. In this way they could work as in-country collaborators for their government or for other organizations that are interested in the biological and genetic resources located in their area and their traditional knowledge could provide valuable information.

This type of collaboration between interested organizations and local and indigenous collaborators benefits both parties and thus helps ensure the long term success of biodiversity conservation projects.

3. Economic growth and social improvements

At this moment, 40 % of the world's economy is based on biological products and processes.^{26/} In order to provide its ever growing population with sufficient food, health care, housing and other needs, a country's economy needs to grow accordingly. Especially many developing countries face immense problems in this respect because of the huge gap that exists between their rate of population growth (sometimes as high as 3.6% with a world average of 1.7%) and their economic growth (See Textbox 3). Consequently, poverty is prevalent in these countries and social improvements are unlikely to be made.

One of the main reasons for the absence of economic growth in developing countries, seems to be the existing imbalance in global patterns of consumption and production.^{27/} According to Chapter 4-A §4.5 of Agenda 21, special attention should be paid to the demand for natural resources, generated by unsustainable

^{26/} See: Diario "El Espectador": *Florece la Biodiversidad* (Sunday 30 January 1994).

^{27/} Ryan also stresses the importance of recognizing the links between biodiversity and population growth and consumption and production patterns.

consumption, bearing in mind that, although consumption patterns are very high in certain parts of the world, the basic consumer needs of a large section of humanity are not being met. *Sustainable consumption patterns with regard to the world's natural resources can eliminate these imbalances and can help to increase the economic growth of developing countries. Sustainable use and exploitation of biological resources forms a part of this.*

Another cause of economic stagnation in developing countries, is their relatively poor access to the international trade market, in combination with the fact that the economies of many developing countries are, in terms of production, employment and export revenues, dominated by the commodity sector. The competitive position of developing countries on the international trade market has to be improved in order to

increase their export revenues. This can only be realized when existing distortions in international trade are removed. The establishment of an open, non-discriminatory and equitable multilateral trade system requires a reduction of government support and protection in agricultural, industrial and other sectors. Improved access to international trade markets, together with sound national policies on the exploitation and export of biological resources can lead to a considerable increase of revenues for the economies of developing countries. The challenge is to ensure that trade and environmental policies are consistent and reinforce the process of sustainable development.^{28/}

Textbox 3

• Population and Economy Growth

When we observe the relation between demographic growth and poverty, we see that in general the growth rate of the population in developing countries is roughly the inverse ratio of the standard of living, measured by its GNP per capita. For example, Bolivia, one of the poorest countries in Latin America with a per capita income of only US\$ 650 (1991), has a population growth rate of 2.5 % . Comparable situations can be encountered in e.g. Kenya, with respectively a US\$ 340 income and a 3.5 % growth rate (one of the highest in the world) and in Laos with an income of US\$ 220 and a growth rate of 2.8 %. With an increase of the GNP, we generally find a lower population growth rate. Chile, for example, with a per capita income that is approximately three times that of Bolivia (US\$ 2.160 (1991)), has a growth rate of 1.7 %.

^{28/} See: Agenda 21 Chapter 2-B § 2.20.

D. CONCLUSIONS

Recognizing the existence of a negative interrelationship between demographic growth, poverty and environmental degradation,^{29/} which form the key factors of a downward spiral that is influenced by other aggravating circumstances like political instability, foreign debts and, sometimes, unfortunate climatological or geographical conditions, it is necessary, in order to reverse this spiral, that economic growth is stimulated. The equitable sharing of benefits arising from the use of biological and genetic resources (in agricultural and pharmaceutical industries but also in e.g. the tourism industry) form a part of this process.

In other words, the transfer of funds and technology can be seen as a decisive link between the industrial developments made in industrialized countries and the achievement of social improvements in developing countries. The dual goal of conserving biodiversity and providing socio-economic benefits for both developing and industrialized countries can only be reached when investments are made in projects that promote sustainable use and exploitation of biological and genetic resources in tropical forests and other diversity rich ecosystems such as areas with "Mediterranean" climates, coral reefs, islands, wetlands, etc.

Through the realization of such projects, industrialized countries, on the one hand, can have access to i.a. valuable genetic resources and to ethnopharmacological information and other indigenous knowledge, to be used in their biotechnological industries. This will stimulate R&D programmes and is likely to lead to the development of new products, some of which might prove to have an immense value for humanity. Developing countries, on the other hand, can attain economic growth and stability on local, regional and national level through the inflow of additional funding, technology and other intellectual means in combination with participation of the local population in joint projects with foreign investors. With a strengthening of their economy, governments are enabled to improve social conditions for their people. Housing, health care, food supply and education could be provided or improved.

Whereas it is true that the world's healthy ecosystems are found predominantly in areas under indigenous control, special attention has to be paid in this process to the key role that the local and indigenous populations of developing

^{29/} See also P.S. Ramakrishnan: *Tropical Forests (Exploitation, conservation and management)* on p.160/161.

countries play in the conservation of biological diversity, and it is therefore wise to include their participation in conservation projects.

Important in this analysis, however, is to keep in mind that the conservation of biodiversity and the sustainable use of its components, can only be a part of the solution to social problems such as poverty, malnutrition, poor health care, habitat destruction and pollution. It is no more than an element in the overall strategy that attempts to realize a sustainable development at a global level.

Keeping in mind the above mentioned values of biological and genetic resources for society, as well as the potential presented by the yet unexplored quantity of resources, it is now time to turn to the legal aspects of the conservation of biodiversity. In Chapter 2 an analysis shall be made of the international legal provisions that are relevant for the implementation⁹ of an effective and sustainable national strategy for the conservation of biological diversity.

Chapter 2

THE INTERNATIONAL LEGAL FRAMEWORK 30/

Because of the transboundary character of our global environment and the intricacy and interdependence of the many systems and subsystems of which it is made up, the international community has to take a holistic and systematic approach towards the solution of environmental problems. This requires cooperation between States at international, regional and sub-regional levels in order to make a joint effort to cope effectively with situations that cannot be dealt with individually.

UNEP's Environmental Report 1993-94 gives an overview of the participation of the world community members in twenty-five selected international agreements relating to the environment.^{31/} In comparison with other international environmental documents, the participation in the Convention on Biological Diversity is remarkably high. This chapter will give a brief analysis of the Convention and of the broader concept on which Agenda 21 was based.

A. AGENDA 21

The United Nations Conference on Environment and Development, under whose auspices the Agenda was elaborated, was the largest conference ever organized by the UN. It generated five formal documents:

- ▲ The Rio Declaration on Environment and Development
- ▲ The UN Framework Convention on Climate Change
- ▲ The Convention on Biological Diversity
- ▲ The statement of principles for management, conservation and sustainable development of forests and,
- ▲ Agenda 21, a program outline for future action on environment and development.

^{30/} This chapter has been based mainly on CLA/UICN: *Guía Explicativa de la Convención de Biodiversidad*. Elaborated by the Centro de Legislación Ambiental de la Unión Mundial para la Naturaleza for the Southamerican Workshop on the Convention on Biodiversity (29/11/93 - 1/12/93, Quito, Ecuador).

^{31/} See: UNEP 1993 United Nations Environmental Program *Environmental Data Report 1993-94*, Table 10.3 on pages 395-400.

The latter is considered to be the most significant product of UNCED, providing the framework for action and cooperation on environment and development leading into the next century. The document is composed of forty chapters, divided into four sections, dealing with social and economic dimensions, conservation and management of resources for development, the strengthening of the role of major groups and means of implementation. The UNCED secretariat summarized Agenda 21 and identified the following main themes:

- Revitalization of growth with sustainability (economics, trade and debt)
- Sustainable living (poverty, health and equity, consumption of resources)
- Human settlements (shelter, water supply and sanitation, waste, transport and energy)
- Efficient resource use (water, energy, biodiversity, minerals, forests and agriculture)
- Global and regional resources (climate and weather, oceans and atmosphere)
- Managing chemicals and wastes (reduction, disposal and regulation), and
- People's participation and responsibility (education, public awareness and training)

The idea is that the document provides guidelines for national governments, international organizations and others, along which they can produce their own strategies for the implementation of the intentions expressed in the document. Basically, Agenda 21 is not a convention in the sense of the Vienna Convention on the Law of Treaties, but merely a joint political statement made by the 179 participants of the UNCED, by means of which they express their good intentions. The document is a piece of so-called "soft law" ^{32/} and therefore does not constitute any legal obligations whatsoever for governments.

Chapter 15 of Agenda 21 deals with the "Conservation of Biological Diversity". It sums up the objectives to be pursued and the activities to be undertaken. It calls for international and regional cooperation and coordination and it deals with means of implementation. Its intention is to improve the conservation of biological diversity and the sustainable use of biological resources, as well as to support the Convention on Biological Diversity.

^{32/} "Soft law" can be described as rules which have to be considered as law insofar as they fix norms with which States should comply, but which cannot be enforced in the traditional meaning of the term. Therefore, these cannot be part of a legal framework's core, but on the other hand they can very well prove their value as referential documents.

B. THE CONVENTION ON BIOLOGICAL DIVERSITY

Unlike Agenda 21, the Convention on Biological Diversity is a binding legal document for the State Parties that acceded to it. For them, after having signed and ratified the text, the Convention establishes legal obligations to act according to its provisions. However, although this might sound firm, the reality is that the wordings of the articles have been chosen most cautiously as not to put too much pressure on the State Parties which could easily be interpreted as interference with their sovereignty. As a consequence, phrases like "as far as possible and as appropriate" (Articles 5, 7, 8, 9, 10, 11 and 14), "in accordance with - its particular conditions and - capabilities" (Articles 6 and 20) and "subject to its national legislation" (Article 8(j)) are found throughout the text. Another result of striking a balance between the interests of different actors (mostly "North" and "South"), is the sometimes ambiguous language of long negotiated articles, like e.g the text of the controversial Article 16.

1. The Preamble

The preamble of the Convention, which forms part of the binding legal text but does not constitute obligations in itself, reflects the ideological framework in the light of which the regulations of the Convention have to be read. Whenever interpretation is deemed necessary, the preamble together with the "travaux préparatoires", serve as a guideline in order to keep this interpretation in line with the intentions on which the Convention was initially based.^{33/}

With twenty-three brief statements the Contracting Parties express in the preamble their awareness of the significance of the conservation of biological diversity because of its evolutionary importance, its intrinsic value ^{34/} as well as

^{33/} See also article 31(1) of the Vienna Convention on the Law of Treaties, which states that: "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose". Article 32 permits recourse to supplementary means of interpretation such as the use of the preparatory work leading to the treaty and consideration of the circumstances of its negotiation. This is allowed only when the ordinary meaning of the text is ambiguous or obscure or when the ordinary meaning of the text leads to a result which is manifestly absurd or unreasonable".

^{34/} Note that this is the first time that in an international treaty reference is made to the intrinsic value of biological diversity, which indicates the recognition of the right of existence, regardless of the actual or potential value for human society.

its many values for society. Convinced of the fact that economic and social development and poverty eradication are the first and utmost priorities of developing countries, special attention has to be paid to the key role that these countries, and more specifically the local and indigenous populations of these countries, play in the process of conserving biological diversity. More so, while the major part of the world's biodiversity is located in developing countries. The process of conserving biological diversity, in combination with the sustainable use of biological resources, is of critical importance for meeting the food, health and other needs of the growing world population. A growth that is predominantly taking place in these developing countries.

The preamble makes clear that scientific, technical and institutional capacities have to be developed through international and regional cooperation among public and private organizations in order to obtain the information and knowledge that is needed for the in-situ⁷⁾ and, complementary, the ex-situ conservation⁸⁾ of biological diversity and for the sustainable use of its components, the biological and genetic resources. For this reason, and taking into account the needs of developing countries (especially those of the least developed countries and small island States), the industrialized countries should provide new and additional financial resources as well as appropriate access to relevant technologies, i.a. biotechnologies.

Also, benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components, should be shared equitably.

2. A Brief Analysis of the Articles

If one would seek a structure in the forty-two articles of the Convention, the following rough division could be made:

- Introductory Articles 1 to 5,
- Main Articles 6 to 22,
- Institutional Articles 23 to 42.

The "Main Articles" 6 to 22 work out the three objectives as put down in Article 1 and can, in turn, be divided in articles that deal with:

- the conservation of biological diversity (Articles 6 to 9 and 11 to 14),
- the sustainable use of biological resources (Articles 6 and 10 to 13) and
- the fair and equitable sharing of the benefits arising out of the

utilization of genetic resources through access to these resources (Article 15), transfer of relevant technologies (Articles 16 and 19) and funding (Articles 20 and 21).

Article 1: Objectives

The three objectives summed up in this article, 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, have to be pursued through appropriate access to genetic resources, appropriate transfer of relevant technologies and appropriate funding.

The qualification "appropriate" makes it possible for the individual Parties to take tailor-made measures in specific, domestic situations. With this qualification, however, the article refers implicitly to provisions of the Convention that are relevant to the pursuance of the objectives. Articles 15 and 16 j°19 respectively deal with the "Access to Genetic Resources" and "Access to and Transfer of Technology", while the Articles 20 and 21 provide measures with regard to financial resources and the creation of a financial mechanism.

Article 2: Use of Terms

It cannot be repeated often enough how important it is, especially with regard to legal texts, that a uniform description of the essential notions is used by all those who (have to) work with these notions. For the addressees of a Convention, whether they are States, NGO's or individuals, it has to be clear what is meant by the terms used in the text and, what is even more important, the terms have to be used in a consistent manner.

For example, we have to uphold the use of the distinctive notions of *biological resources* and *genetic resources*, the latter being a subcategory of the former, for not all biological resources contain the functional units of heredity that are typical to genetic resources. This is for example the case with many chemical extracts or chemical compounds. When these elements do not contain units of heredity, they cannot be classified as genetic material or as a genetic resource. Being part of an organism, however, or at least "*a biotic component of an ecosystem*" (see the description of *biological resources* in Article 2), they do have to be treated as a biological resource.

Genetic resources, combined with the description of *genetic material*, include any material of plant, animal, microbial or other origin containing functional units of heredity, that has actual or potential value. And whereas genetic resources form a part of the biological resources, they can also consist of complete organisms, parts of organisms, populations of organisms and any other biotic (living) components of ecosystems with actual or potential use or value for humanity.

The definition of a *Country of origin of genetic resources* has to be read in relation with the description of *in-situ conditions* which, with regard to domesticated or cultivated species", refers to "the surroundings where they have developed their distinctive properties" as a decisive element. The consequence hereof is that, where it concerns for example traditionally cultivated crops like potato, rice and other kinds of cereals which developed their distinctive properties over centuries in different parts of the world, it seems impossible to identify one country of origin.

Complications of the same sort occur with regard to wild, non-domesticated species, i.a. because of the coexistence of identical species and populations in different countries. And how can one, for example, identify the country of origin of a certain type of microbe?

Unless it is accepted that there are cases in which one cannot identify a country of origin or cases in which one has to accept the existence of more than just one country of origin, this concept is as good as useless. Perhaps this is why it is only mentioned three times in the Convention, viz. in the preamble and in Articles 9 and 15(3).

A country that provides genetic resources is not necessarily, but can be at the same time the country of origin of these genetic resources. In fact, *any* country can provide genetic resources, whereas these resources can be collected from:

- in-situ sources within the country itself (in which case the country is also country of origin)
 - in-situ sources in (an)other countr(y)ies
 - ex-situ sources within the country itself
- or
- ex-situ sources in (an)other countr(y)ies.

The given description of a country of origin further implies that a country is the *possessor* of the genetic resources within its jurisdictional boundaries, although this obviously also follows from the principle of sovereignty of a country over its natural resources, which comprises biological and genetic resources as well.

The suggestion of the introduction of a definition of the term "*conservation of biological diversity*" by the Peruvian government, seems to be superfluous because this definition can be derived from the combination of the definitions of "*biological diversity*", "*in-situ conservation*" and "*ex-situ conservation*".

On the whole Article 2 provides a fine set of clearcut descriptions and by combining the various definitions with caution and in its contextual concept, one gets a rather clear view of the terminology and the interrelationship of the individual terms.

Article 3: Principle

Article 3 of the Convention explicitly entitles States to exploit their own resources and it has been correctly mentioned that for the first time since the Stockholm Declaration of 1972,^{35/} this principle has been laid down in a binding international agreement. The sovereign rights of States over their natural resources are, by the way, again stressed in Article 15(1).

Although States have sovereign rights over the resources within the limits of their jurisdiction, this sovereignty is being restricted by the Convention insofar as States are at the same time held responsible not to cause damage to the environment of other States or of areas beyond the limits of national jurisdiction through activities within their jurisdiction or control (national activities).^{36/} There are many ways in which these national activities can damage the environment of other countries, the most well known forms being transboundary air- and water pollution which of course have an impact on the quality of biological resources and in the worst case result in a decline of biodiversity.

^{35/} Principle 21: "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

^{36/} In a declaration made at the time of adoption of the agreed text of the Convention, the government of Colombia gives notice of its interpretation of the text of Article 3 in the sense that "*no country shall be responsible for activities carried out beyond the control of its Government, within its national jurisdiction, which cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.*"

Other restrictions can follow from obligations laid down in the UN Charter or in principles of international law. An important and generally recognized principle is e.g. that of a State's responsibility for the *sustainable use* of their resources which, according to the definition given in Article 2 of the Convention, means that resources must be used "in a way, and at a rate that does not lead to the long-term decline of these resources (and in this case biological and genetic resources), thereby maintaining its potential to meet the needs and aspirations of present and future generations".

Article 4: Jurisdictional Scope

This article limits the scope of the Convention's provisions with regard to two distinct subjects, viz. "*the components of biological diversity*" and "*the processes and activities carried out under a Contracting Party's jurisdiction or control*". Where provisions of the Convention apply to components of biological diversity, i.e. to living organisms from all sources, including parts thereof, they *only* apply to these resources in areas within the limits of the Contracting Party's national jurisdiction. This follows automatically from the principle that States have sovereign rights over their own natural resources, as laid down in Article 3. Where provisions of the Convention apply to processes and activities (regardless of where their effects occur), it doesn't make any difference whether these are carried out under the jurisdiction of a Contracting Party or under its control, neither whether they are carried out within or beyond the limits of national jurisdiction.

Article 5: Cooperation

Article 5 aims at cooperation among Contracting Parties in the field of i.a. the conservation and sustainable use of biological diversity in areas beyond national jurisdiction, like the international waters of the high seas, the ocean floor and outer space, but also for example international watercourses and transboundary lakes. In this respect, Article 5 forms the complement of Article 4.

The *other matters of mutual interest* that the article mentions, of course include all the activities related to the conservation and sustainable use of biological diversity, referred to in the convention's provisions, like the in-situ and ex-situ conservation, the access to genetic resources and the transfer of technology. Also living resources with transboundary movements, like sea-animals and other migratory species, are of mutual interest and therefore have to be considered under this article.

Less obvious but equally important is the situation in which a national economic activity as e.g. the import of timber, affects the environment of another country, e.g. the exporting country. When, in this example, the timber was logged in an unsustainable manner and thus causing serious damage to biodiversity, Contracting Parties could take cooperative measures against the logging enterprise or the importing country.

Article 6: General Measures for Conservation and Sustainable Use

What the Convention demands from the State Parties in this article is, in a nutshell, the realization of the first two objectives as set out in Article 1, the conservation of biological diversity and the sustainable use of its components. As easy as it is to put this in black and white, as laborious and complicated is the part of setting up and carrying out strategies that succeed in this task. As was mentioned before, the effectiveness of international regulations is largely determined by the capabilities of the individual States to implement the regulations, which of course differ widely in countries such as, for example, Canada, Brazil or Uganda.

For the development of national strategies, plans or programmes (paragraph (a)), countries need to have human, financial and intellectual resources at their disposal. Special consideration in this respect is given to the needs of developing countries in i.a. the Articles 12, 16(2), 18(2), 19, 20 and 21, which respectively deal with "Research and Training", "Access to and Transfer of Technology", "[T]he development and strengthening of national capabilities by means of human resources development and institution building", "Handling of Biotechnology and Distribution of its Benefits", and "[T]he creation of a mechanism for the provision of new and additional financial resources by developed country Parties".

Integration of new strategies into existent sectoral or cross-sectoral plans, programmes or policies (paragraph (b)), requires a thorough analysis of the national legal-administrative structures at the various levels, i.e. at national, federal and municipal or local levels. Depending on the actual situation, it might be necessary to reform these structures in order to come to an effective integration of the conservation and sustainable use of biological diversity into the national environmental preservation policy. These reforms could for example exist in decentralization of legal-administrative structures and the desectoralization of environmental legislation.

Articles 7-10: Identification and Monitoring, In-situ and Ex-situ Conservation & the Sustainable Use of Components of Biological Diversity

For the purpose of the in-situ and ex-situ conservation of biological resources and the actions under Article 10, Article 7 (with reference to Annex I of the Convention) calls upon Contracting Parties to undertake specified activities, like

- the identification (a) and monitoring (b) of components of biological diversity,
- the identification of (potentially) harmful processes and categories of activities and the assessment of their impact (c), and
- the maintenance and organization of relevant data (d).

The content of Annex I shows that the activities to be undertaken relate to ecosystems and habitats, to species and communities as well as to described genomes and genes, of various use and value.^{37/} With the valuable information obtained from the activities under Article 7, an essential foundation has been created for the establishment of systems for in-situ and ex-situ conservation, which in fact forms the most fundamental component of the conservation of biodiversity.

Article 8 deals with the in-situ conservation of ecosystems and natural habitats and with the maintenance and recovery of viable populations^{38/} of species in their natural surroundings which, according to the text of the preamble, is a fundamental requirement for the conservation of biological diversity. Paragraph (a) calls for the establishment of protected areas^{39/}. Just as in-situ conservation forms the heart of the biodiversity conservation strategy, the establishment of protected areas forms the central element of in-situ conservation. Over the years, many different types of protected areas have been created by national authorities, the most well-known being the National Parks and the National Reserves.^{38/} So far, only very few areas have been established for the protection of genetic resources.^{39/}

^{37/} Sub 2 of Annex I specifically refers to medicinal, agricultural and other economic values.

^{38/} Protected areas of other types include for example "Ecological Reserves", "Areas of Relevant Ecological Interest", "Areas Under Special Protection", "Wildlife Areas", "Patrimonial Sites" and "Biosphere Reserves", the latter being based on UNESCO's Man and Biosphere Program, as initiated by this organization in November 1971. (Annex 2 on p.81 of the 1987-1988 biennial MAB report gives a list of biosphere reserves included in the MAB-network.)

^{39/} For some critical remarks on the establishment and functioning of protected areas, see: WRI, *World Resources 1994-95 (a guide to the global environment)*, Box 8.1 on p.152 and Olivares, p.9-12.

Paragraph (c) deserves special attention, for it is the only provision in the Convention that explicitly mentions the "regulation and management" of biological resources, although the provision has its reversed counterpart in Article 10(b). Furthermore, it is interesting to note that, by means of the qualitative statement "[biological resources] *that are important for the conservation of biological diversity*", it is implied that there also exist biological resources that are not important for the conservation of biological diversity and that with respect to these resources, regulation and management is not required.

Finally, in the brief analysis of this article, it is noteworthy that UNESCO's Man And Biosphere Program ^{40/} provides suggestions that can help States with the implementation of paragraph (e), regarding the environmentally sound and sustainable development in areas adjacent to protected areas. Paragraph (j) stresses the importance of the maintenance of indigenous and local knowledge and innovative practices and the equitable sharing of the benefits arising therefrom^{41/}.

Although presented as a "second-grade" conservation measure (for Article 9 refers to ex-situ conservation as "*predominantly for the purpose of complementing in-situ measures*"), the ex-situ conservation plays a role that should not be underestimated, especially where it concerns the conservation of genetic information of cultivated plant species and their wild counterparts.^{42/} Ex-situ conservation serves both as insurance against the loss of genetic and species diversity in the wild and as a resources for occasional releases to reintroduce or bolster wild populations.^{43/} Botanical gardens are of course the more attractive option, but gene-banks and seed-banks seem to be the most efficient way of storing this information, although their maintenance can sometimes prove to be problematic because of financial restraints. Conservation of domesticated animal species takes place in zoological gardens; conservation of wild animal species, on the other hand,

^{40/} The Man and Biosphere (MAB) Program was initiated by UNESCO in November 1971. To get an idea of their activities, see e.g.: UNESCO's *Man and Biosphere (MAB) Program, 1987-1988 Biennial Report*, 95 p.

^{41/} The Peruvian and Colombian governments' Declarations express dissatisfaction with the weak wordings of Article 8 (j), which only asks to *encourage* the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

^{42/} See: CLA/UICN, *Guía Explicativa de la Convención de Biodiversidad*, p. 60.

^{43/} See: WRI, *World Resources 1994-95 (a guide to the global environment)*, p.151-152.

is a much more complicated task, i.a. due to their behaviour patterns and the related reintroduction aspects.

Sustainable use of the components of biological diversity, being the complementary part of conservation of biological diversity in the overall strategy, is elaborated in Article 10. It is a general provision, stressing the integration of sustainable policies regarding the use of biological diversity, into national decision making. Paragraphs (c) and (d) encourage the support to local populations in their actions to revitalize degraded areas, as well as the protection of customary use of biological resources in accordance with traditional cultural practices. Here too, the classification given in Annex I applies, so that in reading Article 10, one has to be aware of the distinctive categories of sustainable use, viz. of ecosystems and habitats, of species and communities and of described genomes and genes. With regard to species, their use is said to be sustainable when:

- it does not reduce the potential future use of their population or affects its viability in the long run;
- it is compatible with the maintenance of viability in the long run of support ecosystems and of the species that depend on these ecosystems;
- it does not reduce the potential future use, or affects the viability in the long run of other species.^{44/}

Article 11: Incentive Measures

The article calls for the adoption of economically and socially sound measures as incentives for the conservation and sustainable use of biological resources.

It cannot be denied that people need incentives, and preferably economic incentives, to persuade them to undertake activities that do not by themselves bring immediate profits. In this line of thought, rewards could be offered as compensation for sacrifices that people make for the conservation and sustainable use of components of biological diversity. These rewards can for example exist in subsidies, tax exemptions, preferential grants or, and this is an attractive option in more than one respect, in the benefits derived from the application of intellectual property rights. Of course, also negative incentives can be applied to induce people to abstain from harmful activities.

^{44/} See: CLA/UICN, *Guía Explicativa de la Convención de Biodiversidad*, p. 64.

Articles 12 and 13: Research and Training & Public Education and Awareness

These articles encourage a better understanding of the biodiversity concept for professionals and laymen through the promotion of scientific and technical education and research and through the development of educational and public awareness programmes.

Article 14: Impact Assessment and Minimizing Adverse Impacts

Environmental Impact Assessments (EIA's) nowadays form a crucial part of the preliminary studies regarding project development programmes and other plans that will have or are likely to have an effect on the environment in its broadest sense. Although often only government projects are liable to EIA's, it is more and more recognized that also private projects have to undergo this "sustainability test". An important feature of EIA's is the public feed-back and participation of NGO's and individuals.

Article 14 has its focus on EIA's with respect to possible adverse effects on biological diversity. It calls for the introduction of these EIA's in projects proposed by the Contracting Parties (in paragraph (a), the word 'its' refers to the Contracting Parties in the introductory phrase) and it should be noted that private projects are not mentioned here. Paragraphs (c) and (d) deal with the transboundary aspects of biodiversity protection, and form in fact a specification of the cooperation obligation of Article 5.^{45/} In order to minimize adverse impacts, States have to cooperate by means of mutual notification, exchange of information and consultation, in cases where the biological diversity of other States, or of areas beyond the limits of national jurisdiction, is at stake. For this purpose, bilateral, regional and multilateral agreements can be concluded.

Section 2 of Article 14 assigns to the Conference of the Parties (established in Article 23) the examination of the issue of liability and redress, including restoration and compensation, for any damage to biological diversity. In international law, the commission of an unlawful act amounts to the duty to make reparation in the form of *restitutio in integrum*, monetary compensation or satisfaction. In the case of damage done to components of biological diversity, monetary compensation seems to be the most appropriate form of reparation, whereas it will be difficult if not impossible to restore the damaged components to their former conditions. Apart from the regular compensation for expenses and other indemnifications, punitive

^{45/} See also supra p.31.

damages could be introduced as an additional measure, in cases where damage has been caused as a result of gross negligence or wilful conduct. These 'fines' could for example exist in the form of a contribution to a fund that supports biodiversity projects.

Articles 15 & 16: Access to Genetic Resources and Access to Transfer of Technology

These two articles form the hub of the Convention and shall therefore be analyzed more thoroughly. First of all, why are the Articles 15 and 16 considered the central part of the Convention ?

Being aware of the actual and potential value represented by genetic resources (as illustrated in Chapter 1), the sustainable use and exploitation of these resources forms a unique opportunity for so-called "gene-rich countries", most of the times developing countries, to improve their domestic capacities through the participation in scientific research and the transfer of technology, the sharing of benefits and the financial support by industrialized countries. In this way they will be able to strengthen their economy and to achieve social improvements. This development will in turn provide a healthy basis for the conservation of biodiversity. The Articles 15 and 16 of the Convention, together with Articles 19 to 21, constitute the starting-point of this ambitious mechanism. This is, in short, why these articles can be considered as the backbone of the Convention.

This mechanism should guarantee a flow of technology, know-how and financial means towards the country that provides the genetic resources. For this purpose paragraph 7 of Article 15 requires that Contracting Parties take "(...) legislative, administrative or policy measures (...) with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources." This provision has its parallel in Article 16(3) which requires access to and transfer of technology which makes use of genetic resources, on mutually agreed terms, to Contracting Parties that provide these resources and in particular those that are developing countries. Articles 19(1) and 19(2) provide comparable provisions.

Sharing in the results and benefits of this use is clearly not the only objective of these articles, as is reflected in Articles 19(1) and 15(6) which aim at effective participation in the scientific and biotechnological research activities based on genetic resources of, and where possible, in the country that provides these resources. In this way national human and institutional capacity building is stimulated.

Paragraph 3 of Article 15 excludes certain categories of genetic resources from the application of the Articles 15, 16 and 19. The consequence of this exclusion is that e.g. genetic resources provided by non-Party States, by States that are not a country of origin or by States that acquired the resources before the entry into force of the Convention or illegally (i.e. not conform the Convention), are not considered under these articles. Ex-situ collections of genetic resources created before the entry into force of the Convention, are also not considered. In concrete this means that States that possess these collections are not obliged to share the benefits arising from any commercial or other utilization of these genetic resources, a situation that is frowned upon by developing countries in particular. Because a great deal of the genetic resources with economic importance are excluded in this way, efforts are being made to bridge this gap.^{46/} In this context, the discussion on the definition of which country (or countries) can be regarded as country of origin clearly gains importance.^{47/}

A primary condition for the successful implementation of the above mentioned mechanism is of course the creation of efficient access regulation systems with regard to genetic resources, in the countries that provide such resources.(See Textbox 4) The prior informed consent plays a key-role in the creation of these systems.^{48/} It is a flexible tool for supplier countries to regulate the access according to the specific circumstances of each application.

Equally important for the country that provides genetic resources, is the conclusion of satisfactory agreements with the "user - countries". The most efficient form in this respect seems to be the contract, because of its flexibility. Very likely, these two aspects, access for the user country and compensation for the supplier country, will most of the times be negotiated together.(See Textbox 5)

^{46/} An example in this respect are The Global System for the Conservation and Utilization of Plant Genetic Resources, which was established in 1983 by the UN Food and Agricultural Organization (FAO). Its objective is to coordinate the conservation and use of plant genetic resources at all levels. Another example is the CGIAR-system (Consultative Group on International Agricultural Research), supporting international centers with gene repositories and providing access to these resources free of intellectual property protection.

^{47/} See supra p.28.

^{48/} See: CLA/UICN, *Guía Explicativa de la Convención de Biodiversidad*, p.81/82.

Just as Article 15 on the "Access to Genetic Resources" is the most interesting provision for the developed Contracting Parties, Article 16 on the "Access to and Transfer of Technology" has great significance for the developing countries among the Contracting Parties. Paragraph 1 refers to two types of technology. First, technologies (including biotechnologies) that are relevant to the conservation and sustainable use of biological diversity and, second, (bio)technologies that make use of genetic resources and do not cause significant damage to the environment. Access to and transfer of these technologies has to be provided *and/or facilitated* by Contracting Parties, which means that States do not have the obligation of giving direct access or of transferring physically their technologies to other States. They can opt for just a facilitation of the access or transfer. This could be realized through e.g. the reform of regulations that stimulate foreign investment, the conclusion of cooperative research and development agreements with other States and donations to or the acquisition of intellectual property rights in favor of other States.

Taking into account the specific needs of developing countries, access and transfer has to be provided on, what is called, *most favorable terms* and when necessary with financial support based on the Articles 20 and 21. What these "most favorable terms" should look like, is left open for interpretation.

Textbox 4

● Access Regulation Systems

In spite of the recognition of sovereign rights over their natural resources in the first paragraph of Article 15, paragraph 2 obliges the Contracting Parties to facilitate access to their genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of the Convention. According to paragraph 5, such access shall be subject to prior informed consent of the providing country.

To regulate access to a resource, it is necessary to have an inventory of the resources you want to give access to. Depending on the depository form of the genetic resources, the manageability of registration and administration differs.

Access to resources stocked in a gene or seed bank or in botanical or zoological gardens is easier to control than to those stocked in for example a huge rain forest.

Effective access regulation in the latter situation can only be achieved through the segmentation of large areas into controllable sectors, to be managed jointly by local populations and other specialists. Obviously a lot of paperwork will be involved in the issue of access permits and the registration of relevant data.

Important questions in this respect are e.g., who is asking a permit ?; which resources are involved, which quantity and for what purpose ?

Textbox 5

● Contracts

The most convenient option for the regulation of contacts between those who want to have access to genetic resources and those who can provide these resources, seems to be the conclusion of contractual agreements through negotiation.

Depending on the complexity of the collection/distribution network of the genetic resources, different types of contracts can be involved. Contracts between local collectors of genetic resource samples and governmental or private collector entities in the supplier country (the in-country collaborators), contracts between these entities and their counterparts in other countries or between these latter entities and pharmaceutical, biotechnological or other industrial companies.

These contracts reflect the mutual agreed upon conditions of the agreement between parties, which normally will include the right of access to regular and reliable supplies of samples for the user country, and the right of receiving equitable monetary or non-monetary compensation for the supplier-country.

Of course the concluding parties can determine the details of the contract. Access can be conditional (e.g. with regard to biodiversity conservation requirements or the respect for the rights of indigenous and local populations), or the quantity of the supply can be limited, while on the other hand compensation can exist in different forms, like e.g. advance payments, royalties, a lumpsum but also in scientific or technical assistance, transfer of technology, know-how and data or the distribution of drugs at cost in the country of collection.

Paragraphs 2, 3 and 5 draw the attention to the effect that intellectual property rights (IPR's) can have on the access to and transfer of technology. Although the exclusive character of IPR's is recognized in the second paragraph, the third paragraph nevertheless calls upon Contracting Parties to take measures with the aim to provide access to and transfer of technology to other Contracting Parties (and especially developing countries), *including technology that is protected by patents and other IPR's*,^{49/} albeit on mutually agreed terms. Foreseeing complications with

^{49/} The most significant step in the expansion of ipr coverage took place in the USA, where for the first time in 1980 a genetically altered bacterium was granted a utility patent (Diamond vs. Chakrabarty, US Supreme Court, 1980, 447 US 303). In 1985 a utility patent was granted to a modified corn plant and in 1988 the first animal was patented, the oncomouse, carrying a human cancer gene used in medical research. Also human cells (1984) and human gene fragments (1991) have received patents. According to criteria applied by industrialized powers as the US, Europe and Japan, pharmaceutical companies can patent chemicals derived from natural sources and genes that have been transferred to unrelated organisms.

regard to the influence that IPR's might have on the implementation of the provisions of the Convention, paragraph 5 demands cooperation in this field in accordance with national legislation and international law.^{50/} (See also Textbox 6)

Furthermore, like the first paragraph, paragraph 3 does not constitute a solid obligation for the Parties to undertake direct action. Its wordings are subtle. The Contracting Parties shall take measures with the aim that other Contracting Parties are provided access to and transfer of technology. They only have to make access and transfer possible.

Because the majority of the technology is in hands of the private sector, it is important that governments take measures that enable private organizations to facilitate the access to and the transfer of their technology. This is what paragraph 4 aims at.

Article 17: Exchange of Information

This article contains a general provision on the exchange of any information relevant to the conservation and sustainable use of biological diversity. It is added, however, that this only includes information from publicly available sources, thereby excluding protected information as trade secrets, etc. What exactly is the content of the phrase *repatriation of information* at the end of the article, is not very clear. A definition is not given and neither any references for interpretation. My idea is that this "repatriation"-provision tries to secure the availability of relevant information for the country in which the information was obtained or from whose resources it was obtained, regardless of the fact who obtained the information. In this way, recognizing that technology is a form of information, the obligation is in line with Article 16(3) which provides access to and transfer of technology which makes use of genetic resources, for the country that provides those resources. At the same time it also forms a specification of the more general principle of sharing in a fair and equitable way the results of research and development, as laid down in Article 15(7).

^{50/} For more detailed information on the role of IPR's in the exploitation and sustainable use of biological and genetic resources, reference is made to: W. Reid et al., *Biodiversity prospecting: using genetic resources for sustainable development*, Ch. 6; R. T. Rapp and R. P. Rozek, *Benefits and Costs of Intellectual Property Protection in Developing Countries*; J. Caillaux, *Diversidad biológica y propiedad intelectual* and Van Wijk/Cohen/Komen, *Intellectual Property Rights for Agricultural Biotechnology (Options and Implications for Developing Countries)*.

Textbox 6

Intellectual Property Rights

IPR's (trade secrets, utility patents, plant breeders rights, "petty" patents, trademarks, copyrights and property rights "sui generis") can be used to grant private ownership to genetic and biochemical products because of the ingenuity involved in finding, identifying and developing them. Although wild habitats and species themselves cannot be patented, products derived from them (e.g. by means of biotechnology) can be protected by patents.

The possibility to retain rights over innovations stimulates innovative research because, in general, the existence of intellectual property protection provides the incentive to investigate alternative uses of patented products. This, in turn, increases productivity, thereby enhancing economic growth, which is of critical importance for especially developing countries. Intellectual property protection helps these countries attract technology, diffuse it throughout the domestic economy and, ultimately, develop indigenous industries. The transfer of technology (through i.a. licensing of technology, patent disclosures and publications or technical meetings) is facilitated and foreign ownership and participation, an important factor for the survival of local firms, is also

influenced by the degree of intellectual property protection.

Many developing countries exclude the pharmaceutical sector from their system of intellectual property protection. An unintended side-effect of this policy option is that benefits from pharmaceutical R&D (mainly biotechnological) are forfeited. Other disadvantageous consequences hereof are fewer new pharmaceutical products, a reduced future growth of domestic industry and poorer health care for the country's residents. In industrialized countries, however, patent coverage is gradually extended from plant and animal genes to plant and animal varieties (See footnote 44).

In short, the benefits from protecting patents for developing countries are the inflow of investment and technology to the country, access by local firms to this technology and, eventually, economic growth of the country as a whole. Modern economic growth requires therefore IPR's that prevent expropriation or dissipation of the gains from innovation. Without this protection, development is thwarted.

Article 18: Technical and Scientific Cooperation

With dispersed provisions on international cooperation in areas like scientific research, biotechnology, indigenous and traditional knowledge and the exchange of other relevant information in inter alia Articles 5, 12(c), 15(6), 16, 17 and 19, Article 18 can be seen as a comprehensive provision on this subject. It calls for technical and scientific international cooperation in general terms and stresses the priority of strengthening national capabilities, by means of human resources development and institution building. The establishment of a clearing house mechanism, a well-known phenomenon in cooperative international entities, is to be examined by the Conference of the Parties (§ 3).

Article 19: Handling of Biotechnology and Distribution of Its Benefits

This is a general provision - with parallels in Articles 15(6), 16(3) and 18(2) - that intends to stimulate capacity building (through the effective participation in biotechnological research and priority access to results and benefits), in countries that provide genetic resources for biotechnological research activities. *Priority access*, although not defined in the text, should be understood as the supplier country having the first option on access to research results and benefits. This provision could prove to be useful in case the results or benefits consist of e.g. very few and valuable samples of genetically modified material. Note that, just as in the Articles 15 and 16, no obligations are laid down in this paragraph. Contracting Parties shall only *promote and advance* priority access.

Just as with any other possible adverse effect or threat to the environment posed by a State, the transfer, handling and use of living modified organisms (LMO's) that are "suspect" in this regard, is subject to notification and information to other States. The concept of an *advanced informed agreement* is, identical to that of the prior informed consent as used in the Basel Convention. The Conference of the Parties shall consider a protocol on this subject (paragraph 3, to be read together with Article 8(g)). Together with paragraph 4, paragraph 3 intends to establish a situation of *biosecurity*, by requiring appropriate procedures in the field of safe transfer, handling and use of any LMO resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biodiversity. The information covered by the fourth paragraph includes (1) any available information about the use and safety regulations that apply to the handling of LMO's in the "exporting" State, as well as (2) to any available information on the adverse impact of the specific organisms concerned to the "receiving" State.

Articles 20 and 21: Financial Resources and the Financial Mechanism

Without adequate funding of domestic public and private activities, the objectives of the Convention are not likely to be achieved by the Contracting Parties. And knowing that the implementation of the Convention's provisions depends on a great deal on domestic capacities, it is obvious that funding has to be provided by governments in general to national activities (paragraph 1) and by governments of developed countries in particular to those countries that lack these capacities (paragraph 2). Article 21 provides the creation of a mechanism to regulate the latter form of funding, although paragraph 3 of Article 20 explicitly leaves space for bilateral, regional and other multilateral channels of funding. During the time that is needed to make the mechanism operational, or ultimately until the first meeting of the Conference of the Parties, an interim institutional structure is provided by Article 39, the GEF.^{51/}

Paragraph 4 draws attention to the fact that the transfer of funds and technology by developed countries, which depends on the effective implementation of their commitments under the Convention, is an absolute necessity for developing countries in order to fulfil *their* obligations under the Convention and also to achieve economic and social improvements in these countries. For various reasons, special consideration shall be given to the position of the group of least developed countries, small island States and States with extra-vulnerable environments such as arid and semi-arid zones and coastal and mountainous areas (paragraphs 5, 6 & 7).

Article 22: Relationship with other International Conventions

Only few references are made explicitly in the Convention's text to the application of international law (e.g. Articles 16(3) and 16(5)) but as with any other international agreement, the provisions of the Convention do not affect obligations or rights, derived from other international agreements.^{52/} Of course an exception

^{51/} This is the Global Environmental Facility of the UNDP, UNEP and the IBRD, that was created in 1990 to assist developing countries in combating their environmental problems.

^{52/} Other international agreements related to the conservation of biological diversity are the Ramsar Convention on Wetlands of International Importance of 1971, the Paris Convention for the protection of the World Cultural and Natural Heritage of 1972, the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora of 1973 and the Bonn Convention on the Conservation Migratory Species of Wild Animals of 1979.

has been made with regard to cases in which *serious damage or a threat* is posed to biological diversity (paragraph 1), although this condition leaves a lot of space for interpretation, for what has to be understood by "serious"?

Article 23 et seq

Article 23 and the following provide institutional, organizational, functional and procedural information. They will not be analyzed here. A Conference of the Parties is established (Art.23), as well as a Secretariat (Art.24) and a Subsidiary Body on Scientific, Technical and Technological Advice (Art.25). Means for dispute settlement are provided at four stages: negotiation, good offices or mediation by a third party, arbitration and ultimately, the International Court of Justice (Art.27). The GEF is created in Article 39.

D. CONCLUSIONS

Having analyzed the provisions relevant to the subject of the international legal framework that is meant to guide governments in their efforts to implement effectively the provisions set out in this framework, the thing that leaps most to the eye is its wide scope, its ambition. When the three objectives mentioned in Article 1 actually can be achieved, the impact on societies of many countries, and above all of many developing countries, will be considerable.

Effective implementation of the convention as called for in general wordings in Article 6, implies however the fulfillment of specified tasks in many different areas. In the analysis of Article 8 we saw that the establishment of protected areas forms the central element of in-situ conservation, just as in-situ conservation itself forms the heart of the biodiversity conservation strategy. In order to decide on locations for the establishment of protected areas, governments need to know which areas under their jurisdiction are best suited for this purpose. Practice has proved that it is far more efficient to opt for several small, but very carefully selected areas, than to choose one or two big areas without investigating their potential. Therefore, on a national level, an inventory will have to be made of the biological resources at present (see Article 7). It has to be investigated which species and populations occur, their location and distribution has to be identified as well as their quantities and state of health. These activities can e.g. be undertaken by the government itself, or under their auspices by NGO's, contracted private organizations, etc. The information obtained from this inventory should be stored in databanks and, when possible, genetic samples of plant and animal species should be stored in genebanks.

Exchange of information of this kind between different States, could easily enhance the ex-situ conservation facilities as promoted in Article 9. A national authority has to be established whose task would be to regulate the access to the resources kept in protected areas and other places, in close cooperation with regional and local collaborators that monitor and administer these resources. Access applications have to be considered carefully, and whether the use of a resource is sustainable or not (e.g. by means of an EIA; see Article 14), experts on the subject have to be consulted prior to any proposed use of one of these resources. Such a use could exist in for example the clearing of a forested area by the government for the construction of an airport, the extraction of marine resources for consumption by a private enterprise, the start of ecotourist activities or a scientific expedition by a university. Once access is granted by the national authority and the use of a resource is permitted, this has to be guided and kept under surveillance by the so-called local collaborators. Additionally, these local collaborators could for example be contracted by applicants to provide assistance to their project. In this respect, excellent possibilities exist for the participation of local and indigenous populations.

Whenever an application concerns the access to genetic resources, a contract should be made up between the national authority and the applicant in order to define in detail in which way any results or benefits arising from the utilization of these resources shall be shared (see Article 15(7)). The transfer of technology is one way of sharing benefits. Of course, governments can conclude bilateral agreements to standardize the bulk of these details. If not governments but private entities are the main actors, their contractual agreement is subject to any relevant national legislation.

Obviously, a multilateral international agreement as this convention, on a complicated matter as biodiversity, can give no more than a very general and broad idea of how things should be regulated. As a consequence hereof, practical issues like: how to establish protected areas?; how to make reliable EIA's?; how to regulate access to genetic resources?; how to make indigenous populations participate in the whole process?; how to draft fair contracts and how to incorporate the role of IPR's ?, cannot be dealt with in depth. Nevertheless, although the text does not read easily and is rather specialized and although it is true that it contains some phrases that are not (well) defined (like *most favorable terms* (Article 16(2)), *repatriation of information* (Article 17(2)), and *priority access* and *advance informed agreement* (Article 19(2) and 19(3))), the convention provides a healthy basis for further discussions on the subject and a good set of guidelines as a starting-point for the development of regional and national strategies.

Whereas the development of these strategies is a complicated and laborious task and not something that can be realized overnight, it is important to examine the

properties of relevant national legislation upon which these strategies shall be based. The national legislative system must allow the incorporation of the convention's provisions and effective institutional structures must exist to support the implementation of the provisions. In Chapter 3, following some observations regarding the classification of legal environmental documents and implementation of the international regulations in general, the most important piece of Peru's actual environmental legislation, the *Código del Medio Ambiente*, shall be examined to see whether it constitutes an appropriate national tool for the implementation of the convention's regulations in an effective manner.

Also a selection will be provided of legal environmental documents on the executive level of decrees and resolutions, that are in their turn responsible for the putting into practice of the *Código del Medio Ambiente*.

Chapter 3

IMPLEMENTATION OF THE CONVENTION INTO PERU'S
LEGISLATIVE SYSTEM BY THE *CÓDIGO DEL MEDIO
AMBIENTE* 53/

A. THEORETIC FRAMEWORK

For a better understanding of the analysis made in this chapter, it is necessary to give a brief description of the basic elements of environmental legislation in general. Which are the principal doctrines, what are their characteristics and what does a classification of legal environmental documents look like ?

1. Doctrines

A landmark in the development of sectoral environmental concepts towards more integrated environmental concepts, has been the 1972 Stockholm Conference which gave birth to environmental law in its form known today. By adopting a holistic and systematic approach towards the environment instead of considering environmental aspects separately, the integral character of the environment was recognized. From 1972 on, and therefore within the holistic approach, different doctrines have been developed, of which the environmentalist doctrine and the ecologist doctrine are the most prominent.

The environmental doctrine has its focus on the human being, i.e. on the protection of the surroundings that make its life possible and that also determine the quality of this life. Sand 54/ distinguishes four steps in the evolution of this

53/ This chapter has been based on the following documents: *Legislación Ambiental en los Países del Convenio Andres Bello*, elaborated by Guillermo Ramirez Rebolledo for the Secretaria Ejecutiva del Convenio Andres Bello (SECAB), Bogotá, D.E. Colombia, 1990, 267 p.; *Aspectos Institucionales y Jurídicos del Medio Ambiente, incluida la Participación de las Organizaciones No Gubernamentales en la Gestión Ambiental*, elaborated by Raúl Brañes for the World Bank, Washington D.C., 1991, 142 p.; *La Evolución Ambiental de la Región Loreto: Resultados de un Estudio de Evaluación y Propuesta de Políticas y Acciones*, edited by Benjamin Quijandría and Wilfredo Caballero, CE&DAP, Lima, Peru, April 1994, 213 p. and *Código del Medio Ambiente (actualizado, concordando y comentado)* by the Sociedad Peruana de Derecho Ambiental (SPDA), Lima, Peru, 1992, 145 p.

54/ See Rebolledo, p.7.

doctrine: primary protection, limitation of use, conservation of resources and, finally, ecological control.

From the environmental doctrine emerged the ecological doctrine which also reflects the holistic approach but instead focuses on the protection of nature itself. Within this context the whole of the environment is considered a system with all its interdependent elements (natural, artificial, economic and socio-cultural) interacting.

So, the environmental doctrine places the human being, as a consumer, face to face with its environment, while within the ecological doctrine the human being, as a participant, has been included in its environment.

2. Classifications

The next step towards a comprehensive structuring of a set of environmental legislative documents, is to make a doctrine-based classification with the aim to obtain a clear picture of the aggregate of norms and its characteristics.

According to UNEP's methodology, environmental legislation can be divided in two main categories:

- 1▲ Proper environmental legislation, and
- 2▲ Environmental legislation with sectoral relevance 55/

The first category (1▲) coincides with both of the doctrines mentioned above, in the sense that it is based on the holistic and systematic approach of the environment, although no attention is paid to the role and position of the human being.

The second category (2▲) cannot be linked to any of the above mentioned doctrines because it does not consider the ecosystematic character of the environment. The legislation within this category normally deals with the protection of a separate natural component, like flora or fauna, terrestrial waters, soils, forests or non renewable natural resources. Environmental legislation with sectoral relevance remains predominant in many Latin American 56/ judicial systems and is therefore an important factor.

55/ Although Brañes uses "sectoral legislation of environmental relevance", I prefer to use UNEP's terminology which puts more emphasis on the environmental aspect.

56/ See Rebolledo, p.19.

With regard to both categories UNEP distinguishes four subcategories:

- Legislation with a general environmental nature (a)
- Legislation that deals with the protection of nature and its elements (b)
- Legislation that deals with the structuring of manmade environment (c),
- and • Legislation that deals with environmental hazards and health protection (d)

Alongside UNEP's classification, the Chilean author Rafael Valenzuela has put forward another methodology, which contains some interesting elements to complete this classification. Important is the addition of a third category (3▲) of *legislation with casual environmental relevance*, i.e. legislation that preterintentionally deals with environmental matters. Another advantage of Valenzuela's approach is the introduction of a systematization for constitutional norms and international treaties. Although these contributions are very valuable, they are excluded from this paper because of the wide scope of this third category.

A legislative system for environmental protection can be based on these three categories (1▲, 2▲ and 3▲). The grade of efficiency of an environmental legislative system is, however, largely determined by the national political-administrative structure (federal or unitarian) and the quality of the environmental administrative legislation which, being the complement of environmental normative legislation, provides the rules that determine the government's activities.

So, the instruments of the first category distinguish themselves by their holistic approach, while those belonging to the second category have a sectoral character. While UNEP's classification of environmental legislation doesn't take into account man's position with respect to its environment, the year 1972 can be considered the division mark between the categories 1▲ and 2▲. What remains is the need for a division within the first category of instruments focused on human beings (environmental) and those focused on nature in itself (ecological). This brings us to the following classification (see table 1):

Table 1

Classification for Environmental Legal Documents

	C L A S S I F I C A T I O N		
	CATEGORY	SUBCATEGORY	
norms, treaties, laws, regulations or competence	properly environmental	of a general nature	1-a
	properly environmental	the protection of nature and its elements	1-b
	properly environmental	the structuring of the manmade environment	1-c
	properly environmental	environmental hazards and health protection	1-d
norms, treaties, laws, regulations or competence	environmental with sectoral relevance	of a general nature	2-a
	environmental with sectoral relevance	the protection of nature and its elements	2-b
	environmental with sectoral relevance	the structuring of the manmade environment	2-c
	environmental with sectoral relevance	environmental hazards and health protection	2-d

Source: Andreas Hardeman, based on UNEP's methodology.

3. General Aspects of Implementation

It has been mentioned before ^{57/} that implementation not only consists in the incorporation of international regulations in the national legal framework, but also in the physical capability of carrying out, maintaining and if necessary enforcing these regulations. *So, to achieve an effective application of international regulations on the domestic level, we have to take care of an incorporative part and of an executive part.*

Supposing that the international legal regulations themselves are efficient (and with regard to the present Convention there is sufficient reason to believe that this

^{57/} See supra p.4.

is the case) the efficacy 58/ of international legislation is determined by three factors. The first thing that is important is the participation of States in international legal instruments, but as was seen in the introductory part of the second chapter.59/ the participation in the Convention on Biological Diversity is remarkably high. Then, another decisive element is the absence of appropriate law enforcement mechanisms to assure that the obligations, laid down in agreements and treaties between States, are fulfilled. This weak spot has always been inherent to the international legal system and to fill this gap international documents normally adopt arbitration regulations, as for example the Convention on Biological Diversity in its Article 27. Finally, the third element is the dependence of international legal instruments on the development and efficiency of domestic legislation. A proper realization of both parts of the implementation process (incorporation and execution) depends on the efficiency and efficacy of the environmental legislative system that exist in the country that has to perform the implementation.

To judge the efficiency and efficacy of this system, the "*causes of inefficiency and inefficacy*", as formulated by Brañes can be used.60/ According to these criteria, a set of regulations is considered *efficient* when:

- They adopt a scientific approach in the way they deal with their subject.
- They take into consideration the social aspects that are linked to the situations they intend to adjust.
- Necessary appropriate mechanisms exist for the application of regulations.
- The legislative system has a homogeneous structure.
- The environmental dimension has been sufficiently embodied in the general legal system and particularly in the economic legislation.

A set of regulations is considered *efficacious* when:

- They can count on sufficient social valuation.
- The institutions that take care of the administrative and judicial application of the environmental legislation, do not show deficiencies.

58/ In his text, Brañes gives the following definitions of the terms efficiency and efficacy: *Efficiency* is the grade of obeisance that a legal norm receives from its addressees, while *efficacy* is the capacity of a legal norm to achieve its objective.

59/ See supra p.22.

60/ See Brañes p.48/53, Chapter II-15.

Point B., will turn to a selection of the activities that are mentioned in the Convention. The idea is to extract from the Convention on Biodiversity (CBD) ^{61/} the steps that a State has to take in order to meet with its obligations under the Convention with the aim of achieving the goals as set out in the same Convention. It will also be indicated which are the regulations in Peru's *Código del Medio Ambiente* (CMA) ^{62/} that correspond to these steps. Because the CMA claims to be a framework law for the national environmental policy and for the structuring of the dispersed and scattered peruvian environmental legislation, this document is seen as the principal instrument in this respect and is therefore taken as the starting-point for this analysis.

B. IDENTIFICATION OF ACTIVITIES TO BE UNDERTAKEN AND A COMPARATIVE ANALYSIS

Distinct activities correspond with the three objectives mentioned in the first chapter of the Convention. In conformity with the classification of the articles that was given before,^{63/} the Convention's principal articles (Arts. 6 - 22) shall be examined. Although the majority of the articles' regulations consist in obligations directed towards all the Contracting Parties (the text refers to "Each Contracting Party" or "The Contracting Parties"), there are some that were explicitly or implicitly written for specific actors, like the Conference of the Parties (Arts. 14(2), 18(3), 21(2), (3) and (4)), or the industrialized countries (Arts. 8(m), 9(e), a part of 12(a) and 12(b), 15(7), 16, 20(2) and 20(3) and 21(1)). Also, generally formulated regulations of an imperative character can be found, as for example Articles 15(1) - 15(5), 17(2) and 22(1). These will not be examined. The activities that were described for the Contracting Parties will be presented in general (*in italics*) and the corresponding regulations in the CMA (**in bold**).

^{61/} The Convention on Biological Diversity was subscribed by Peru on 12 June 1992 and ratified on 11 May 1993.

^{62/} The *Código del Medio Ambiente y los Recursos Naturales* was promulgated by *Decreto Legislativo No. 613* of 7 September 1990. From the day of its promulgation on, the CMA has been subject to various modifications, i.a. by *Decreto Legislativo 757 (13-11-91)*, *Ley Marco para el Crecimiento de la Inversión Privada*. To Peru the CMA is a novelty, in the sense that for the first time a piece of environmental legislation adopts a holistic approach to the problems, without any tendency to sectionalism.

^{63/} See supra p.26.

First objective: The Conservation of Biological Diversity
(Arts. 6-9 and 11-14 CBD)

Second objective: The Sustainable Use of its Components
(Arts. 6 and 10-13 CBD)

Article 6: General Measures for Conservation and Sustainable Use

- *Development of national strategies, plans or programs for the conservation and sustainable use of biological diversity or adaptation of existing strategies, plans or programmes. (Art. 1 CMA) 64/*

- *Integration of the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies. (Art. 3 CMA)*

Article 7: Identification y monitoring

- *Identification of components of biodiversity that are important for its conservation and its sustainable use. (Arts. 25 y 47 CMA)*

- *Monitoring of these components. (Arts. 25 y 47 CMA)*

- *Identification of processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of . . . biological diversity. (Art.23 CMA)*

- *Monitoring of these processes and categories of activities (Art.23 CMA)*

- *Storage of data derived from identification and monitoring activities.65/*

Article 8: In-situ Conservation

- *Establishment of a system of protected areas for the conservation of biological diversity. (Art. 50 CMA) See also textbox 7.*

- *Development of guidelines for the selection, establishment and management of these areas. (Arts. 51 - 58 CMA) 66/*

64/ Without doubt the CMA as a document can be defined as a "national strategy, plan or program for the conservation and sustainable use of biological diversity".

65/ Although it would be easy to extend the scope of the provisions that deal with "evaluation, vigilance and control" (Ch.5) so that they would include the storage of data, there is no provision that mentions this action explicitly.

66/ The articles 56, 57 and 58 CMA have been substituted by *Decreto Legislativo 757*, art. 54 and *Decreto Legislativo 708, Ley de Promoción de Inversiones en el Sector Minero*, art. 48.

Textbox 7

- **Protected Areas in Peru**

For the in-situ conservation in Peru, a system of conservation units, or protected areas exists, which was established by the *Ley Forestal y de Fauna Silvestre* (Decreto Ley No. 21147 de 7/1/1975). This system includes four categories:

- (a) National Parks, for the protection of representative samples of ecosystems,
- (b) National Sanctuaries, for the protection of endangered species,
- (c) Historical Sanctuaries, for the protection of natural surroundings with historic scenery and
- (d) National Reserves, for inter alia the reservation of non-renewable natural resources for their extraction or posterior use.

Only the categories (a), (b) y (c) have an intangible character.

According to Ferrando (see note 15) a lack of financial resources is the main reason that none of Peru's conservation units is managed by a fully operational and integrated management plan. To solve this problem the government is investigating the option of transferring to the private sector the administration of the protected areas and/or the services that the areas offer.

- *Regulation or management of biological resources that are important for the conservation of biological diversity, to ensure their conservation and sustainable use. (Arts. 25 y 39 CMA).*

- *Promotion of the protection of ecosystems and natural habitats. (Arts. 36, 37, 38 and 49 CMA)*

- *Maintenance of viable populations of species in natural surroundings. (Art. 38 CMA).*

- *Promotion of environmentally sound and sustainable development in areas adjacent to protected areas. (Arts. 36, 37 and 97 CMA).*

- *Rehabilitation and restoration of degraded ecosystems. (Arts. 36 and 37 CMA)*

- *Promotion of the recovery of threatened species. (Arts. 36, 37 and 39 CMA)*

- *Establishment or maintenance of means to regulate, manage or control the risks associated with the use and release of living modified organisms (LMO's).*^{67/}
- *Prevention of the introduction of, or the control or eradication of alien species which threaten ecosystems, habitats or species. (Arts. 40, 41, 44 and 45 CMA).*
- *Establishment or maintenance of necessary legislation and/or other regulatory provisions for the protection of threatened species and populations. (Art. 39 CMA)*
- *Regulation or management of relevant processes and categories of activities in cases where a significant adverse effect on biological diversity has been determined. . . (Arts. 18, 22 and 23 CMA).*^{68/}
- *Cooperation in providing financial and other support for in-situ conservation. (Art. 2 CMA).*

Article 9: Ex-situ Conservation

- *Adoption of measures for the ex-situ conservation of components of biological diversity. (Arts. 42, 43 and 48 CMA).*^{69/}
- *Establishment and maintenance of facilities for ex-situ conservation of and . . research on plants, animals and micro-organisms. (Arts. 42, 43 and 48 CMA).*
- *Adoption of measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions. (Arts. 36 - 39, 42 and 43 CMA).*
- *Regulation and management of the collection of biological resources from natural habitats for ex-situ conservation purposes. (Arts. 42, 43 and 48 CMA).*
- *Cooperation in providing financial and other support for ex-situ conservation. (Art. 2 CMA).*

Article 10: Sustainable Use of Components of Biological Diversity

- *Integration of the consideration of the conservation and sustainable use of biological resources into national decision-making. (Arts. 1 and 3 CMA).*

^{67/} Apart from the possibility of placing the subject of *living modified organisms* with more general provisions, like Article 40 (on the introduction of exotic species), Article 41 (on the introduction to the country of animal or plant species in general) or Article 45 (on the importation of any species of flora or fauna), the CMA has no specific provision on this subject.

^{68/} Article 18 CMA has been substituted by *Decreto Legislativo 757*, art. 52.

^{69/} The articles 42 and 43 have been modified by *Decreto Legislativo 653, Ley de Promoción de las Inversiones en el Sector Agrario*, art. 67.

- *Adoption of measures relating to the use of biological resources. (Arts. 36 and 37 CMA).*

- *Protection and encouragement of the customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements. (Arts. 29 and 54 CMA)*

- *Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced. (Arts. 29 and 54 CMA)*

- *Encouragement of cooperation between governmental authorities and the private sector in developing methods for sustainable use of biological resources.^{70/}*

Article 11: Incentive Measures

- *Adoption of economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.^{71/}*

Article 12: Research and Training

- *Establishment and maintenance of programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and its components. (Arts. VIII and 26 CMA)*

- *Provide support for such education and training for the specific needs of developing countries.^{72/}*

- *Promotion and encouragement of research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries. (Arts. 26 and 47 CMA)*

- *Promotion in the use of scientific advances in biological diversity research and cooperation in this field. (Art. 26 CMA).^{73/}*

^{70/} Not one regulation mentions the cooperation between governmental authorities and the private sector.

^{71/} In this context, article 54 (which recognizes property rights of ancestral rural and indigenous communities over the land that they possess within protected areas and areas of influence) can be considered an example of an incentive. Most of the incentive measures will be found, however, in legislation with casual environmental relevance.

^{72/} No reference is made to measures for the support of development countries in this respect.

^{73/} The second part of article 26 CMA refers to promotion of the development of *neuvos sistemas, métodos, equipos y dispositivos* which, in my opinion, implicates a use of scientific advances. Cooperation is not mentioned.

Article 13: Public Education and Awareness

- *Promotion, encouragement and cooperation in the field of education and public awareness regarding the conservation and sustainable use of biological diversity. (Arts. VIII and 30 - 33 CMA)*

Article 14: Impact Assessment and Minimizing Adverse Impacts

- *Introduction of appropriate procedures requiring environmental impact assessment (EIA) and of appropriate arrangements ensuring that the environmental consequences of programs and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account. (Arts. 7(5), 8 and 9 CMA).^{74/}*

- *Promotion of notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction.^{75/}*

- *Immediate notification in the case of imminent or grave danger.^{76/}*

- *Promotion of national arrangements for emergency responses to activities or events, whether caused naturally or otherwise, which present a grave and imminent danger to biological diversity. (Arts. 18 and 91 - 95 CMA).^{77/}*

Third objective: The fair and equitable sharing of the benefits arising out of the utilization of genetic resources (Articles 15 and 16 and 19-22)

^{74/} Article 8 of the CMA has been replaced by *Decreto Legislativo 757*, art. 51. With respect to studies on Environmental Impact, *Decreto Legislativo 757* states that every individual Ministry shall act as the environmental authority in its own sector. This regulation will inevitably lead to disputes between the various Ministries over their respective competencies in cases where environmental impact assessments are to be carried out on a cross-sectoral base, something that tends to be more often the rule than the exception.

^{75/} Article 1(9) of the CMA refers to the maxim "*sic utero tuo alienum non laedus*", also laid down in article 3 of the Convention. However, the article doesn't make any reference to a notification system regarding the activities under a State's jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction.

^{76/} Idem.

^{77/} See footnote 68.

Article 15: Access to Genetic Resources

- Endeavor to create conditions in order to facilitate the access to genetic resources for other Contracting Parties. (Art. 46 CMA).^{78/} Also see textbox 8.

- Not impose restrictions that run counter to the objectives of the Convention.^{79/}

- Promotion and realization of scientific research based on genetic resources provided by other Contracting Parties. (Art. 47 CMA).

- Adoption of legislative, administrative or policy measures (in conformity with articles 16, 19, 20 and 21) with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources.^{80/}

Textbox 8

- **Commercialization of Biological and Genetic Resources**

The commercialization of biological and genetic resources, (and therefore the access to these resources) is subject to the national trade legislation. Peru's domestic and international trade has been liberalized in the *Ley de Comercio Exterior* although the *Decreto Legislativo 682* has added that this liberalization does not exclude provisions "aimed at the preservation of the native and improved genetic patrimony", like for example fito and zoo-sanitarian measures. Besides, the adoption of measures for the protection of the life and health of human beings, animals and plants, or measures that relate to the conservation of a country's non-renewable natural resources, is permitted in GATT's article XX (sections b) and g)).

^{78/} Although article 46 CMA is the only provision that makes reference to the access to genetic resources, it gives no more than a *restriction* with respect to this access. It does not include any conditions regarding the *facilitation* of the access.

^{79/} As this is an obligation *not* to act, a verification of this obligation would implicate an analysis of the complete peruvian legislation which, at this point, is neither possible nor desirable.

^{80/} The sharing of results and benefits is not mentioned in the CMA.

Article 16: Access to and Transfer of Technology.^{81/}

- *Provision and/or facilitation of access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biologic diversity.*
- *Adoption of legislative, administrative or policy measures with the aim that Contracting Parties which provide genetic resources are provided access to and transfer of technology which makes use of those resources.*
- *Adoption of legislative, administrative or policy measures with the aim that the private sector facilitates access to, joint development and transfer of technology for the benefit of both governmental institutions and the private sector of developing countries.*
- *Cooperation in this field subject to national legislation and international law.*

Article 19: Handling of Biotechnology and Distribution of its Benefits.^{82/}

- *Adoption of legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities by those Contracting Parties which provide the genetic resources for such research.*
- *Adoption of practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties to the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties.*
- *Establishment of procedures in the field of transfer, manipulation and utilization of living modified organisms (LMO's) and the information on these organisms.*

Article 20: Financial Resources

- *Provision of financial support and incentives in respect of those national activities which are intended to achieve the objectives of the Convention.*^{83/}

^{81/} The CMA neither makes reference to the access of other Contracting Parties to technologies, nor to the transfer of such technologies.

^{82/} There are no provisions in the CMA that correspond with article 19 of the Convention.

^{83/} Except for a non-specific provision in article 2 CMA that refers to the tributary system as financial resource for the effective conservation of natural resources, their recuperation and the promotion of sustainable development, we do not find any other provisions that correspond to article 20 of the Convention.

Article 21: Financial Mechanism

- *Consider the strengthening of existing financial institutions to provide financial resources for the conservation and sustainable use of biological diversity.*^{84/}

Article 22: Relationship with Other International Conventions

- *Implementation of this Convention with respect to the marine environment consistently with the rights and obligations of States under the Law of the Sea.* (See textbox 10)

C. CONCLUSIONS

What conclusions can be drawn from the information in this chapter?

The classification that was given in Table 1, according to which the *Código del Medio Ambiente* can be classified as a proper environmental document of a general nature, supports the conclusion that Peru now has a principle document for the formulation of its national environmental policy in a holistic manner.

The CMA's main feature of being an instrument of coordination, among other things implies that it has the function of absorbing international regulations with the aim to fit them in executive documents of national policy. An instrument of this kind needs to have sufficient points of reference to be able to absorb a great variety of environmental regulations. This means that this instrument will contain ample and generally formulated norms and that the execution of the environmental policy (the other essential part for an effective application of international law)^{85/} remains dependent on regulatory provisions which contents is much more concrete and specialized.

Against the background of this structure, several conclusions can be drawn from the comparative analysis that was made between the obligations set out in the Convention and the provisions given in the *Código del Medio Ambiente*.

^{84/} Only the fourth paragraph of article 21 directs itself to the Contracting Parties. While it holds no more than an obligation to give thought to a certain activity, it is obvious that no reference to this has been made in the CMA.

^{85/} See supra p.54.

Textbox 9

- **The Constitution and International Treaties**

The 1993 Constitution of Peru assigns to the State the task of "Establishing the National Environmental Policy, Conserving the Biological Diversity and Promoting Sustainable Development of the Amazon region" (arts. 67, 68 and 69). In Tit.II Cap.II (arts. 55-57) the Constitution speaks of Treaties, that have to be approved by the Congress. Although in general international agreements are assimilated by laws, the legal system in Peru allows them to alter the Constitution.

Apart from the present Convention, other **international treaties**, important for the conservation of the biological diversity in Peru are:

- UNESCO Convention for the Protection of the World Cultural and Natural Heritage (Paris, 9/2/1972).
- Treaty on the Cooperation in the Amazon Region *Decreto Ley 22660* (26/8/79))
- UNESCO Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Washington, 8/2/1973) (*Decreto Ley 21080* (21/1/75)).
- Ramsar Convention on Wetlands of International Importance (*Resolución Legislativa 25353* (26/11/91)).

First of all the attention is drawn to the fact that the CMA *only confirms the majority of the obligations* that are mentioned in the Convention, in the sense that it repeats in other words what is described in the articles of the Convention. So, the *Código* incorporates the international regulations in the national legal system and by doing so, complies with its function of coordinating instrument. However, to come to an efficient incorporation of an international legal document, the coordinating instrument needs a minimum of tangent planes with this document. An incomplete incorporation renders the intentions and objectives of the international document futile which very likely will lead to inefficient national policies and, as a result of this, to improper management activities. Deficiencies of this kind bring us to the next subject.

Analyzing the *Código del Medio Ambiente*, it appears that much attention has been devoted to some subjects (like the introduction into the country of animal and plant species) while other subjects aren't mentioned at all. And although it is true that many activities described in the Convention's articles are reflected in the articles of the CMA, it is also true that several

have been left out. The following subjects do not have their complement in the *Código*:

- Storage of data (Art. 7(d) of the Convention)
- Living modified organisms (Arts. 8(g) and 19(3) and (4) CBD)
- Cooperation between government and private sector (Art. 10(e) CBD)

- Cooperation with other Contracting Parties (Arts. 12(a) and (c), 14(c) and (d), 16(5), and 19(1) and (2) CBD)
- Facilitation of the access to genetic resources (Art. 15(1) CBD)
- Sharing of results and benefits (Art. 15(7) CBD)
- Access to and transfer of technology (Art. 16(1) - (4) CBD)
- Financial incentives and support (Art. 20(1) CBD)

Of course, a country like Peru, still in the process of development, puts more emphasis on the conservation of its natural heritage and on the protection of its resources than for example on the transfer of technology to other Contracting Parties (art.19 CBD) or the strengthening of existing financial institutions (art.21 CBD). Besides these, let us say, "excusable" or "comprehensible" omissions in the text of the CMA, it is also found, however, that some topics of utmost importance for the realization of the Convention's objectives, have been left out. Especially noteworthy is the omission of regulations regarding the storage of data, the cooperation between government and private sector, the facilitation of the access to genetic resources and the cooperation with other Contracting Parties in the field of notification and consultation in cases of grave and imminent danger to biodiversity.

- Without a database at national level containing detailed information on ecosystems, habitats, populations and species, genomes and genes, it is impossible to get a clear insight of the magnitude and composition of the biodiversity in a certain area and, therefore, impossible to appoint and establish protected areas in an appropriate manner. Protected areas are not always territorial expanses with an intangible character. The general idea is to secure within these areas a sustainable coexistence of utilization and conservation of natural resources, including biological and genetic resources. So, the areas set apart for the utilization of these resources that is carried out under a management strategy which guarantees the sustainability of the activities and secures the conservation of the environment, also are considered protected areas.^{86/} The management of these areas will never be effective without the availability of information stored in a database.

- In the first chapter of this paper it has been explained how the use and exploitation of biological and genetic resources can lead to economic growth and social improvements by means of biotechnology. The access of other Contracting Parties to genetic resources not only is indispensable for scientific progress, but also

^{86/} Like the National Reserves mentioned in Textbox 7.

an incentive for the development of the region that provides the resources. Therefore, and in accordance with its obligation under art. 15(2) of the Convention, the government of Peru should facilitate this access. While it is obvious that the resources are under Peruvian sovereignty and that their access shall be submitted to national legislation, the guiding principle must always be sustainability.

- In most of all in border regions, customarily preferred for the establishment of protected areas, the change exists that a neighbouring country causes environmental harm, for example in the form of transboundary air pollution or groundwater contamination. *Notification and consultation* are the most appropriate instruments to minimize these risks.^{87/} Without cooperation between Contracting Parties by means of bilateral or multilateral agreements, on the subject of notification and consultation, a country lacks the vigilance and control that is absolutely necessary for an effective environmental management at national level.

In summary, particularly the first two objectives of the Convention are represented by the CMA, although at the same time some very important subject have been left out. The third objective, on the contrary, almost seems to have no confirmation whatsoever in the CMA. Therefore, as far as it concerns the incorporation of the present Convention, the entirety of provisions of the *Código del Medio Ambiente* can impossibly be qualified as being efficient, for the sole reason that it only represents a part of the set of international legal regulations, viz. the part that deals with the conservation of biodiversity and the sustainable utilization of its components. The other part, concerning the sharing in a fair and equitable way of the results and benefits derived from the utilization of genetic resources has all but disappeared. This scarcity of points of reference leads to the conclusion that the *Código del Medio Ambiente*, as incorporative instrument, will be incapable of founding a national policy directed towards a sustainable management of biological and genetic resources in the way the Convention had envisaged it.

It needs to be mentioned that the formulation of a national environmental policy is not based upon one single document like the CMA, but rather together with an extensive set of regulatory provisions that provide norms of a specified and detailed character. The table of Annex 2 (without the pretention of being complete)

^{87/} It is important to make a distinction between notification and consultation. *Notification* is a unilateral action with a purely informative character. The obligation to notify, therefore, does not affect the right carry out activities. *Consultation*, implicates an exchange of information and opinions which means that the other party has a possibility to limit the right to carry out activities.

shows a selected and classified inventory of Peruvian legislative instruments that are relevant for the implementation of the Convention.^{88/}

Finally, it is important to realize that apart from the normative instruments, also the *public environmental policy* institutions responsible for the administrative and judicial application of the environmental legislation, as well as the *public environmental education institutions*,^{89/} responsible for the social promotion of environmental legislation and the protection of the environment have to be taken also into account. These institutions form the administrative part of the execution of international regulations, incorporated by the coordinating instrument which in the present case is the *Código del Medio Ambiente*.^{90/}

^{88/} For Annex 2 see p.77; The classification of the inventory was based on Table I (see supra p.52), while the legislation with casual environmental relevance (category 3▲) has been left out. In this last category, the following documents are important for the implementation of the *Código del Medio Ambiente*:

- *Ley 23853* (09-06-84) *Ley Orgánica de Municipalidades*.
- *Decreto Supremo 071-88-PCM* (14-06-88) *TUO Ley de Bases de la Regionalización*
- *Decreto Legislativo 653* (01-08-91) *Ley de Promoción de las Inversiones en el Sector Agrario*
- *Decreto Legislativo 750* (13-11-91) *Ley de Promoción de las Inversiones en el Sector Pesquero*
- *Decreto Legislativo 668* (14-04-91) *medidas de libre comercio*
- *Decreto Legislativo 682* (20-10-91) *medidas de libre comercio no excluyen cumplimiento de normas para preservar recursos naturales*.

^{89/} With respect to environmental education the *Decretos Legislativos Nos. 135* and *217* of 12 June 1981, assign to the Ministry of Education the task of "planning, promoting, orientating, setting norms for, regulating, coordinating, directing, evaluating, and controlling the education policy (...) of the country, confirm the State's general policies.

^{90/} Like for example Colombia and Chile, Peru has had for many years a unitarian political-administrative structure where the competence of drafting general legal norms was concentrated within the national government. In this structure, the Ministries of State, Agriculture, Mining and Energy, Housing and Public Health Care, as well as many decentralized public organisms linked to these Ministries, shared their responsibilities. However, between 1985 and 1990 the Peruvian Government has implemented a political-administrative decentralization which allowed a democratization on the regional and municipal level. (See: Quijandría and Caballero, p.195).

Chapter 4

FINAL CONCLUSIONS AND CONCLUDING REMARKS

- What was done

- It has been pointed out what exactly are the values of biological diversity, for the industrialized countries as well as for the development countries. It was seen that the concept of the conservation of biodiversity does not implicate its intangibility, but rather the utilization of its components in a sustainable manner. This condition allows the unification of nature conservation (ecosystems, populations and species, genes and genomes) with its exploitation, with the aim to achieve economic growth and social improvements.
- A brief analysis has been made of the Convention on Biological Diversity, the principal document at the global level to regulate and coordinate the conservation of biodiversity. The activities to be undertaken were indicated and it was concluded that the Convention represents a legal framework that is suitable enough to serve as a guide to national governments in their efforts to adopt efficient policies.
- Furthermore, a comparison was made of the necessary and obligatory activities of the Convention and the provisions laid down in the *Código del Medio Ambiente* (Peru's principal environmental document that serves as a tool for coordination and incorporation), to know the extent to which the *Código* translates the international policy into national policy. On account of the deficiencies that were found, it was concluded that as far as it concerns the incorporation of provisions that deal with the conservation of biological diversity, the *Código del Medio Ambiente* in its present form is incapable of founding a national policy for the sustainable management of biological and genetic resources.

- What still has to be done

- An analysis has to be made of the relevant executive legislation (regulatory provisions), with the help of the classification given in Table I, to find out whether this legislation has been founded on the ecologic and holistic approach, something which is considered indispensable for a modern legal environmental system.
- An analysis of the same set of legal documents with the help of Brañes' criteria to see whether these documents can be qualified as being efficient.

● Investigate the public environmental policy and education institutions upon which the efficacy of the legal environmental system depends. To judge the system's efficacy it is necessary to:

- make an investigation in the social field to find out to what extent the people assign value to environmental legislation and policy.

- make a profound analysis of the environmental-administrative institutions with respect to their competence, duties, aims, responsibilities, policies and results.^{91/}

● Adopt a law that should be dedicated specifically to the management of Peru's biological and genetic resources. This step "in between" is necessary to fill the gaps that exist with respect to the conservation of biodiversity, in the formulation of the national environmental policy as proposed by the *Código del Medio Ambiente*. Without a law like this, the adoption of regulatory provisions and the execution of existing provisions, will certainly lead to failures and disappointments.

^{91/} See: Brañes p.48/53.

Annex 1

GLOSSARY

biological diversity: the variability among living organisms from all sources including, i.a. terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

biological resources: organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

biotechnology: any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.

developing countries: those countries that do not appear in the high income group with a minimum GNP per capita of US\$ 8.356, as classified by the World Bank.

domesticated species: species in which the evolutionary process has been influenced by humans to meet their needs.

ecosystem: a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

environment: the natural, social and cultural surroundings that have or can have an influence on the quality of life.

ethnopharmacology: the science of preparation and dispensing of medicines and drugs based on the experience and traditional knowledge of plants.

ex-situ conservation: the conservation of components of biological diversity outside their natural habitats.

genetic material: any material of plant, animal, microbial or other origin containing functional units of heredity.

genetic resources: any genetic material of actual or potential value.

habitat: the place or type of site where an organism or population naturally occurs.

in-situ conservation: the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural habitats, and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

implementation: the process of incorporation of international regulations into a national legal system, followed by the execution, maintenance and enforcement of these regulations.

natural resources: the aggregate of raw materials and available means of production in the economic activity of man.

pharmacology: the science of preparation and dispensing of medicines and drugs.

protected area: a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives.

sustainable use: the use of components of biological diversity in a way, and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

viable populations: populations that are capable of maintaining their genetic diversity and their potential of evolutionary adaptation and that have a minimal risk of extinction or extermination caused by demographic fluctuations, environmental changes or possible catastrophes, including excessive use.

Annex 2

SELECTED AND CLASSIFIED INVENTORY OF THE ENVIRONMENTAL LEGISLATION

LEGISLATION			
	International Treaties	Laws	Regulatory Provisions
1-a	X	<ul style="list-style-type: none"> • Decreto Legislativo No. 613. Código del Medio Ambiente y los Recursos Naturales (7/9/1990). • Decreto Ley No. 21147. Ley Forestal y de Fauna Silvestre (7/1/1975). • Decreto Ley No. 23056. Ley General de Semillas (7/1/1980). 	X
1-b	<ul style="list-style-type: none"> • UNESCO Convention for the Protection of the World Cultural and Natural Heritage (Paris, 9/2/1972). • Resolución Legislativa 25353 (26/11/91) Ramsar Convention on Wetlands of International Importance. 		<ul style="list-style-type: none"> • Decreto Supremo No. 158-77-AG. Reglamento del Decreto Ley 21147 sobre Conservación de Flora y Fauna Silvestre (7/3/1977). • Decreto Supremo No. 161-77-AG, sobre extracción y transformación forestal (7/3/1977). • Resolución Ministerial No. 01710-77-AG/DGFF. Aprueban clasificación de flora silvestre (31/3/1977). • Decreto Supremo No. 044-82-AG. Reglamento de la Ley General de Semillas (30/4/1982). • Resolución Suprema No. 0158-83-PCM. Constitución de la Comisión Especial del Medio Ambiente, Recursos Naturales y Organización del Territorio (17/4/1983). • Resolución Ministerial No. 00524-87-AG/DGFF. Dispone reinvertir recursos económicos, a fin de fortalecer la capacidad operativa de la Administración Técnica Forestal y Política Forestal (7/4/1987). • Decreto Supremo No. 010-90-AG conforma el Sistema Nacional de Areas Naturales Protegidas por el Estado (SINANPE) (24/3/1990). • Resolución Ministerial No. 01082-90-AG/DGFF, clasificación de especies de fauna silvestre (16/9/1990).

1-c	<ul style="list-style-type: none"> • UNESCO Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Washington, 8/2/1973). • Decreto Ley No. 22660. Treaty on the Cooperation in the Amazon Region (Decreto Ley 22660 (27-08-79)). 	<ul style="list-style-type: none"> • Decreto Ley No. 22175. Ley de Comunidades Nativas y de Desarrollo Agrario de La Selva y Ceja de Selva (4/1/1978). • Ley No. 24656 Ley General de Comunidades Campesinas (14/4/1987). 	<ul style="list-style-type: none"> • Decreto Supremo No. 007-85 VC Reglamento de Acondicionamiento Territorial, Desarrollo Urbano y Medio Ambiente (20/2/1985). • Decreto Supremo No. 009-92-ICTI sobre turismo ecológico (18/2/1992). • Decreto Supremo No. 018-92-AG Reglamento de Zoológicos y Cotos de Caza (30/5/1992).
1-d	X	<ul style="list-style-type: none"> • Decreto Legislativo No. 354. Consejo Nacional de Protección del Medio Ambiente para La Salud (17/1/1985). 	X
2-a	X	X	X
2-b	<ul style="list-style-type: none"> • Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere. (Washington, 7/2/1940). • Convention on the Conservation of Migratory Species of Wild Animals. (Bonn, 1979) 	X	X
2-c	<ul style="list-style-type: none"> • International Convention on Fitosanitarian Protection (1951). • Agreement of the Permanent Commission on the exploitation and conservation of marine resources in the South Pacific (Caracas, 11/2/1966; Decreto Ley No. 17104). • Treaties of the Permanent Commission for the South Pacific (PCSP) 	<ul style="list-style-type: none"> • Ley No. 9147. Declara La Protección del Estado sobre toda especie de Animales Salvajes en el Territorio Nacional (8/1/1940). • Decreto Ley No. 17752. Ley General de Aguas (24/7/1969). • Decreto Legislativo No. 18810. Ley General de Pesquería (1971). 	<ul style="list-style-type: none"> • Resolución Suprema. Protección a la Fauna Nacional (8/4/1950). • Resolución Suprema S/N. Reglamento para la protección de los animales en el país (8/3/1962). • Reglamento para las Aguas Subterráneas (1969).
2-d	X	<ul style="list-style-type: none"> • Decreto Legislativo No. 17505. Código Sanitario (1969). 	X

Fuente: Andreas Hardeman, CEPAL 1994

Annex 3

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