

BIOLOGICAL DIVERSITY IN PERU

LIMA-PERU

NATIONAL REPORT

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The National Report on Biodiversity briefly describes the current state of biodiversity in Peru as well as the efforts and progress made by the Government of Peru for its conservation and ongoing activities geared towards a sustainable use of the different components of biodiversity (primary objective of the Convention on Biological Diversity). It also includes recent measures for the implementation of biodiversity.

The Importance of Peru's Biodiversity

Peru is located on the shores of the Pacific Ocean between the Equator and 18° South. Peru's territory is spread over 1,285,216 square kilometers and has jurisdictional waters in the Pacific Ocean, which account for approximately 863,000 square kilometers (Figure 1).

Within this surface area, Peru has a high biodiversity both terrestrial and marine. There are several reasons which explain this situation. First, along the coast of Peru, the Peruvian Current runs from South to North (up to approximately 6 ° South) and second, the Andes flank Peru parallel to the coast. This mountain range is a true geographical barrier to the tropical rainforest. The Andes rise from sea level up to 6,767 m.

on the *Cordillera Blanca*, the highest tropical mountain range in the world. Peru has many different climates, from tropical (55% of the country); desert (14%); humid (9%); boreal (9%); and cold highland plateaus or tundras with their glaciers (13%).

Such a complex geography has shaped 16 biogeographical provinces or great Peruvian landscapes (Figure 2), in addition to the tropical northern sea and the cold ocean waters of the Peruvian Current. The continental waters are divided into three major basins (Pacific, Amazon and Titicaca); they also comprise over 12,000 lakes and lagoons.

Peru has an impressive variety of native species including birds, mammals, butterflies, flowering plants and marine organisms (Table 1). Most of the vertebrates, at different levels of altitude in the Andean Mountains register high endemic levels which fluctuate from 6% for birds and 38% for amphibians. Despite the fact that barely 2/3 of Peru's national territory has been sampled, the country is widely recognized as one of the twelve megadiverse countries of the world. Known species of birds, mammals, amphibians, reptiles and vascular plants from Peru represent about 15% of the world's biodiversity and rank among the 10 highest in the world.

Peru is also one of the five world centres of origin of cultivated plants and is an immense natural germplasm bank for useful wild species. Peru has wild populations of tomatoes, potatoes, sweet potatoes, and many types of corn, cassava, beans, etc., and over 4,217 species of native plants which have 42 different uses (tannin, food, medicinal plants, etc.), of which at least 1,005 are cultivated and 222 domesticated (Table 2). As

concerns *ex situ* conservation, Peru has 70,860 accessions of 126 crops in different institutions.

From a social perspective, biodiversity is a basic component of national food security since it provides food from agriculture, fishing, livestock production and forestry; it is also a source of employment and industry and, in particular, medicine for almost 80% of the population. In 1996, the GDP per capita was US\$ 2,160 and the total GDP US\$ 61,000 million. Agriculture, hunting and fishing accounted for 14.7% of the total GDP, of which the agricultural sector had 13.4% and fishing 1.3%.

A major portion of the income of those who live within the fragile ecosystems of the Andes comes from small-scale production and farming. These activities depend upon traditional methods of sustainable management which are increasingly being replaced by more aggressive practices, for instance, the cultivation of exotic species replacing native species, the over grazing of pastures and deforestation which erodes the naturally poor soils. Activities involving mining, oil drilling and other industries are main sources of water pollution also threatening Peru's biodiversity and water itself as a resource needed by humankind.

In other words, the direct benefits and environmental services of Peru's biodiversity (the control of terrestrial erosion, air quality, water conservation, etc.) partially alleviate the extreme poverty of at least 50% of the population. It should also be mentioned that, although biodiversity probably helps to maintain a certain level of the quality of life and its value is underestimated since conventional indicators do not quantify this subject.

Peru Commitments with the CBD

On April 30, 1993, Peru ratified *the Convention on Biological Diversity* (RL 21681) and delivered it duly signed to the Secretariat of the United Nations Organization on June 7, 1993. This Convention entered into force as of December 1993.

Important points, specified in the Convention, were incorporated into the new Political Constitution (1993) drafted after Rio '92. Article 68 of the new Constitution stipulates that “the State must promote the conservation of Biodiversity and protected areas”.

Important legal steps have been taken on the subject.

The *Regulation to Protect the Rights of Obtentors of Plant Varieties* which in Peru applies to Decision 345 of the Andean Community, was approved in May 1996.

In June 1997, *the Law on the Conservation and Sustainable Use of Biodiversity (Law 26839)* was enacted. This Law defines the national goals and objectives that match those stipulated in the CBD. It specifies that the National Biodiversity Strategy and Action Plan must be drafted, since the subject is of a primary national importance. The Law furthermore specifies that each Ministry must introduce and implement into its sectoral programmes and plans (agriculture, education, health, roads and transportation, etc.) those outlined by this strategy.

In 1993 the Government of Peru established the *National Commission for Biodiversity (CONADIB)* (R.S. 227-93-RE). This Commission is in charge of coordinating the activities required in order to implement the Convention on Biodiversity. CONADIB is a multi-disciplinary and inter-sectoral organism presided by the *National Environmental Council (CONAM)* and integrated by 18 government institutions, 8 NGOs, 4 universities, 3 international organizations, and two national experts (Annex 1).

The CONADIB Executive Committee operates through 4 official Working Groups and one Sub-Group: *forest biodiversity, genetic resources (with a sub group on bio-safety), agricultural biodiversity, and marine biodiversity* (Annex 2). At present, two more working groups are about to be set up: *traditional knowledge and continental waters*. Eleven CONADIB member participate in these Working Groups.

The *Working Group on Genetic Resources* is currently preparing a *Bill on Access to Genetic Resources*. The *Sub-Group on Biosafety* has drafted a *proposal for the General Law on Bio-Safety* and a proposal for a *Protocol on Biosafety*. A *Draft Protocol on the Clearing House Mechanism* has also been prepared.

A *Technical Committee for Strategies* of the institutions has been established within CONADIB to carry out specific actions concerning the National Report and the National Strategy and Action Plans for biodiversity. The members of this committee are all government representatives except for one non-governmental organization.

The National Environmental Council (CONAM) was established in December 1994. It is the National Environmental Authority of Peru whose mission is to articulate sectoral policies into a cross-sectoral unified environmental policy. CONAM seeks to promote sustainable development by fostering a balance between socio-economic development, the use of natural resources and environmental conservation. *CONAM* chairs several National Commissions in charge of implementing the Conventions on Biological Diversity, Climate Changes, Desertification and Droughts and also heads a special Commission on the Global Environmental Facility (GEF).

In compliance with the commitment assumed by the parties of the Convention on Biodiversity, the Government of Peru has prepared the Country Study on Biodiversity (“Assistance to Draft the National Report on Biodiversity” Project 6105-92-GF/UNEP).

The Country Study is geared towards discovering, identifying and determining the gaps, successes and failures of the biodiversity data currently available and to present basic information required in order to design a National Strategy and its corresponding Action Plan. *INRENA* has been appointed as the Coordinating Entity in charge of gathering data from *INIA*, *IMARPE*, *INEI*, and the 8 Biodiversity Regional Centres in order to reach a diagnosis of the situation and draft a report. ¹

The process to formulate *National Strategy for the Conservation and Sustainable Use of Biodiversity (ENCBD)* and this report both began to

¹ Tumbes = Tumbes + Piura; Cajamarca = Cajamarca + part of San Martin; Huanuco; Loreto = Loreto + San Martin + Ucayali; Cusco = Cusco + Abancay + Madre de Dios; Arequipa = Arequipa + Tacna + Moquegua

be drafted at the same time in October, 1997. A political and social consensus should be reached through the participation of Regional Centers and other participatory mechanisms in order to guarantee the implementation of the strategy.

The data collected to draft this report was provided by regional studies prepared under the framework of the Country Study on Biodiversity; by private and public institutions members of the National Commission on Biodiversity (CONADIB), the Peruvian Amazonian Research Institute (IIAP), the Marine Institute of Peru (IMARPE), the National Agrarian Research Institute (INIA), the National Institute of Natural Resources (INRENA), and the National Environmental Council (CONAM), as well as available documents. The Biodiversity Country Study has not been available throughout the drafting of this report nor for the onset of the ENCBD process.

Progress Implementation

Since 1993, when the CBD was enforced, Peru has been working on its adequate implementation. Major steps have to be taken to this regard, for instance, new laws should be issued on biodiversity; the state has to build up its national capacity to manage these new subjects on its agenda and new State policies and technologies have to be tested and implemented and the appropriate funds must be made available, etc. This Executive Summary briefly presents issues of the Convention and the agreements to be reported at the next *Conference of the Parties (COP)*.

Since there is no National Strategy, this report approaches the implementation of the Convention, referring to issues of Articles 6 through 20 (as possible) of the CBD. Special attention has been given to the general measures, strategies and action plans for the conservation and sustainable use of biodiversity; identification and monitoring of national priorities on the biodiversity and, *in situ* conservation of biodiversity.

At present, each Ministry adopts its own policy on the use, management and conservation of biodiversity. However, it is expected that **CONAM** will secure the agreement of each Ministry in order to proceed and implement a cross-sectoral Environmental Policy.

Aside from the National Strategy, there are other strategies and plans regarding the conservation of biodiversity. Amongst these is the ***Wetlands Strategy , the Action Plan against Desertification and Drought, and the Strategy Outline for Biodiversity in the Peruvian Amazon Basin***. Each strategy and plan involving a specific ecosystem has recently been approved and is about to be implemented.

The Government of Peru has not yet defined its national priorities on the conservation and sustainable use of biodiversity. Nevertheless, efforts have been made to establish priorities for conservation areas (Figure 3) within the framework of the ***National System for Protected Areas (SINANPE)***. Out of 38 priority areas, 19 do not include any Protected Area (Table 2).

Simultaneously, 28 information gaps have also been identified on the issue of biodiversity (Figure 4), of which 5 have been studied during the

past 3 years. In each case, the studies were carried out by international organizations with the participation of national professionals.

As concerns wild flora and fauna and as part of the CITES Convention, Peru has formally identified 170 threatened species of fauna and 11 threatened species of flora. Peru has also adopted some protective mechanisms for migrating species, in compliance with the **Bonn Convention** on migratory animals.

In situ ecosystem conservation is, undoubtedly, the topic where most progress has been made through the National System for Protected areas (Figure 5) under **INRENA** administration. **SINANPE** has 8 categories currently implemented, 46 protected areas covering over 8% of the national territory, a specific law and a trust fund. Despite this situation, barely 25 of the 46 areas have a real presence in the field (that is staff) and their budgets are far from sufficient. Apparently protected areas management barely reaches 45% efficiency level (Vasquez and Irus, 1996).

On the other hand, the system does not cover all of the natural diversity contained within the territory of the Republic of Peru

Management categories which permit the direct use of resources (national reserves, protected forests, community reserves and hunting grounds) cover 56% of **SINANPE** (Tables 4 and 5).

The recently promulgated **Law on Protected Areas**, among its innovations, specifies the concept of protected marine areas, includes

new definitions for management categories and also mentions new categories and the possibility of establishing private and regional Protected areas. At present, this law has not been regulated and consequently the 1977 Conservation Unit regulations are still in force.

In order to link activities on a national level, concerning *in-situ* conservation of agricultural diversity, the appropriate legal framework has yet to be adopted. At present, the small farmers or peasants hardly receive any support whatsoever as concerns their crop varieties. They certainly deserve much more attention and assistance.

There are ongoing discussions concerning ***the intellectual property rights of traditional knowledge***. Proposals, mutually agreed upon, should be developed in order to guarantee a fair recognition and distribution of benefits from the use of traditional knowledge.

As concerns the traditional knowledge shared by several communities on the use of natural resources, protection mechanisms must be determined in order to ensure a fair use and equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices. The Law on Biodiversity recognizes traditional knowledge as “the cultural heritage” of the indigenous grassroots organizations” and promotes their use under the basic principle of “a previously informed consent” by the members of the communities stakeholders of such knowledge.

On the other hand, proposals are expected concerning ***a fair recognition for traditional farmers who have developed crop varieties***

which have not been considered under the framework of criteria that governs Decision 345 of the Andean Group.

The *Regulation on Decision 391 of the Andean Group concerning Access to Genetic Resources* is pending approval and the National Authority on this issue has yet to be appointed.

As determined in recently adopted national laws, no one in Peru is allowed to patent living organisms such as plants or animals. However microorganisms are excluded from this prohibition.

As concerns the transfer of biotechnology, the goals have not yet been determined, nevertheless *CONAM* has prepared a preliminary diagnosis. The Project for the *National System for the Transfer of Agricultural Technology (SINITTA)* is being established to cover this issue.

As a nation, Peru has the capacity to manage several aspects of biodiversity, particularly scientific research for the identification and inventory of biodiversity at its three levels, although in a restricted manner. However, hardly any public funds at all have been allocated to cover these activities.

With the exception of resources such as guano birds, certain small fisheries and the vicuña, data on natural resource management are not available by which to monitor activities on the use and conservation of biodiversity at its three levels. The strategies, lines of action, budgets, etc. concerning this subject have yet to be formulated adopting a more

effective approach that matches the reality of Peru and ensures the implementation of the Convention.

The subject of information exchange has yet to be discussed at the national level. In order to improve the flow of information on a national level, the adequate procedures for the timely and efficient availability of data must be defined as well as the basis for each strategic data level.

There are hardly any policies whatsoever on economic incentives or other types of incentives geared towards a sustainable use of the components of biodiversity. In order to implement the CBD on a national level, a mechanism of this nature must be developed promptly.

This report includes the proposal of a special matrix to assess the country progress on the implementation of the Convention. This proposal, with Peru as a first example, is submitted as a contribution for possible future evaluations. (See Proposed Progress Report Matrix).

Suggestions to draft a National Biodiversity Conservation and Sustainable Use Strategy

The national priorities for the conservation and sustainable use of biodiversity shall be identified in the process of elaboration of the National Strategy.

Recommendations to be compiled:

a. To bear in mind the priorities of the three hierarchical levels of biodiversity (ecosystems, species and genotypes) identified in this

document, in the Biodiversity Country Study and others that could have been omitted but that have been previously identified during the process.

b. To frame priorities within principles aiming at implementing the Convention such as the conservation, sustainable use of biodiversity and a fair distribution of benefits derived from the use of genetic resources.

c. Priority actions on conservation and sustainable use should, whenever possible, take into consideration social aspects and allow local inhabitants to participate in these activities, bearing in mind that the cultural diversity of Peru has been and continues to be responsible for the domestication and use of a large portion of the country's biodiversity.

d. Considering that funds are usually scarce, it is recommended to avoid any duplicity and fostering innovative ideas, particularly as concerns genetic resources and agricultural ecosystems.

e. That projects (programmes, plans, activities) on conservation and/or the sustainable use of biodiversity be defined as compared to those that have some components on conservation and/or the sustainable use of biodiversity.

f. When drafting the National Biodiversity Strategy the different levels and aspects of biodiversity that must be included in an Environmental Impact Assessment (EIA) must be taken into account.

g. When drafting the National Biodiversity Strategy information gaps concerning ecosystems, communities and associations that have no

updated data should be clearly identified in order to properly evaluate how endangered they may be and to prepare specific plans in order to redress the situation.

h. Research must be carried out concerning the economic valuation of the multiple benefits of biodiversity as a tool which will contribute to establishing priority activities involving the conservation and sustainable use of biodiversity.

PROPOSED PROGRESS REPORT MATRIX

This Progress Report incorporates a matrix describing the measures taken for the implementation of the Convention. Further and proper indicators to measure the effectiveness of the implementation of the National Biodiversity Strategy will be drafted during the process.

A column with CBD articles and/or issues, COP resolutions, national reports, national working groups issues, and other relevant points have been considered in the summary. A scale is proposed, which in spite of being qualitative, should be clear in its declarations: non existent, incipient, partly implemented, and implemented (see below a test score description).

This summary must clearly describe the progress Peru has made concerning the implementation of the Convention.

Evaluation or criteria columns include:

- Legal basis: pertinent laws, in accordance with the Convention
- Installed capacity: national professionals capable of handling the issues
- Pilot projects: different scale pilot projects generated and/or conducted by grassroots organizations, NGOs, trade unions, the State, consortiums, etc.

- Implementation at a national level: incorporated into the structure of the Peruvian State. (plans and programmes)
- Funding: national or international funds channeled or negotiated by the Government of Peru (GO or NGOs) to implement activities regarding the CBD.

Others to be determined or which may be *ad hoc* on certain issues.

TEST SCORE DESCRIPTION

NOT APPLICABLE (N/A): The criteria described on the row has no relation with the column (value=0)

NON AVAILABLE INFORMATION: The pertinent information to evaluate the situation the issue on a national level was not available. (value=0)

NON EXISTENT: (Nonex) No actions have been taken on the issue; there are no national initiatives (value=1)

INCIPIENT: (Inc) A project is being worked on/negotiated; there is an initiative or proposal prepared by the private or public sector, with or without government support. (value=2)

PARTIALLY IMPLEMENTED: (PaImp.) A project or activity with a specific budget executed by a national institution with the capacity to handle the issue and whose content fits perfectly within the Convention's framework (value=3)

IMPLEMENTED: (Imp). A program or activity and a national organization that manages this aspect and fits perfectly within the Convention's framework (value=4)

INSERT TABLE

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ACCRONYMS (from their meaning in Spanish)

ANP	Protected Area
APECO	Peruvian Association for the Conservation of Nature
BIOCOM	SENREM Component for the Conservation of Biodiversity
CONACS	National Council for South American Camelids
D.C.D.	Board of Directors Decree (CONAM)
DGA	Head Office of Agro-Meteorology (SENAMHI)
DNDB	National Biodiversity Diagnosis
D.S.	Supreme Decree
CDC	Data Conservation Center
CITES	Convention on the International Trade of Endangered Wildlife
CONADIB	National Biodiversity Council
CONAM	National Environmental Council
CONCYTEC	National Science and Technology Council
CONFIEP	National Federation of Private Enterprise Institutions
DGEP	Head Office for Projects and Research (INRENA)
ENCBD	National Strategy for the Conservation of Biodiversity
EIA	Environmental Impact Assessment
FANPE	Technical Cooperation Project to draft the Strategic Plan for the National System for Protected Areas (GTZ-INRENA)
GAP	Peruvian Birds Group
IDMA	Environmental and Development Institute
IIAP	Peruvian Amazon Basin Research Institute
IMARPE	Marine Institute of Peru
INEI	Data and Statistics Institute
INIA	National Agrarian Research Institute

INRENA	National Natural Resources Institute
IVITA	Veterinarian Institute for Tropical and High Elevations Research
MEGA	Structural Framework for Environmental Management
OMM	World Meteorological Organization
OPS	Pan American Health Organization
OT	Land Planning
PAMA	Environmental Adaptation and Management Program
PN	National Park
PRONADIB	National Biodiversity Research Programme (from CONCYTEC)
BR	Biosphere Reserve
RIBEN	National Network on the Biological Impact of the “El Niño” Phenomena
R.M.	Ministerial Resolution
SABDR	Relational Data Base System
SEIA	National Environmental Impact Assessment System
SENAMHI	National Hydrology and Meterology Service
SENANSA	National Animal Health Service
SENREM	Sustainable Environmental Natural Resource Management
SIG	Geographic Information System
SINANPE	National System for Protected Areas
SN	National Sanctuary
SPDA	Peruvian Society for Environmental Law
TCA	Amazon Cooperation Treaty (Amazon Pact)
UICN	International Union for the Conservation of Nature
USAID	United States Agency for International Development

UNEEGV	Enrique Guzman y Valle La Cantuta State Pedagogical University
UNMSA	San Marcos State University
UPIGV	Inca Garcilazo de la Vega University
WWF	World Wildlife Fund

INTRODUCTION

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I INTRODUCTION

The National Report on Peru describes the progress made by each sector involved in conservation and the use of biodiversity. Thus, this Report not only refers to laws, policies and projects directly related to the Convention, but also measures conducting towards the implementation of its provision and their effectiveness in meeting the objectives of the Convention of Biological Diversity.

The Report describes three levels of organization of biodiversity (ecosystems, species and genotypes). Although most of the measures refer to wild biodiversity, it also includes aspects on agricultural ecosystems, managed species and cultivated varieties.

The report complies, to the best of its ability, with the structure as suggested in COP Decision II/17 and the recommendations contained in documents UNEP/CBE/COP/2/14, UNEP/CBE/SBSTTA/3/Inf.15 and UNEP /CBD /SBSTTA/16.

However, since there is no National Strategy for the Conservation and Sustainable Use of Biodiversity nor its respective Action Plan, issues referring to Articles 6 through 20 of the Convention have been included in lieu. Any issue not included is either pending discussion or has not provided relevant information concerning the implementation of the Convention.

BACKGROUND

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II BACKGROUND

a Status and trends of knowledge, conservation and use of biodiversity.

Knowledge on biodiversity in Peru is variable amongst its three levels.

Peru has been classified into vast landscapes or biogeographical provinces (CDC, 1992), eco-regions (Brack, 1986), ecological regions (Zamora, 1992) in addition to life zones (ONERN, 1976). These categories have tried to include parameters such as soils, vegetation, the distribution of flora and fauna, geology, and the climate. These items have been previously studied, for example, in the Geological Map of Peru (INGEMMET, 1975), the Map of Land Classification According to Major Use Capacity (ONERN, 1982) and, the most recent classification for types of vegetation as described in the Forest Map (INRENA, 1996).

Despite the fact that an agreement on the most appropriate definition for an “ecosystem” as applied to the Convention has not been reached, all classifications submitted up to date clearly describe the enormous geographical diversity of Peru. For example, according to the Holdridge System (1967), the Ecological Map recognizes 84 life zones and 17

transitions of the existing 104 zones (1967) and, according to the FAO World Map of Soils (1990), Peru has 18 of the 28 groups classified by this organization.

This report describes the diversity and distribution of ecosystems (a term to be applied in the broadest possible sense) by applying the classification of a bio-geographic province or a large landscape of Peru (Rodriguez, 1996; CDC-UNALM 1991); an abridged version of the Udvardy Classification. This same classification will probably be adopted to draft the National Biodiversity Strategy. (Figure 3)

INSERT TABLE

As concerns the state of conservation, in 1986 *ONERN* drafted a document entitled *the Environmental Profile of Peru* and identified 13 critical zones (Table 6, Figure 7) in which the relationship between the environment and the presence of human activity has negatively affected the quality of life. At present, six of these zones (Ilo, Huallaga, Madre de Dios, Mantaro, Chimbote, and Lima) are even more critical and CONAM will carry out priority actions there.

Some sectors have also prepared environmental studies concerning the health of ecosystems. The Ministry of Energy and Mines, for instance, has prepared a Mining and Oil Critical Zone Map.

Despite all these previous efforts, the Government of Peru has to update or prepared an inventory of Peru's ecosystems including their state of

conservation, vulnerability and degree of environmental threat. The *National Land Use Planning* must also be drafted to give priorities for the use of each ecosystem according to its environmental characteristics and socio-economic surroundings. The *Map of Land Classification According to Major Use Capacity* (ONERN, 1982) has classified the potential use of soils in Peru. To date, this map is being used in the distribution of forest concessions, the location of natural protected areas or farmlands.

Figure 6

MAP OF LAND CLASSIFICATION ACCORDING TO MAJOR USE
CAPACITY

Permanent and Clean Crops

Grasslands

Forests

Protection

INSERT TABLE

Figure 7

Peru's Critical Environmental Zones (ONERN, 1996)

Priority Zones

1. Tumbes Mangrove Swamps
2. Chira-Piura Valleys
3. Chimbote-Callejon de Huaylas

4. Chillón-Rimac-Lurín
5. Tambo-Ilo-Locumba
6. Cajamarca
7. Mantaro Valley
8. Huancavelica-Ayacacucho
9. Vilcanota-Huatanay
10. Puno
11. Central Huallaga
12. Alto Huallaga
13. Pastaza-Tigre
14. Madre de Dios

In 1994, when the *National Plan for Protected Areas* (Project FANPE GTZ-INRENA) was drafted, 28 information gaps (Figure 4) or biologically unknown zones were identified. Sampling of these areas in three priority levels will be needed in order to know their specific diversity. Since 1994, international organizations have already sampled at least 5 of these zones, mainly for conservation purposes: Condor, Vilcabamba-Urubamba, Sandia-Tambopata, Napo-Putumayo, and Cenepa.

The knowledge on biodiversity varies depending upon each specific level. At the species level, between 60% to 90% of the total number of species expected of marine and terrestrial vertebrates are already known. However, with the exception of butterflies, crustaceans and mollusks, information on microorganisms, fungi, marine and terrestrial invertebrates is scarce. Moreover, flowering plants are constantly being

documented through individual efforts and projects such as “Flora of Peru” (Missouri Botanical Garden).

At the genetic level and intra-specific varieties of domesticated species and their wild relatives, scientific knowledge is rather limited and dispersed among the local inhabitants that manage and produce most of the domesticated varieties. This local knowledge has not yet been scientifically documented and acknowledged. Therefore each variety must be described and related information systematized.

Field data on certain widely used resources such as potatoes, tomatoes and alpacas has been gathered. In 1978, the International Potato Center (CIP) published a catalog of wild tomato populations (Holle et al. 1978) belonging to 8 different species. Up to 1986, the CIP had registered 3,481 different potato genotypes among 11,000 accessions (Huaman, 1986). This clearly indicates the high diversity which potatoes have reached since they began to be domesticated 6,000 years ago.

Up to 1995, the Germplasm Bank Directory listed 56,000 accessions of 103 cultivated species kept in *ex-situ* collections in universities, NGOs, CIP, private enterprises, and INIA (PRONARGEB). Nevertheless, maintenance, renovation, and viability of the accessions vary among collections. Efforts are currently being made to update the inventory. CIP has by far the largest collection of potatoes, other tubers and Andean roots (RTA). CIP is an international institution working in collaboration with national researchers, and is devoted to the recollection, description, conservation, and evaluation of germplasm particularly the RTA kept by INIA and some universities.

b. Direct (proximal) and indirect (ultimate) threats to biodiversity and its management

The major threat against Peru's biodiversity is its improper lands management, an inadequate management of resources, the application of highly polluting technologies, the lack of trans-sectoral agreements and a breach of existing legal norms. Furthermore, this National Report does not evaluate the environmental damage caused by over a decade of violence and terrorism in Peru.

The real causes

Due to the large surface of Peru, the main threat is probably poor land management and over exploitation of its natural resources. There are several factors involved such as the population growth and the migration of thousands of poor families to other places; overall public ignorance concerning long- term environmental damage and use of quick solutions which overlook past experiences and long term negative impacts.

INSERT TABLE

Peru has a total estimated population of 23,996,185 inhabitants, 60% of which live on the coast, 35% in the highlands and 15% in the rainforest. The annual growth rate is estimated in 2.2% and was even higher in the seventies. The more striking difference is made evident in the distribution of the population which has varied dramatically over the past

50 years. Today, most inhabitants live in coastal urban areas reversing the population distribution registered in the forties, when most Peruvians lived in rural areas. Rural migrants from Peru's highland provinces have increased markedly from 591,000 in the decade of 1950, to approximately 4 million inhabitants in 1990.

The manner in which land is used damages the loss and partition of the habitat (deforestation, drainage of wetlands, farmland conversion into urban development projects, etc.) which are in turn, the most serious threats, although inconspicuous, to the loss of species, that is, wild species or cultivated varieties that will probably never be discovered.

The use of farmlands, pastures and erosion

In spite of the fact that barely 6% of Peru's national territory is appropriate for farming, Peruvians have an ancestral tradition in agriculture and have domesticated several species and varieties. Today depletion of these lands is alarming due to the subsequent loss of agricultural diversity.

At present there is no precise figure on the extent of agricultural lands used in Peru .

INSERT TABLE

Peru has no more than 3 million hectares of agricultural lands under cultivation although it is traditionally considered to be around 2,700,000

hectares, that is, barely 2.1% of the national territory. This figure includes an extension of 400,000 to 500,000 hectares of fallow land, or areas which are purposely left to rest for a certain period. Thus the real area farmed each year is barely 2,200,000 hectares, 1.7% of Peru's territory.

Peru only exploits 36% of its farmland, which clearly indicates a potential of 64% to be used. Mention must be made of the fact that approximately 1% of good farmland are already lost to urban development projects.

In the highlands, farmlands are being over-exploited, while there are areas on the coast and the rainforest to be used; although it is on the coast where potential areas are being converted into urban zones.

On the other hand, Peru has approximately one million hectares of agricultural terraces called *andenes* on highland mountain slopes, a tradition of the Andean culture which, in the past, enabled Peruvians to expand their agricultural frontier and use land in a sustainable manner. Today, barely 20% of these *andenes* are being used properly, the rest are deteriorated due to inappropriate farming practices (Winograd, 1995). The rehabilitation expenses in order to repair and maintain Andean terraces have been calculated between US\$250 and US\$750 per hectare.

INSERT TABLE

Erosion is one of the major threats, particularly as concerns agricultural and natural Andean ecosystems. Up to 30% of the national territory has serious and moderate eroded areas ; of this figure , 72.5% are in the highlands. INRENA is currently drawing a map of Peru on a 1:1 million scale to explain the problem.

Natural Andean grasslands cover 259,658 square kilometers of Peru; however half of these are threatened by desertification.

Above 3,300 meters there are approximately twenty-one million hectares of grazing grounds. Approximately 3.3 million head of bovine cattle, 15 million ovine cattle, and 3.8 million South American camelids graze in these areas. When these lands are over exploited and are left fallow for a certain period, the vegetation of the area is damaged because it is unable to recover fast enough in order to avoid erosion. On the other hand, the *bofedal* or high water table associated with vegetation in the punas ecosystems, which cover about 917 square kilometers, are also used as pastures, however the excessive use of these lands have made them become prey to desertification.

Deforestation

There is no recent data on how much forest has been cut down up to date in Peru. Estimates reveal that of the original 75 million hectares of forests, by 1990, 7 million hectares had been deforested, a surface the size of the Department of Cuzco. At this rate, by the year 2000

deforestation will affect about 9,559,817 hectares (12.65% of the original coverage).

INSERT SMALL TABLE

Forests in the Departments of Huanuco (25%), Pasco (11.3%) and Junin (28.2%) have become seriously affected. However, the Department of Amazonas is the hardest hit since it has lost 43% of its original forests while the Department of San Martin has already lost 25% of its original forests.

Most deforestation has taken place on the Eastern slopes of the Andes in the Departments of Amazonas, San Martin and Loreto which have lost over one million hectares each. Almost 40% were protected forests in the high rainforest slopes of these areas called *selva alta*, 32% were hillside forests, and 28% were alluvial forests. At present, 80% of the deforested surfaces have become *purmas* or secondary forests; the remaining 20% is in production but at extremely low levels due to poor farming quality; and only 6% of this land is being appropriately rotated.

At present, high Andean shrub-sized forests known as *queñoales* only cover 937 square kilometers and are also being depleted because they are a popular source of firewood.

One of the direct causes why forests are being so severely depleted is because of the regulations governing timber concessions of plots less than 1,000 hectares. In these cases, the law does not oblige such areas to be reforested. On the other hand, failure to comply with management

plans (i.e. large concessions) and programmes locally known as Forestry Replacement Programmes actually adversely affect the conservation of forest ecosystems. This situation is more critical in certain fragile or over exploited areas (D.S. 013-96-AG).

According to recent regional studies, the North-Eastern dry forests have been recognized as one of the most endangered ecosystems (Dinerstein et al., 1995; WWF, 1996). Despite this situation, there is no available data on, for instance, the rate of deforestation or rate of conversion to other uses of the habitat.

Loss of Wetlands

There is no national diagnosis on the state of conservation of wetlands but there is some data which describes the situation. Over the last decade about 50% of the wetlands on the southern coast (between Paracas and Ite) have disappeared. A clear example on the central and southern coast is the Villa Swamplands, on the outskirts of Metropolitan Lima, which now occupies less than 30% of its original space, and Pucchon, in Arequipa, which has disappeared altogether (Riveros and Pulido pers.com.). In spite of efforts to preserve and recover the mangrove swamplands in the northern coast, over the past decade they have lost 24% of their total area. There is no national inventory on the adverse effects on wetlands, nor is there any historical reference concerning their original extension.

The worst threat against hydric associations is pollution, caused by domestic and industrial waste, mining and oil drilling tailings and discharges

in addition to the damage caused by people to the structure of ecosystems.

Wildlife Threats

The official classification (applied since 1977) reports only 10 species of endangered wild flora (R.M. 1710-77-AG). However, several studies have mentioned the need to up-date this list, since some experts have estimated that there are at least 70 endangered vascular plants, most of which are trees or ornamental. Apparently 21 of these vascular plants are threatened to extinction (del Carpio, 1996).

The selective extraction of plant products is another reason why diversity is being lost. Forest species with a high commercial value such as cedar (*Cedrela odorata*), mahogany (*Swietenia macrophylla*) and *lupuna* (*Chorisia integrifolia*) have been practically eradicated from areas nearby towns and villages, rivers and roads. Other arboreal and palm species used for food and commerce have also been locally eradicated.

Similarly, indiscriminate hunting and poaching of animals for the pet market and other purposes (exports), as well as the sale of wild meat and by-products are a direct threat to many species of animal wildlife.

There are 170 endangered and threatened species of animal wildlife, all of which are land vertebrates, according to the official list (R.M. 1082-90-AG). Twenty four of these species are endangered, 66 are vulnerable, 26 are rare, and 54 are in an undetermined situation (Annex 3). This list must be up-dated to allow many species to be re-classified (Pulido, 1991;

Rodriguez, 1996) since their status has changed. Today, there is a better knowledge about the real state of conservation of some species, in addition to the fact that categories need to be redefined accordingly to new concepts of conservation biology (Mace and Stuart, 1994).

Moverover, this list does not cover each and every group of organism. For instance, fish, such as the *paiche* (*Arapayma gigas*) in the Amazon Basin, and endemic species (*Orestias* spp. and *Trychomycterus* spp.) found in Lake Titicaca are quickly becoming endangered. As concerns marine organisms, the seahorse (*Hyppocampus ringens*) could also be considered as endangered. Two years ago, 1 MT of this seahorses was fished out of Laguna Grande in Paracas, for sale as an ornamental species.

Pollution

Water pollution is caused by a series of legal and illegal productive activities Monitoring programs to surveille water pollution on terrestrial and marine biota, have been set up by the Ministry of Fisheries, the Ministry of Health and the Navy of Peru, as well as in some universities since 1984. There is information available from the ports of Ilo, Paita, Pisco, Callao, and Chimbote.

Marine contamination is caused by domestic and industrial waste and, mining tailings. Both domestic and industrial waste are important because of the volumes they represent, however mining tailings are important

because they are highly toxic substances which seriously upset the environment.

As a result of the economic measures adopted by the Government of Peru to promote national and foreign investment, more mining plants have started to operate. Peru has numerous ongoing mining operations, and therefore it is obvious that today there is an alarmingly higher amount of tailings being driven into water resources.

Whereas on the coast, 10% of the mining companies continue to drain their tailings on the shore, the PAMA or Environmental Adaption Plan has been implemented, and 90% have built some sort of deposit or grounds. The major direct mining tailings come from Marcona (Ica) and Ite (Tacna).

The appearance of azoic areas without benthic communities, in the Pisco and Chimbote bay areas, is directly caused by pollution dumped by fishmeal and fish oil plants. This results in a high organic discharge which drastically lowers the amount of oxygen in the water.

INSERT TABLES

Domestic waste is perhaps the major pollutant dumped into the ocean and rivers close to urban areas. According to information collected by DIGESA, barely 60% of coastal urban areas have sewage systems while in the highlands and rainforest communities, this figure drops sharply. Untreated domestic and industrial sewage is often considered to be a serious threat to water bodies nearby urban centers.

The use of mercury in gold mining seriously pollutes water. Furthermore, this activity has removed about 81 thousands hectares of forest edging river beds in the area, especially in the Department of Madre de Dios, which is located in the midst of the Peruvian rainforest

The oil industry in Peru today has become much more active , particularly on the northern coast of the country, which significantly increases the risk of an oil spill during loaded and unloading exercises.

Oil prospecting and development activities threaten the Andean coastal and Amazon ecosystems. At present, around 15 million hectares (20% of the Amazon rain forest) in the lowlands of the rainforest area have been granted as concessions. Although these plots exclude National Parks, other Protected Areas such as the *Tambopata-Candamo Reserved Zone* are presently being prospected for oil.

The situation of the Amazon indigenous groups living within the area of an oil concession is even more critical. Measures foreseen by the Ministry of Energy and Mines to mitigate the impact have been specified in the Environmental Impact Assessment as well as in the Oil Prospecting Plan to be submitted by each oil company. Although each plan must clearly describe the environmental scope of its activities, the social impact on the local indigenous groups and the loss of their cultural diversity has not been taken into account up to date.

Moreover, environmental impact assessments make no mention of the probable direct effects that oil or mining activities have on biodiversity.

No description has been given of the environmental harm indicators generated by oil and mining activities. This is an entirely new aspect which should be taken into account and much more experience is needed. Nonetheless, recent studies have revealed a total absence of Anura (frogs) in the seismic lines of the plots prospected whereas in one of the areas where wells are being drilled, lizards have shown chromosome anomalies.

The Environmental Impact Assessment- EIA nor the plans do not clearly specify the risks, nor the amount of damage to biodiversity, nor the necessary new measures to be included in the regulations, for their consideration.

Oil companies have had spills of different sizes and have inadvertently flushed brine, amongst many other pollutants, into the Tigre, Pastaza and Marañon Rivers.

Drug trafficking

The ravines and rivers of the Peruvian rain forest are being severely polluted by chemical ingredients used to make basic cocaine paste (PBC) out of coca leaves. These ingredients are flushed into streams and rivers. According to a study by Buenaventura (1986, quoted in the November 25, 1994 issue of *El Peruano*, Peru's official newspaper), 57 million liters of kerosene, 32 million liters of sulphuric acid, 16 metric tons of quick-lime, 6 million liters of acetone, and 6 million liters of toluene are used to produce 400 tons of PBC in the Alto Huallaga.

Large extensions of coca leaf plantations have accelerated the deforestation affecting nearly one million ha of mountain forests of the rainforest between 500 to 2,000 m. For instance, in the Huallaga Valley 223,000 hectares of forests have been deforested. These forests are home to approximately 2,600 species of flora of which 46 are endemic to this valley and are therefore seriously threatened to extinction. (Young, 1996).

Threats to Protected areas

SINANPE's National Report (1997) recognizes two main types of threats:

a) Threats at an institutional and strategic level, which affect the strength of the system and are usually associated with important economic interests, the adoption of a severe free market policy and power, mining and other development projects.

b) Threats generated by local activities which involve the people neighbouring a Protected Area and the social problems which may arise as a consequence from the use of such areas, such as tourism or the direct utilization of resources.

c. The value of diversity in terms of conservation and sustainable use

The importance of biodiversity, solely as regards wild species, must be measured in terms of its use, expressed by the direct value of its products and potential value.

The best example of the current value of use in Peru is marine fishery which provided between 6.8 and 11.3 million tons (1992 and 1994 respectively) from 30 species. Six percent of all fishing is used for human consumption, while the rest is used to manufacture fishmeal and other products. In 1993, the Government of Peru benefited from the sale of 1.7 million tons of fishmeal which generated an income of US\$541,022,000, that is, 23% of the 1993 export income. Besides, fishing is a source of employment for about 60 thousand people.

Fish from the Amazon Basin are used for decorative purposes or for human consumption since it is the main source of animal protein (60-70%). Of 697 fish species found in the Amazon Basin, 30 provide an estimated 10,000 metric tons per year sold on the market for human consumption and at least an equal amount is consumed directly and not sold on the market. Fishing of ornamental species which accounts for 107 species, generates direct and indirect employment for more than 3,000 workers (Hanneck, 1982 quoted by TCA, 1995) and in years when the catch is especially good, fishing can generate up to US\$1,000,000 worth of exports, ranking second after lumber.

Cochinilla (*Dactilopius coccus*), a Homopterous that produces carmine and lives on the prickly pear cactus plant locally known as **tuna** (*Opuntia ficus indica*), yields approximately 105 Kg/ha per year and, if well managed, can yield up to 300 Kg of dry *Cochinilla* which can be sold on the market at US\$58.60 per kilo. Tuna harvests yield 100 to 200 fruits/hectare (12.3 to 23 kilos) during the first years of production. The tuna harvest can reach double this amount between the 12th and 20th year of

growth. During times of drought, one hectare of tuna can produce up to 300 kilos of fodder, the amount required to feed five head of bovine cattle for a period of 60 days.

INSERT TABLE 7,8,9,10

The figures speak for themselves and clearly indicate the economic potential of biodiversity and how important wildlife is as a non traditional export item (Tables 7 and 8).

According to annual statistics produced by INRENA (1996a, 1996b, 1996c), between 1993 and 1995 wildlife exports reached US\$ 10,955,409 (FOB value). As concerns plants, over 80% of the income for plants came from bulk export of Cat's Claw (*Uncaria tomentosa*), a plant which unfortunately is being exploited legally and illegally, to such an extent that the situation is considered to be alarming. As concerns wild animals, during 1993 and 1994, the value of tanned hide of the *Sajino* (*Tayassu tajacu*) and the *Huangana* (*T. pecari*) represented 62% of exports. In 1995, income generated by arthropod exports (Table 9) increased markedly (from US\$ 52,821 to US\$ 2,584,293). The year 1993 marks the first time that statistics included the export value of cochinitilla (*Dactilopius coccus*) (US\$ 2,559,458) and it ranked topmost animal export item during that year.

On the other hand, between 1993 and 1997, INRENA earned US\$142,000 (Table 10) from export permits.

The economic feasibility of the sustainable use of a natural resource has also been studied. Non-forestry resources, such as fruit and rubber, in one hectare of in the Loreto Amazon rainforest can yield an estimated amount of US\$ 650 and US\$ 50 per year respectively. This same hectare could yield approximately US\$ 1,000 if the trees were felled once for the lumber industry, while in a 20 year cycle it would produce a total of US\$ 310 (Peters *et al.*, 1989). However, these estimates are highly influenced by the market value and its capacity to absorb products; these figures are actually lower than expected and should increase before fostering a different use as compared to the present, towards a more sustainable alternative (Pinedo Vasquez, 1990).

Recent efforts have lead us to estimate the value of fauna via income from ecotourism instead of hunting and trading. Looked at from this perspective, macaws could generate between US\$ 750 and US\$ 4,700 annually from tourism.

The potential value (when there is no market), the value the existence and how we can benefit from not consuming our biodiversity, for example, by avoiding damage caused by floods by taking certain specific precautions, is much more difficult to calculate. Nonetheless certain efforts have been made, for instance, to evaluate the availability of international cooperation to provide funds for conservation projects and activities in the *Pacaya-Samiria National Reserve*.

Studies must be carried out, within the framework of the National Biodiversity Conservation Strategy in order to determine the economic

benefits “ of not using” part of the territory or the amount of family income generated by subsistence activities.

Financial experts have hardly dealt with the subject of incorporating the environmental factor into the national accounts. These experts have not been able to discover the adequate variables that must be applied in order to measure the expenses of a adverse effect generated by an economic activity. The tangible and intangible, direct and indirect values involved in the maintenance of a protected resource as a capital provided by nature must be assessed. With the appropriate technology this natural capital can be developed on a sustainable basis. CONAM is expected to make considerable progress on this subject.

d. Legal & political framework for the conservation and use of biodiversity

Article 66 to 69 of the Political Constitution of the Republic of Peru (1993) provides the general framework for the conservation and use of the Nation’s biodiversity and this is the first time terms and concepts on this subject (Article 68) as well as sustainable development (Article 67) have been specified.

In Peru, there are approximately 4,200 laws on the environment of which 500 have been adopted over the past decade.

The Environmental Code (Legislative Decree 613) was promulgated in September 1990. This was the first time the Congress of Peru attempted to focus upon, order and introduce new concepts into one code,

describing the most relevant principles to protect the environment. The Environmental Code presents a coherent and systematic ethical, conceptual and legal framework on environmental problems from a holistic viewpoint.

Besides, the Government of Peru has been party to several international conventions and laws which have thereafter been ratified by the Congress of the Republic of Peru, and are publicly recognized as a law.

INSERT TABLE

In 1997, several laws and regulations have been issued that significantly contribute to the development of the legal framework needed to implement the CBD:

The Law on the Conservation and Sustainable Use of Biodiversity (Law 28839).

This law is undoubtedly the best contribution for the development of the legal and political framework for the conservation and sustainable use of biodiversity in Peru. Article 1 specifies the principles and definitions of the Convention of Biodiversity (CBD) and also recognizes the future National Biodiversity Strategy as the main planning instrument in order to fulfill the objectives proposed by the law and by the CBD. As concerns the political framework, this law stipulates the trans-sectoral biodiversity cooperation and follow up on the commitment assumed in the Convention and in the law itself.

According to Law 28839, INRENA is the entity responsible for the publication and dissemination of the National Biodiversity Assessment which is still pending.

The Law on Protected Areas (Law 26834).

This law modernizes the management of a Protected Area. Mention must be made of the fact that aside from the progress made on other subjects, this law broadens the concept of a Protected area, from an area to a space, and incorporates marine spaces; reaffirms the perpetual establishment of a PNA; includes the category of a conservation area under private and regional management; promotes an enhanced shared management of SINANPE, establishes a Coordinating Council (at a central level) and Management Committees (at local level); formalizes the situation of Reserved Zones, which was previously precarious; demands the creation of a Master Plan (*Plan Director*) for Natural Protected Areas as a document to plan and govern SINANPE policies; defines an array of PNA categories bearing in mind several choices for their direct and indirect application; etc.

The regulations governing this law are still pending and until they are issued several of its articles can not be enforced. The approval and application of the Master Plan subject to a lengthy participatory process, is also pending.

. The ***Structural Framework for Environmental Management (MEGA)*** (# 001-97-CD/CONAM) has been prepared in order to

guarantee that each Ministry coordinate its environmental affairs at different government levels and that their respective environmental policies harmonize with the *National Environmental Policy*.

Consequently, the Government of Peru will be able to cope with the difficulties and avoid the duplicity of efforts or gaps as concerns the Government's environmental responsibilities. This Structural Framework for Environmental Management also intends to strengthen the environmental management capacity of each Ministry and seeks agreements with both private and public sectors, as well as the public in general.

. The Government of Peru has signed the *Convention on the Conservation of Migratory Species of Wild Animals* (Supreme Decree 002-97-RE) which compels Peru to adopt special measures for certain endangered migrant species which "cross national boundaries of jurisdiction on a seasonal basis" (v.g. sea turtles, sea birds and whales, to mention a few examples).

. The *Law for Private Investment To Develop Economic Activities on State Owned Lands and Land belonging to Indigenous Communities* (Law 26505) and its Regulations (D.S. 11-97-AG).

This law and its regulations have several outstanding points on the conservation and sustainable use of biodiversity, such as the incorporation of the concept of an protected ecological zone in the rain forest placing a particular emphasis on the subject of its sustainable use. In addition to the above, the law clearly indicates that as of its enforcement, all protected land and river beds, shores and marginal

stretches of rivers, streams, lakes, shall no longer be recognized as uncultivated land or be classified as such. As a result, these lands can no longer be auctioned just because they are not being actively used for agricultural or livestock purposes.

Other important laws are:

. The ***Law to Promote Investments in Agriculture and Livestock*** (Legislative Decree 653) that fosters the development and protection of *vicuñas* and *guanacos* by the owners of the plots of lands where they graze. This Law also declares rural land to be intangible for urban development projects and expansion; promotes the rational use of animal wildlife and describes the concept of safe-keeping and use. This law also specifies the establishment of animal breeding farms and hunting grounds.

. The ***Organic Law for the Use of Agricultural Natural Resources*** that affirms the State's responsibility as concern promoting the preservation, conservation, rational use and efficient management of natural resources (Article 3) and governs other aspects of biodiversity.

. The amendment of the ***Environmental Regulations for Hydrocarbon Activities*** (D.S. 09-95-EM) specifies that whenever an Environmental Impact Assessment must be carried out in a protected area, the National Authority in charge of the area in question must clearly express his/her opinion on the matter.

. *Law 26496 Regulating the Ownership, Trade and Sanctions for Poachers of Vicuñas, Guanacos and their Hybrids, and its Regulations* (Supreme Decree 0007-96-AG).

. The *General Law on Fishing Activities* (Legislative Decree 25977) and its Regulations (Supreme Decree 01-94-PE) declares that amongst other purposes it “guarantees a responsible use and conservation of Peru’s biologically diverse hydro-biological resources and is therefore devoted to encouraging a sustainable use of natural hydro-biological resources.”.

Certain progress has been made regarding the laws on intellectual property rights, the access to genetic resources and a fair and equitable distribution of the benefits resulting thereof, which will be explained later.

There are a considerable number of laws which, in one way or another, govern the subject of Peru’s biodiversity. There are occasions when two or more of these laws may clash in open contradiction against each other, and other times when there is an evident difference between these laws and the policy enforced by the Government.

There are evident contradictions between, for instance, the *Law for the Promotion of an Integrated Pest Management* and the laws governing the subject of subsidized chemical products used in agriculture; the *Law on Biodiversity* that promotes research on this subject and, Supreme Decree 020-97-AG which (indefinitely) suspends scientific hunting permits because cynergetic hunting calenders are currently being

determined and which furthermore lifts the hunting ban of Amazon wildlife species that had been forbidden since 1973 (Supreme Decree 934-73-AG). This suggests that, once the hunting calendars are approved, the commercial hunting of all or many Amazon species will be allowed, when formerly only 15 species were allowed to be hunted and/or captured for subsistence purposes or via special scientific hunting permits.

The legal and political background

The general policies concerning natural resources currently adopted by the Government of Peru are geared towards promoting the efficiency, profit levels and competition of the producer in compliance with a rational exploitation of a natural resource and the conservation of an ecosystem (INRENA 1997).

The political framework for the conservation and use of biodiversity has been inscribed in the following features of Peruvian environmental policy (CONAM 1997b):

- . The right of an individual to a healthy and productive life in harmony with nature and his/her socio-cultural environment;
- . Development must aim towards massively improving the capacity of present generations to satisfy their needs, by safeguarding the continuity of the natural resources that future generations will have to depend upon.

If sustainable development is truly to be targeted, the subject of environmental protection must become a formal item under the title of development and should definitely no longer be considered as an isolated item, nor treated as such.

. Warning standards must be defined to indicate danger of serious or irreversible harm. The fact that there may be a doubt should not prevent us from adopting efficient measures to avoid harming the environment.

. Environmental research and education must be fostered at all levels.

e. Institutional responsibilities and capacities

The National Environmental Council (CONAM)

Law 26410, issued in 1994, created the National Environmental Council- CONAM- the entity in charge of defining and implementing the national policy on the environment, by taking into account the different viewpoints and interests of each Ministry and by encouraging the active participation of the private sector. CONAM is a governmental entity under the responsibility of the President of the Council of Ministers. The members of CONAM's Board of Directors are as follows: the Minister of Economy and Finance, the Minister of Fishing, the Minister of Agriculture, the Minister of Energy and Mines, the Minister of Health and the Minister of Industries, Trade, Tourism and Integration, the MITINCI.

The Government of Peru has mandated CONAM to implement the Conventions on Biodiversity; the Framework Convention on Climate

Change and, Desertification and Drought within the national territory. One of CONAM's objectives is to develop an Environmental Management System (EMS), a National System for Environmental Information and, a National Strategy for Sustainable Development.

The Draft National Biodiversity Conservation Strategy has grouped the human resources most directly involved in the subject of biodiversity. Project Capacity 21 - Local and Regional Management for Sustainable Development – has determined nuclei of spaces for dialogue and agreement (at both local and regional levels) that welcome the participation of the Local Coordinator in charge of the National Biodiversity Conservation Strategy.

Independent consultants have assisted a small team of full time professionals who are in charge of drafting most of the studies carried out by CONAM as well as proposals they may wish to submit.

The Ministry of Agriculture

The Ministry of Agriculture is the public entity in charge of policies on land use governing agriculture, livestock, forestry resources and fallow land; on river shores; on the use of water from rivers, lakes and other water sources for farming, forestry resources and terrestrial flora and fauna; on crops, husbandry as well as other matters involving natural resource management and conservation.

The main responsibility of the Ministry of Agriculture as concerns biodiversity is to formulate, coordinate, and evaluate national agriculture

and livestock policies vis a vis natural resource preservation and conservation.

At the level of each region there is a ***Regional Agrarian Head Office*** which represents the Ministry of Agriculture and is responsible for related activities. There are four de-centralized public entities under the Ministry of Agriculture which, in varying degrees, are each related to the Convention, that is, the ***National Institute of Agrarian Research (INIA)***, the ***National Institute of Natural Resources (INRENA)***, the ***National Animal Health Service (SENASA)***, and the ***National Council for South American Camelids (CONACS)***.

The National Institute of Agrarian Research (INIA) is in charge of the research, promotion and transfer of technologies within the Ministry of Agriculture as well as the conservation, preservation and management of genebanks which belong to the Government of Peru.

The ***INIA*** carries out its research programmes through 14 National Research Programmes, one of which is the ***National Genetic Resource and Bio-Technology Programme***. This programme aims at protecting and conserving biodiversity by gathering, describing, evaluating and registering the genetic resources of domestic animal and plants, and their wild relatives, and by maintaining in *in-situ*, *ex-situ* and *in-vitro* germplasm banks. This programme enables INIA to represent Peru as concerns the conservation and sustainable use of genetic resources. INIA is the Technical Authority in charge of granting rights to the Obtentors of Flora Varieties.

The National System for Agrarian Research and the Transfer of Technology (SINITTA) is geared towards promoting an active participation of the private sector in agrarian research, technical assistance and the transfer of technology as well as to support joint actions with universities and public and private institutions. It is also in charge of drafting the *National Agrarian Research and Transfer of Technology Plan* jointly with the INIA and other SINITTA members.

INIA carries out its activities through a network of 8 experimental stations located on the coast, the highlands and rainforest: San Roque (Iquitos); Baños del Inca (Cajamarca); El Porvenir (Tarapoto); Santa Ana (Huancayo); Donoso (Huaral); Andenes (Cusco); Illpa (Puno); Pucallpa (Pucallpa), and Canaan (Ayacucho).

The National Institute of Natural Resources (INRENA) is in charge of the rational and integral use of a renewable natural resource and their ecological habitat in order to reach a level of sustainable development.

As concerns biodiversity, *INRENA* has the following main functions: to propose, coordinate and harmonize policies on the rational use and conservation of a renewable natural resource; to regularly describe, research, evaluate, surveille, and control renewable natural resources, enabling their rational conservation, preservation and utilization; and, to coordinate efforts between the public and private sectors concerning the use and conservation of a renewable natural resource.

INRENA has five Head Offices: *Water and Soil (DGAS)*, *Forestry (DGF)*, *Protected areas and Animal Wildlife (DGANPES)*, *Natural*

Resource Studies and Projects (DGEP), and Rural Environment (DGMAR). Of these, only two, **DGF** and **DGANPES**, have a direct responsibility over *in situ* and *ex situ* conservation aspects of terrestrial wildlife species.

The Protected areas and Animal Wildlife, DGANPES is the governing entity of *the National System for Protected areas (SINANPE)* and is in charge of supervising the management of the areas belonging to the system. It also proposes policies, plans and laws on the subject of wildlife preservation, conservation and sustainable use and supervises and controls the enforcement of such laws.

The *Head Office of Forestry* proposes, supervises and controls the enforcement of policies, plans and laws on the preservation, conservation and sustainable use of forestry resources.

Two *Direcciones Generales* or **Head Offices** have an indirect impact on biodiversity. *The Head Office for Studies and Projects* which conducts integrated studies to characterize natural resources and to promote pre-investment studies for forestry and wild fauna projects. This Head Office also is a natural resource data center which generates data and its strategic analysis as concerns environmental conservation and investments. The *Natural Resource and Infrastructure Data Base* which is currently being set up will be used together with the *FONCODES Poverty Map* to pinpoint development potentials in the poorest areas of the country in order to foster Peru's socio-economic development.

The Head Office on Rural Environment is in charge of assessing the environmental impact of the programmes and projects implemented by the Ministry of Agriculture. Whenever deemed necessary it may propose the necessary measures to prevent and correct an environmental impact and monitor the measures taken for this purpose. This Head Office on Rural Environment is in charge of evaluating the Environmental Impact Assessment of a Protected area.

Through the **DGAPES** which belongs to **INRENA**, the **CITES** National Authority presides over *the National Committee for the Programme of Man and the Biosphere (MAB - UNESCO)* (which is not functioning at present) and represents Peru for all **RAMSAR** related matters.

The National Animal Health Service (SENASA) is the entity in charge of protecting animal health in rural areas. It promotes the active participation of the private sector in the design of plans and programmes to prevent, control and eradicate pests and diseases that have a major socio-economic impact on agriculture and livestock.

The National Council for South American Camelids (CONACS) is in charge of promoting, counseling and supervising the development, conservation, management, improvement and use of all species of South American camelids and their hybrids throughout Peru.

The Ministry of Fisheries

The Ministry of Fisheries has a *National Head Office for the Extraction and Processing of Fish* and regional and sub-regional head offices that

are in charge of managing and controlling the rational exploitation of hydro-biological resources found in the jurisdictional and continental sea waters of Peru. After conducting scientific and technological studies, this Ministry of Fisheries dictates the pertinent measures which the Government of Peru must adopt in order to preserve its hydro-biological resources. This Ministry issues laws, jointly with the Ministry of Health and the Ministry of Agriculture, concerning the use of insecticides and pesticides to avoid killing hydro-biological species and polluting ocean and continental waters.

The Marine Institute of Peru (IMARPE) conducts scientific and technological research on ocean and continental waters and their hydro biological resources with a view towards achieving their rational use without interfering with ongoing research that other institutions may be involved in. The Marine Institute of Peru, that has its main office in the port of Callao, provides the Ministry of Fisheries with the scientific basis required to secure a rational management of ocean and continental water resources. IMARPE generates different statistics and publications concerning the results of its marine resource and physical and chemical evaluations and characteristics, by monitoring the sea water from the shore up to the 200 mile limit of Peru's jurisdictional waters. In addition to the Callao main office IMARPE also has seven laboratories on the coast: Tumbes, Paita, Pimentel, Chimbote, Huacho, Pisco, and Ilo.

The Peruvian Amazon Basin Research Institute (IIAP) is an autonomous entity incorporated via a public law as specified in Article 120 of the 1979 Political Constitution of the Republic of Peru. The IIAP

is legally present throughout the Amazon Basin of Peru and its main purpose is to improve the socio-economic well-being of indigenous populations through research directed towards the sustainable development of the Peruvian Amazon Basin. Its four research programmes concern, directly or indirectly, conservation and use of biodiversity: *Environmental Planning, Integrated Sustainable Production of Terrestrial Ecosystems, Integrated Sustainable Production of Water Ecosystems, and the Sustainable Use of Biodiversity*. The latter intends to develop new and better products derived from biodiversity to adapt them to terrestrial and aquatic production systems.

The National Council of Science and Technology (CONCYTEC) is a de-centralized public entity which belongs to the Ministry of Education. Its mission is to promote, coordinate and guide scientific and technological research throughout Peru.

☒ *The Head Office of Science and Technology Programmes* *CONCYTEC* is directly in charge of biodiversity and related matters, and does research in three areas: biology, bio-technology and natural resources. The Biology Area works jointly with the *National Group on Marine and Coastal Areas protected by the South Pacific Permanent Commission (CPPS)* which is the representative of Peru at the *UNESCO Latin American National Biological Sciences Network (RELAB)*.

◆ *The National Biodiversity Research Programme (PRONIDIB)* has been established within the framework of CBD objectives in order to cover different aspects of biodiversity. It approaches issues on

ethnobiology, promising biota, inventory and economic appraisal of biodiversity and applied microbiology. It seeks to promote research, human resource training, documentation centers, herbariums and scientific collections, to divulge scientific knowledge as well as to create a greater public awareness concerning the environment.

- ◆ As concerns the “El Niño” phenomenon this subject is part of the activities carried out by *the National Network on the Biological Impact of the El Niño Phenomeno (RIBEN)* set up by experts from several universities and institutions.

The National Institute of Informatics and Statistics (INEI) has a legal mandate to administrate the informatic and statistical information system.

Among its responsibilities it gathers trans-sectoral data, carries out census and surveys, administrates the data bank, and regularly publishes all the national data on the environment in general. It also gathers data from other sectors through the *Inter-Institutional Environmental Statistics Commission*.

INDECOPI is the national institute in charge of defending intellectual property rights and free and fair competition. The *INDECOPI Inventions Office* is the administrative authority that grants the *Rights of Obtentors of Flora Varieties*

Two years ago INDECOPI summoned 5 Working Groups to design a data base on genetic resources, citizen awareness, the diagnosis of a scheme for communal intellectual property rights, the system to protect

intellectual property, and to draft the regulations governing the access to genetic resources.

The National Hydrology and Meteorology Service (SENAMHI) is part of the Ministry of Defence. It plans, organizes, coordinates, regulates, directs, supervises, and controls meteorological, hydrological and agrometeorological activity in Peru; and permanently represents Peru at *the World Meteorological Organization (OMM)*. SENAMHI offers the public a nation-wide meteorological information system, carries out scientific and technological research and delivers special services.

As concerns biodiversity, *the Head Office of Agrometeorology (DGAM)* must acquire and manage a phenological data base of 68 of the most important national cultivated crops. It has applied to be a member of the *CONADIB Working Group on Agrobiodiversity*.

The Ministry of Foreign Affairs

The Ministry of Foreign Affairs governs Peru's foreign policy and is in charge of defending Peru as concerns the scope of its international relations as well as the obligations mandated via national laws.

This Ministry has an *Office for Special Affairs* which depends upon the *Head Office of Multilateral Policies*.

The *Department for the Environment and Sustainable Development* determines the foreign policy of the Government of Peru as concerns environmental issues and directly depends upon the *Office for Special*

Affairs. This Department is also in charge of coordinating the position which Peru adopts on environmental issues on a national level; it channels requests for environmental information addressed to the Chancellery and disseminates international agreements subscribed by Peru on environmental issues, overseeing their fulfillment and execution.

The Ministry of Foreign Affairs has an *Office for International Technical Cooperation* in charge of channeling the reception of funds from abroad in coordination with the specialized offices of their potential beneficiaries.

As approved during the 1992 Earth Summit Meeting of Rio de Janeiro, Brazil, a National Commission has been established which is in charge of organizing each sector and designing plans and actions required in order to secure a sustainable development throughout Peru with the purpose of drafting a national agenda under the framework of Agenda XXI.

As a result of the negotiations of *the Inter-Governmental Panel on Forests*, a National Panel must be established to study proposals to allow the public, private and related sectors to reach an agreement as concerns the topic of forests. For this purpose the Ministry of Foreign Affairs organizes regular meetings on the progress achieved by the *Inter-Governmental Forestry Forum*.

The Executive Secretariat for International Cooperation (SECTI) is a government entity which belongs to the *Ministry of the Presidency*. Its main responsibility is the coordination, promotion and management of

International Technical Cooperation received by Peru, as well as the cooperation efforts which the Government of Peru offers to other countries

SECTI is the State interlocutor with international cooperation entities; the interlocutor and promoter of cooperation amongst developing countries (South-South Cooperation); it determines the priority of International Technical Cooperation (ITC) in keeping with priority domestic policies; coordinates International Technical Cooperation and acts as a link between the national needs of the ITC and available cooperation sources; it also is the ITC resources programme and project coordinator with several public and private entities.

The National Council for Biodiversity (CONADIB)

CONADIB was created by R.S. 227-93-RE as an inter-ministerial council to ensure the conservation of biodiversity and to define national policies on the conservation and sustainable use of biodiversity.

CONADIB is a multi-disciplinary and inter-ministerial body presided by CONAM. It originally had 14 institutions and later the Commission opened vacancies for other organizations. At present it is integrated by 18 governmental institutions, 8 non-governmental institutions, 4 universities, 3 international organisms, and two national experts (Annex 1).

The CONADIB Executive Committee has 4 Working Groups and one Sub-Group officially established (**forest biodiversity, genetic resources,**

bio-safety sub-group, agricultural biodiversity, and marine biodiversity). Two additional Working Groups (traditional knowledge and continental waters) are about to be established. Eleven out of CONADIB's 34 organizations participate in these Working Groups. *The Working Group on Genetic Resources* is preparing a proposal for the *Law on Genetic Resources*. *The Sub-Group on Biosafety* has elaborated a draft proposal for the *General Law on Biosafety* and a proposal for the *Protocol on Biosafety*.

A *Strategic Technical Committee* has been set up gathering representatives from 7 governmental organisations and one non-governmental organisation, in charge of implementing specific actions as specified in the National Report, National Strategy and Action Plan.

Universities

Several state and private universities provide training for professionals and research on biodiversity management and knowledge in general. University programs on biology, fisheries, agronomy, zootechnology, forestry and geographical sciences are offered at a national level. There are also programmes on genetic improvement and forestry management and conservation at *the State Agrarian University*.

Peruvian Universities offer few postgraduate courses such as botany, zoology, biology, ecology, aquatic resources, nutrition, physiology, biochemistry, and bio-technology. *The San Marcos State University* confers a Masters Degree Programme in zoology, botany and microbiology. The *Bartolome de las Casas Institute* in Cusco is about to open a post

graduate programme on natural resource conservation and sustainable management.

Natural Resource Management Master Degree Programmes have been recently established in universities in Arequipa, Trujillo, Iquitos, Tingo Maria, and Cusco. At present there are no Peruvian universities that offer doctorate programmes on biodiversity.

An increasing number of professionals from social sciences such as economists, anthropologists, sociologists, lawyers, and others are becoming involved in the subject of biodiversity within the framework of the globalization of the conservation and sustainable management of biodiversity. Current training in most of these programmes in Peruvian universities include basic courses in ecology and others related to social and environmental issues.

The Private Sector

The main private sector actors related to the conservation of nature are non-governmental organizations (NGOs). There are many NGOs in Peru and some focus upon protected areas. Mention should be made of the participation of the *Peruvian Association for the Conservation of Nature (APECO)*, *the Peruvian Foundation for the Conservation of Nature (FPCN)*, *the Environmental and Development Institute (IDMA)*, and *the Peruvian Society for Environmental Rights (SPDA)* amongst others.

The main activities of these entities include staff training; support for the construction of infrastructure to control and monitor; to seek and channel funds; to execute environmental development and education projects together with the inhabitants within their area of influence and, public administration counseling on legal conflicts, amongst others.

Table 11
STATE INSTITUTIONAL CAPACITY
(main institutions related to biodiversity)

SECTOR: Institution Office	Technical Professionals	Administrative Professionals	Non- professional Staff
Ministry of the Presidency:			
CONAM .National Biodiversity Conservation Strategy Project			
IIAP .Environmental Planning Sustainable Production on Terrestrial Ecosystems .Sustainable production on Water Ecosystems Sustainable Use			

SECTOR: Institution Office	Technical Professionals	Administrative Professionals	Non- professional Staff
Biodiversity			
Ministry of Agriculture:			
INIA . SINITA .PRONARGEB			
INRENA .DGNAP .DANP (2) .DFS .DGF (3) .DGEP (4) .DGMAR (5)			
SENASA			
CONACS (7)			
Ministry of Fishery: Extraction Head Office .Environment Head Office .Aquaculture Head Office			
IMARPE (7)			
Ministry of Education:			
CONCYTEC (8)			

SECTOR: Institution Office	Technical Professionals	Administrative Professionals	Non- professional Staff
.PRONIDIB .RIBEN			
Ministry of Foreign Affairs: . Direction for Special Affairs(9)			
Ministry of the Defence			
SENAMHI DGAM (10)			

N/D

(1) Includes CAP staff and personnel for non-professional services.

(2) The numbers in parenthesis correspond to SINANPE personnel registered by INRENA; non-professional staff includes park guards paid by NGOs, regional governments, etc. but under INRENA.

(3) The Forestry Management Office has 11 professional technicians, 1 manager, 4 technicians and an aide. As concerns reforestry, this office has provided field support for 24 Reforestation Committees (from 4 to 40 persons per committee).

(4) 6 projects and 6 in process

(5) No information available from DGMAR; number estimated from other sources.

(6) Pampas Galeras National Reserve staff paid by CONACS in parenthesis.

(7) It has 180 stable professionals hired to gather data. The number increases when there are cruisers.

(8) Includes all RIBEN and PRONIDIB personnel, plus two biologists in the Biological Area, 2 biologists in the Biotechnology Area and one biologist in the Fishery Area.

(9) It also takes care of other issues outside the DB.

(10) Field observation.

HUMAN RESOURCES

There are an estimated 877 government employees that have varying degrees of responsibilities on the subject of biodiversity through information provided by 10 main state institutions, comprised of 408 professional technicians, 43 administrative employees, and 426 non-professionals (Table 11).

GOALS AND OBJECTIVES

III NATIONAL GOALS AND OBJECTIVES ON THE CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY

National goals and objectives on the conservation and sustainable use of biodiversity stem from Articles 3 and 5 of Law 268339 on “the Conservation and Sustainable Use of Biodiversity”.

Goals:

- a) To conserve the diversity of ecosystems, species and genes, as well as to safeguard the essential life-sustaining ecological processes which species need.
- b) To encourage a fair and equitable distribution of benefits derived from the use of biodiversity.
- c) To foster education, information exchange, as well as the development of human resources, scientific research and the transfer of technology concerning biodiversity and the sustainable use of its components.
- d) To encourage the economic development of Peru on the basis of a sustainable use of the components of biodiversity, by encouraging the private sector to share these goals.

Objectives:

- a) To establish priority actions concerning the conservation of ecosystems, species and genes, favouring those that have a high ecological, financial, social, and cultural value as specified in the National Strategy on Biodiversity.
- b) To adopt a holistic approach on terrestrial and aquatic management by applying watershed management as an environmental management and planning unit.
- c) To conserve natural ecosystems and farmlands, by fostering the adequate technology for a sustainable management.
- d) To prevent terrestrial and aquatic ecosystem pollution and degradation through conservation and management.
- e) To rehabilitate and restore degraded ecosystems.
- f) To generate conditions, including funding mechanisms, and the availability of the necessary resources needed in order to adequately manage biodiversity.
- g) To adopt clean technologies and an integrated natural resource management in order to upgrade the productivity of an ecosystem.

- h) To include ecological criteria for conservation of biodiversity in environmental and land planning processes
- i) To cooperate and link initiatives between the public and private sectors for the conservation of biodiversity and the sustainable use of its components.

In general, the national goals and objectives are clearly related to the objectives of the Convention on Biodiversity (CBD). Explicitly, national goals (a), (b), and (d) are based on Article 1 of the CBD which refers to the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Clause (d) emphasizes human resource training, research and the transfer of technology, as well as the exchange of information and other means pursuant to the fulfillment of the Convention's objectives.

National objectives have included a particular characteristic by proposing that each watershed be considered as an environmental planning and management unit.

***ADVANCES MADE ON THE
IMPLEMENTATION OF THE
CONVENTION***

IV ADVANCES MADE ON THE IMPLEMENTATION OF THE CONVENTION

General measures, strategies and action plans for conservation and a sustainable use (Article 6).

a. General measures for conservation and sustainable use.

The enactment of the *Law on the Conservation and Use of Biodiversity* is the most important event since the Convention has been signed.

As concerns planning, the strategy is currently being designed. However, former experience has been gained through the joint participation in the drafting of the *National Strategy for Conservation, Basis for a Sustainable Development (1990-1991)* and the *Master Plan for Protected areas (1993-1995)* which are pending approval.

Furthermore, CONAM intends to develop its environmental strategy based upon three fronts: a **green front**, or the sustainable use of natural resources; a **brown front**, concerning the enhancement of environmental quality as well as the control of pollution and, a **blue front**, involving a greater degree of public awareness and education as regards the environment. Since this progress report is a part of the process to draft a *National Strategy as well as the Action Plans for the Conservation and Sustainable Use of Biodiversity (ENCBD)*, it is considered to be part of the green front.

In order to begin the ENCBD process, it was decided that the *National*

Council of Biodiversity (CONADIB) was the most appropriate entity through which to set up a *Technical Commission*. The main objective of this Technical Commission is to coordinate and supervise the design of this national strategy.

Throughout this process, CONADIB shall dictate the general guidelines and the Project Coordinator shall be the person responsible for the organization, coordination and management.

In October the ENCBD and its corresponding Action Plan started to be drafted. The process openly welcomes participation, much needed in order to construe the political and social consensus which will guarantee the subsequent application of the strategy.

Participatory planning workshops also began in October. First, a *Workshop on Provision Methodologies for the 4 Project Coordinators from the Macro-Region Centers* (north, center, south and rainforest) was held. An additional workshop was held on planning whose results were the input for the preliminary conceptual basis for strategic development. The members of the CONADIB Technical Committee, Working Group coordinators, consultants and guests attended the *Planning Workshop*; with the participation of representatives of 4 ministries and 3 private organizations.

In order to de-centralize the process, 4 macro-regional centers involving 15 *Regional Technical Committees* have been established, where the local processes will be implemented. Each of these regional technical committees have members from different sectors: a government

organization which has a solid presence in the area; a local state university (preferably a DNDB associate); an NGO which works heavily in the area; a member of the *Transitory Regional Management Council* and, a representative of local government.

As a result of the work carried out with products recommended by the Group of Experts summoned by CONADIB, each Coordinator of a center shall furnish information concerning the products they have successfully managed and shall help prepare the *Draft National Proposal*.

Moreover, in order to foster a greater awareness concerning CBD's purpose, a press campaign in Lima and the Macro-Regions shall be launched.

Following are examples of the progress made throughout the process involved in implementing Article 6 of the CBD: the development of several strategies, regional plans and sectoral programs, such as, the *Strategy on Wetlands*, the *Peruvian Amazon Basic Biodiversity Strategic Guidelines and the Action Plan against Desertification and Drought*.

The *Wetlands Strategy* has been prepared within the framework of the RAMSAR Convention and has been ratified by Congress on November 26, 1991. It was finally approved by INRENA on March 12, 1996. Its overall objective is to implement the conservation of the wetlands by insuring economic, social, cultural and spiritual advantages, as a contribution towards the holistic development of Peru.

The Wetlands Strategy approaches certain specific aspects on policies for the use and protection of wetlands, i.e.: the legal framework; research; the development of activities whose proceeds will benefit the local inhabitants; education and public awareness; training; financial cooperation and support.

Moreover, the Strategy has pinpointed some of the most important problems affecting Peruvian wetlands such as, pollution caused by tailings, fuel and agricultural industries; the destruction of the habitat due to the expansion of the agricultural frontier; the over grazing of herds; the over harvesting of the totora weed; the construction of roads and, other infrastructure works such as, dams.

One of the first activities to be carried out concerning the implementation of the strategy is to design a Master Plan for the joint management of the *Balsar de Huanchaco* which is an ongoing activity. Experiences should also be shared on the subject of mangrove swampland management which covers from Tumbes in Peru to Guayaquil in Ecuador. Furthermore, updated technical information shall be made available concerning the status of conservation of coastal wetlands. A list of experts and institutions involved in the conservation and sustainable use of wetlands in Peru shall also be submitted.

Strategic Biodiversity Guidelines for the Peruvian Amazon

Basin: drafted by IIAP in 1996.

The Peruvian Amazon Basin covers 4 bio-geographical regions (the montane forest area or tropical and sub-tropical *yungas* and the lowland rainforest area or tropical and subtropical Amazon area called *selva baja*). This basin is spread over almost 60% of the Peruvian national territory, the largest area of biodiversity in Peru. At the ecological level (31 out of the 84 life zones) as well as at the specific level (60% of the continental vertebrates and approximately 43 % of the angiosperm plants) are found there.

Article 69 of the Political Constitution of Peru (1993) specifically refers to the sustainable development of the Amazon Basin and provides a framework for the development and enforcement of simple and practical norms and regulations, both at a regional and local level, in order to guarantee the sustainable development and a protection of biodiversity.

The proposal for the Amazon Basin is currently being drafted taking into account six basic strategic guidelines, i.e :

- Environmental planning ;
- the generation of technology to manage and transform the biodiversity resources of the Amazon;
- the establishment of a national research system to monitor the biodiversity in the Amazon Basin;
- the strenghtening of SINANPE;

- the harmonization of current laws and the drafting of a *Law on Biodiversity and Genetic Resources*;
- better education programmes to enhance public awareness concerning the importance of conserving biodiversity.

The specific policies and actions as proposed for each guideline throughout a ten year period required funding equivalent to US\$47.900.000.

The Action Plan against Desertification and Droughts: The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification was signed by the Government of Peru in 1994 and ratified by the Congress of Peru in 1995.

The *National Action Programme Against the Desertification of Peru (PAN-Peru)* that determines the national mechanisms and activities required under the framework of this Convention have also been included.

The *PAN objectives*, directly related to the conservation and sustainable use of biodiversity are i.e.:

- to evaluate the factors contributing to desertification; and,
- to determine the practical measures in order to combat desertification and to diminish its effects.

PAN has legal, research and education mechanisms, as well as productive projects. PAN also proposes to establish a *Trust Fund* to be managed by the *Executive Units* to be supervised by the *District Development Committees*.

b. Sectoral and Trans-Sectoral Policies

Herein is an overall description regarding the political framework for the Environment and Natural Resources which will facilitate the conservation and sustainable use of biodiversity. However, it is not easy to discover the link between the above mentioned framework and sectoral and trans-sectoral policies.

Mention must be made of the fact that each Ministry has its own office on the Environment and conducts its business to this regard, in a relatively independent manner. *CONAM* is currently faced with a great challenge: to achieve the best possible coordination amongst the offices of each Ministry through the *Structural Framework for Environmental Management (MEGA)*.

As concerns the Ministerial policies, the Law has currently established that all Ministries on a national level must present an Environmental Impact Assessment (EIA) as a prerequisite to carry out any activity within its own scope. Each sector has its own EIA *ad-hoc* terms of reference and establishes different levels of importance concerning biodiversity.

The design for a *National System of Environmental Impact Assessments* has recently been approved and will eventually be implemented on a national level. Once environmental protection has been defined, biodiversity should become a top priority issue and should guide those who draft proposals for actions as well as the authorities in

charge of the EIA process.

In 1994, the *Ministry of Agriculture* sponsored an in-house workshop on its biodiversity policy. Several recommendations concerning policy guidelines were presented on that occasion. Over the past two years, some of those recommendations have been taken into account in subsequent legislation. Apparently the other proposals and policy guidelines concerning biodiversity have not been formally accepted by the Ministry of Agriculture. However, each Ministry is interested in addressing the matter from the viewpoint of its own objectives, i.e., the *Ministry of Agriculture* is interested in fostering environmental conservation and a rational use of renewable natural resources in order to achieve the sustainable development of its activities.

INRENA (1997) has established the following natural resource policies:

- * to promote and regulate the conservation and sustainable use of renewable natural resources in order to develop the activities of the Ministry of Agriculture;
- * to foster private sector participation in the conservation and sustainable use of natural resources;
- * to foster the execution of overall and integrated research, as well as the characterization of these natural resources;
- * to encourage training on renewable natural resources;

* to upgrade and modernize the current operation and information system concerning natural resources and the environment;

* to assume and foster international commitments by Peru concerning natural resources and the environment.

As concerns the *Ministry of Fisheries*, the political guidelines have been issued in October this year (RM 646-97-PE) and these comply with a sustainable use of fishery resources; the promotion of research and training, as well as the ordering of fishing activities; the diversification and intensification of human consumption and, the promotion of investments that will increase food production, will generate employment and provide economic gain.

The Ministry of Fisheries and the Ministry of Agriculture are both seriously concerned about how to alleviate poverty and promote ways of managing resources, for example, through aquaculture and wildlife farms. The profit levels of these new management models as well as their sustainability have not yet been confirmed. Nevertheless, these alternatives must be compared to the management of wildlife, which is another possibility of usage, perhaps even more profitable and that matches more closely the social and economic reality of Peru.

Since there is no national strategy on conservation and the sustainable use of biodiversity, there are few trans-sectoral policies. Data still has to be processed to allow for an effective follow-up on the use and conservation of biodiversity, on each of its three levels. New strategies must be designed together with the necessary lines of action and budgets

in order to fully implement the Convention adjusted to the reality of Peru.

Establishing Priorities and Monitoring (Article 7).

a. Identifying priorities amongst the different components of biodiversity:

In view of the fact that the national priorities for the conservation and sustainable use of biodiversity have yet to be determined, this report also expresses the viewpoints of several different information sources.

As concerns ecosystems, the species and richness representativeness of the diversity of Peruvian ecosystems, degree of vulnerability and relative importance of socio-economic resources as services of ecosystems, must be taken into account when establishing priorities.

The vulnerability of an ecosystem can be measured by comparing its present state of conservation together with the type, action time, spatial scale and intensity of the threats expected over the next years. These factors may be correlated to the topographic, edaphic and climatic characteristics, in order to reach a clearer understanding of the degree of vulnerability of a given ecosystem

In other words, the presence of steep slopes and heavy rains as well as very poor or poorly developed soils will have a serious adverse effect on the ecosystem's vulnerability, particularly if these soils have a high rate of deforestation, as is actually the case of the eastern slopes of the Andes. According to Gentry (1986), as concerns plants, much more attention

should be directed towards Andean ecosystems, where a greater amount of herbs and shrubs are restrictedly distributed as opposed to the Amazon rainforest where trees and vines are spread over far more extended areas. This fact is also valid as concerns other organisms such as, amphibians, birds and reptiles, to mention only a few.

MAP OF PERU

Agroecological Zones of Peru Tapia 1996

The World Bank and the World Wildlife Fund have jointly concluded an assessment of priorities for conservation actions throughout several Latin American terrestrial eco-regions and have determined the degree of conservation of each eco-region based on 5 landscape integrity indicators, each of which has a different percentage value:

- * total loss of the original habitat (40%);
- * amount and size of fragments (20%);
- * habitat rate of conversion (10%);
- * degree of fragmentation or degradation (20%);
- * degree of protection (10%).

The degree of environmental threat was measured considering the estimated % of habitat conversion, % of degradation and wildlife exploitation.

According to these criteria, the most badly threatened Peruvian terrestrial ecosystems are the Dry Forest around Piura and Tumbes on the northern coast of Peru, the Dry Forest of the Marañón River and, the Peruvian Yungas or eastern slopes of the Andes. The Tropical Napo Humid Forest, the South West Amazon Forest together with the Western Amazon Grasslands bordering Peru and Bolivia, were considered to be relatively stable.

As concerns setting priorities for conservation activities, both the state of conservation and the peculiar traits of several Latin American ecoregions have been studied. As a result, all the Peruvian ecoregions have been qualified as top priority with the exception of the Marañón River Dry Forest, the Southern Rainforest Savanah, and the Japurá-Rio Negro Humid Forest. (Dinerstein et al, 1995).

This Report considers the following ecosystems, ecoregions and communities to be of top priority:

- the 38 priority conservation zones (Figure 3) identified because of their biological value, a high degree of species diversity, of high singularity or number of endemisms and of representativity of the ecosystem in each case.

In this context the following needs to be highlighted:

- the dry forests of the North East due to their limited area, high degree of endemisms, and advanced state of degradation and strong pressure

for usage;

- the Peruvian Ocean, due to the socio-economic importance of its biological diversity, and the threats it faces (over exploitation, pollution, etc.);
- the coastal *loma (atmospheric associations)*, home to a considerable number of endemic flora and fauna species and populations which are becoming extinct. This ecosystem is naturally fragmented into many “islands of vegetation” on the desert coast, have been drastically reduced over the past 50 years (from 600,000 to 10,000 hectares) as a result of the sand drifts and the strong pressure exerted on land usage by roaming cattle;
- the guano islands due to the economic value of guano, to the large flocks of birds and marine mammals and because these islands have become the last refuge of several endangered species;
- . the relict forests of the western Andean slopes;
- . the wetlands, in view of the many different communities and habitats involved, and the importance they have for migratory birds, for the ecological services rendered to other biotic communities and for human beings and, furthermore, because wetlands are extremely fragile to the adverse effects of human activity;

The Wetlands Strategy has pinpointed 46 priority conservation zones: 11 wetlands alongside the coastline, mixed with mangroves, one estuary,

lagoons, swamps, **bañados** (tidal areas) and one coastal area. As concerns the highlands, it recognizes 28 wetlands amongst lakes and lagoons, and 7 areas in the rainforest.

However, other important aquatic environments could be included: the area bordering the Pastaza, particularly Lake Rimachi (79km²), the Amazonian lagoons such as Lagartococha, Papayacu, Quistococha and Supay (Department of Loreto), the Sauce Lagoon and ONERN Cocha (Department of San Martin) as well as the Pomacocha Lagoon (Department of Amazonas).

. the tropical rainforest, the country's highest proportion of species biodiversity and also because of the ecological good it renders to the whole country.

. the tropical montane forest, which hosts an extremely large amount of endemic species and that is becoming increasingly colonized and consequently has been extensively deforested.

. the Pacific Tropical Forest, which is spread over restricted areas on the coast and is practically isolated since the rest of this forest, spread into the territory of Ecuador has been completely depleted. Moreover, this is a relict formation, a meeting ground for flora and fauna from other areas.

. the humid **páramo** (high barren plateau), given its current limited (170,000 ha) and isolated situation. The area hosts endangered fauna species, such as two mammals, not found in other eco-systems throughout Peru, the mountain tapir *Tapirus pinchaque* and, the only

species of shrew specie known in Peru (*Cryptotis sp.*) and several rare reptiles, amphibians and butterflies.

. The eight environmental critical zones determined by ONERN (1986), which happen to be biodiversity priority zones (Pastaza, Cajamarca, Madre de Dios, Mantaro and Titicaca) and those that demand special attention due to degradation as determined by CONAM: Ilo, Huallaga, Mantaro, Madre de Dios and Chimbote.

There is no information concerning the official initiatives to establish priorities for endangered species and communities, for wild species related to domestic species, medicinal or agricultural species or other key species. Apparently this task is pending.

However, the Agroecological Zones of Tapia (1996) provide a primary overview for priorities for the conservation and sustainable use of the following species (Figure 8).

. within the TCA framework, priorities have been set for 17 Amazon food crops, fruit and vegetable species, among which mention must be made of the **lúcuma** (*Lucuma obovata*), the **castaña** (*Bertholletia excelsa*) and the **pijuayo** (*Bactris gasipes*) (Annex 4).

. the In-Situ Germplasm Conservation Project has determined 32 domesticated Peruvian species such as the *yacón*, the *arracacha* and the potato.

. wild species, closely related to native Peruvian domesticated species.

- . migratory species (in compliance with the Bonn Convention).
- . endangered species (in compliance with CITES)
- . marine species that have special legal arrangements as concerns their usage.
- . wild camelids, in particular the vicuña (*Vicugna vicugna*), governed by many new laws.
- . endemic vertebrate and phanerogam plantspecies that inhabit endangered eco-systems such as Lake Junin and on the western slopes of the Andes, among others.
- . species used by traditional medicine.

There is no further information available on priority eco-systems or anthropic systems as regards the conservation of genotypic variability. However, the Agro-Ecological Zones determined by Tapia (1966) may be considered as an initial approach towards determining the priority setting of some phytogenetic resources (Figure 8):

- . dry western slope or *jalca*, for *chochos* (*Lupinus spp.*)
- . southern area for late *quinuas*,
- . central area for *maca* and *quinua* (*Chenopodium quinoa*)

. mid-southern area for bitter potatoes and *chochos* (*Lupinus spp.*)

. humid eastern slope for *Chenopodium hircinum*.

The rationale applied to establish priorities for Amazon food, fruit and vegetable crops (TCA, 1994) covers the economic and social importance which each specie may have as well as, the threat of genetic erosion, the size of either current or future markets, the need for a sustainable production technology, the eco-systems usage potential identified outside of the natural area of events, the acceptance potential for country-products and, finally, the agro-industrial potential. These concepts will undoubtedly be taken into account when the ENCBD starts to determine each priority.

b. Monitoring biodiversity

The few long-term monitoring surveys available in Peru, mainly refer to resources in usage. The guano birds that live on the coast are the oldest known case -from the beginning of this century- and their dependence on schools of anchoveta (*Engraulis ringens*) was made evident during the decade of the seventies.

Monitoring populations or processes (i.e. deforestation, changes in land usage, space occupation, etc.) is usually an expensive alternative and does not yield a direct profit. The most efficient way to gather information, concerning the follow-up of possible changes over a certain period, is through the interest and active participation of either direct or

potential resource users, depending on the selected indicators. The first step towards implementing a monitoring system involves determining goals and objectives, as well as the pertinent criteria and indicators. Other relevant items to be taken into account and to be implemented, are the way information is handled as well as its availability for appropriate analysis.

At the Ministerial level, certain efforts have been displayed to implement the monitoring activities on resources considered to be important to the economy of Peru, for example, the fisheries sector. Ever since the ***General Law on Fisheries*** was approved in 1992, each year thereafter, the Ministry of Fisheries launches its ***Programme for the Follow-up and Control of Hydro-Biological Resources*** throughout the Peruvian coast. This programme covers the following aspects: control over unloading centers docks and wharfs, allowable fresh/live fish catch, (cooled, frozen or cured, sea food and shell fish), smallest allowable size, tolerance percentage, fishing bans, *inter alia*, as well as the control over fishing gear, minimum length of fishing nets (except for anchoveta, sardine, jurel and caballa) as well as other regulations to govern the preservation and exploitation of hydro-biological resources.

INSERT TABLE

Within the agricultural sector, the vicuña is perhaps one of the few terrestrial wildlife species under regular monitoring. In 1996, the Ministry of Agriculture requested CONACS and INRENA to supervise this specie, and simultaneously, to create the ***Single Registry of South***

American Wild Camelids in Peru, considering the following: population, management, production, origin, products, marketing, buyers or users of other products and transformation that have no business or research purposes.

As concerns terrestrial wildlife there is no monitoring information available on main populations of many commercial wildlife species, except for an assessment currently being conducted on the Psitacids (*Brotogeris pyrrhopterus* and *Aratinga erythrogonis*) in the north coast and on the pecaries (*Tayassu tajacu* and *T. pecari*) found in the rainforest (INRENA 1997).

According to 1993-1995 statistics, over the past three years there has been a drop in the amount of **sajino** and **huangana** hide exported (81,605, 45,870 and 55,448 for each year). In addition to this fact, there are marked differences in the % ratio of sajino/huangana leather (77%/23%, 72%/28%, 66%/34%) and fewer hides according to place of origin.

Since there is no additional information available, it is not possible to determine whether this is due to an over-pressure on wild populations, to a decrease of the cuotas approved by the Ministry of Agriculture, or because there is a lower demand by tanneries, among others.

Some species of reptiles like the **capones** (*Tropidurus peruvianus*), the **pacazos** (*Iguana iguana*) and spiders like the **tarántulas** (*Migalis avicularia*), revealed a greater number in each catch in 1994 (between 7 and 12 times more as compared to 1993), a figure which dropped in 1995. Special mention should be made of the fact that between 1993 and

1994, over 6,000 hummingbirds belonging to 24 different species were exported, a practice which has come under control in 1995.

Due to this situation, monitoring programmes on those species which are of a commercial interest must be implemented to determine priorities, particularly as concerns species that have a higher market value (Table 12) and those that have a greater demand (Table 13).

Most PNA species, populations and key eco-systems, have not been regularly monitored in the past or at present except for the vicuña (*Vicugna vicugna*) and some primates, amphibians and river turtles. No biological indicators to establish a sound basis for monitoring have been developed to date.

In general, very few reliable records are available which indicate the current level of usage of terrestrial and aquatic wildlife, for sustainable use or that could be used to study the natural phenomena effects caused by "El Niño".

As of 1998 BICOM -SENREM's component for biodiversity conservation- will implement a new system adopting permanent monitoring measures for the conservation of some specie, key population and eco-system throughout previously selected protected areas. This is the first time in which several Protected areas will be implemented in an integrated manner. The active participation of the 3 biosphere reserves is expected.

Monitoring activities based on an eco-system level, are less frequent.

Recently, for example, INRENA carried out a survey on the "Peruvian Amazon Basin Deforestation Monitoring" as part of a regional initiative on the Amazon rainforest (see results further on).

c. Identification of threats at three levels

The criteria and mechanisms applied to identify a threat will be covered by the ENCBD. However, some of the direct threats commonly identified are described below:

. The main threat to biodiversity - at the level of an ecosystem and wildlife population level- is represented by destruction (deforestation, drainage, etc.) and habitat fragmentation (due to roads, division of plots, deforestation of extended areas, etc.)

. The most likely second direct cause of a loss of diversity of species, after the habitat destruction and fragmentation, is the unrestricted use, capture and illegal traffic of wild species.

Over-exploitation is another particularly important threat concerning marine biodiversity.

. The main threat to genetic diversity is the reduction or extinction of wild relatives of domesticated species.

At the ecosystem level a new diagnosis of the status of the 8 critical zones (ONERN 1986), in terms of recovery or degradation, is another pending activity which would lead to the study of threats at different

biodiversity levels.

Moreover, the scarce information on some ecosystems and associations (i.e. the wetlands) does not allow for an adequate evaluation of the degree of threat they are faced with. The ENCBBD should develop processes, to clearly define these information gaps and establish clear-cut and realistic goals to overcome this situation.

d. Information maintenance and organization as a result of identification and monitoring activities.

The identification of the biodiversity components is accomplished by several national and international institutions and must be organized in a way which makes it accessible to the CBDs objectives.

For example, partial information is found in the *Forestry Science Programme Conservation Data Center (CDC)* of the La Molina State Agrarian University, the University of Arequipa and recently, the Regional Centers implemented for the purpose of drafting a diagnosis.

In the future, CONAM has foreseen that the results of the evaluation on the state of knowledge, conservation and usage of biodiversity shall be included in the *National Environmental Information System*. Special initiatives are currently being considered as concerns gathering information from outside of Lima, especially university thesis.

At present, the *Wildlife Exports Annual Statistics* facilitate follow up activities on the pressures imposed upon the populations of different

wildlife species. However, there is no analytic information nor assessment on the subject

IMARPE has publications as well as progress reports on its records and monitoring programmes of different hydro-biological resources and abiotic factors, relevant for the management of fish resources.

In Situ Conservation (Article 8)

a. The National System of Protected Natural Areas, SINANPE (8a)

Peru first declared a Protected Area in 1961. In 1977, the National System for Conservation Units (SINUC) was created and by 1990, it became known as the National System for Protected areas (SINANPE).

At present, SINANPE covers 46 Protected areas at a national level that involve 8 management categories: 8 national parks, 6 national sanctuaries, 3 historic sanctuaries, 8 national reserves, 6 protected forests, 2 hunting grounds and 2 community reservations in addition to 11 reserved zones.

The entire system covers an area of 10 849 671,9 ha (Table 1). Concerning the 38 priority zones, 13 are duly represented in the Protected Areas, 6 are either too small or do not correspond to the real values of the respective zones, making their conservation difficult to guarantee. An additional 19 PNA have to be covered.

There have recently been two outstanding events which must be mentioned: the adoption of the Law on Protected areas and the fact that 15 PNA have been inscribed as such before the Public Registry.

The Law specifies 14 objectives for these areas, an improvement over the former Environment Code (1990). Moreover, one of these objectives aims at avoiding the loss of genetic diversity and determines 3 levels for a protected area: a national and regional level and a private area. Furthermore, former definitions concerning a national reserves and a historical sanctuary have been refined and 2 new categories have been established: *a landscape reserve and a wildlife refuge*.

The system presently has 9 different management categories, divided in two large groups: protected areas of direct and indirect usage. The areas of an indirect use regard recreational use, tourism and non-manipulative research, such as national parks, national sanctuaries or historic sanctuaries. The areas of direct use include landscape reserves, wildlife refuges, national reserves, communal reserves, protected forests and hunting grounds. SINANPE also has reserved zones (a provisional status).

Once the new law on protected areas is enforced, these new definitions and categories shall trigger a process of recategorization of the existing PNAs and shall also define definite categories for Reserved Zones.

The Law on Protected Areas welcomes the participation of the private sector in the management of these areas. It introduces the concept of a buffer zone and improves the definition of a Reserved Zone since this

category has recently been included in the system.

As concerns administrative aspects, INRENA is the legal governing entity in charge of granting authorization for any activity carried out within any of the above mentioned areas; moreover, this entity is also in charge of inscribing an area in the respective Registries. In 1997 SINANPE was strengthened by registering 15 Protected areas before the Public Registry, thus improving their legal status.

Planning documents such as the *Plan Director* for the System and Master Plans for each area have been recognized as legal management documents for protected areas.

Biosphere Reserve	World Heritage Sites	Ramsar Sites
Manu BR	Rio Abiseo NP	Villa Swamps RZ
North Eastern BR	Manu NP	Tumbes Mangroves NS
Huascarán BR	Huascarán NP	Mejía Lagoons NS
	Machu Picchu NS	Pacaya Samiria NR
		Titicaca NR
		Paracas NR

BR = Biosphere Reserve

NP= National Park

NS= National Sanctuary

RZ= Reserved Zone

NR= National Reserve

SINANPE's *Plan Director* has already been submitted and is pending prompt approval.

It should be emphasized that due to the state of conservation as well as the singularities of 3 Biosphere Reserves, 4 World Heritage Sites and 7 RAMSAR Sites have been internationally recognized.

Of these 46 ANP, 25 are run by their own personnel which includes 19 PNAs directors, 22 professional technicians, 17 office personnel, 187 park guards as well as 3 technicians. CONACS personnel stationed in the Pampas Galeras National Reserve (Table 11) should also be taken into account. Finally, 4 of these areas (Tingo Maria NP, Ampay NS, Tabaconas Namballe NS and Villa Swamplands RZ) only have 4 members of personnel at their disposal.

A detailed description of the current status of SINANPE has been drawn in the National Report being submitted to the Latin American Congress on PNAs (1997).

b. Guidelines to select, establish and manage protected areas (8b).

The Draft *SINANPE Plan Director* contains an overall framework for these aspects. The following criteria must be taken into account when selecting and determining an area:

. Biological: representativity of bio-geographical provinces, life zones and relevant asociaion: species richness and high degree of endemisms.

.Urgent need for protection: state of conservation of the type of landscape; vulnerability and its capacity to regenerate, and threats or

human pressure.

. Socio-economic values and management possibilities: cultural, ethnic and historic importance for local inhabitants and the usage possibilities should match the need to become a protected area.

In addition, there are certain criteria to determine the management categories to be allocated in keeping with the biogeographical features, size of area, etc.

As concerns management, guidelines for different categories have been considered as well as specifications for the zoning of each area to be contained in the corresponding Master Plan. It should be pointed out that all these measures were taken in 1977, when the regulations for the Conservation Units were adopted. Moreover, planning documents (*Planes Maestros or Action Plans*) have been drafted for at least 15 of the SINANPE areas, some of which need to be updated.

c. Management of important biological resources in protected areas (8c)

If the term resource management is equivalent to sustainable use Peru has some former management experience, mainly in its National Reserves.

. The **vicuña** in *Pampa Galeras* is the most famous example since the population of this wild species recovered considerably. The local inhabitants have participated in this effort and will share the profits

derived from the management and sale of vicuña wool and from management areas outside of the reserve.

. **River turtles** (*Prodocnemis spp.*) in Pacaya-Samiria and in Manu are a direct result of the initiative undertaken in the 80s to decrease their rate of infant mortality.

. As concerns the area of ***Pampas de Heath*** in the ***Bahuaja Sonene National Park***, activities are geared towards helping the inhabitants of the neighbouring villages to set up taricaya (*Podocnemis unifils*) management activities management .

.As concerns the ***Pacaya-Samiria National Reserve***, efforts have been made together with the local fishermen towards regulating the catch for **paiche** (*Arapaima gigas*). (The Ministry of Fisheries has recently forbidden the catch of this species in all the rainforest, except for the Putumayo River Basin).

.At the ***Tumbes Mangrove National Sanctuary*** surveys are under way on topics for example, monitoring the populations of conchas negras (*Anadara tuberculosa*) and improving the fishing gear for prawn (*Pennaeus vannamei*) catch, as well as the trade of mollusks and crustaceans.

.In the ***Paracas National Reserve***, as part of the wetlands strategy, bio-ecological surveys have been undertaken on scallops (*Argopecten purpuratus*), identifying areas for larvae capture. To this respect, the Ministry of Fisheries issued a Ministerial Resolution restricting the

capture of larvae in these these areas.

.At the *Tamshiyacu-Tahuayo Community Reserve* (on a regional level), a *Community Management Fishing Plan* is currently being implemented whereby non-residents are forbidden to fish with the use of refrigerated storage facilities and, in general, all fishing methods have been restricted. As regards hunting of wild animals, primates and tapirs are forbidden, however, each type of wild animal that is allowed to be hunted is regulated according to age and gender.

Flora species:

.A *Castaño Management Plan* (*Bertholletia excelsa*) has been established under special management conditions and through the support of a local farmers committee which specifies, where, when and how much castaño is allowed to be harvested in each of the following protected areas: *Pampas of Heath, the Bahuaja-Sonene National Park and the Tambopara-Candamo Reserved Zone.*

The *Huascarán National Park* has 155 404 ha of natural pasturelands and the land found on 30 of the 41 ravines are used by 46 local farmer's committees involving an estimated 3 800 families. These villagers own bovines, ovines and equines as well as alpacas, that are regularly checked to verify compliance with the national animal health norms and rules and management. This is a protected area of a restricted direct use and the rights of local users (livestock breeders) are based upon the traditional use of the area, well before the park was created (MR 1200-

80-AG).

.The Huascarán National Park also has 4 medicinal plants nurseries, where 9 medicinal plant species are also being grown on an experimental basis. In view of the interest in reducing the pressure of depleting the natural populations of medicinal plant species, The Head Park Guard and his/her staff are responsible for the production of these species in community nurseries.

There are 28 native forestal species nurseries which have been installed (mainly the queñual *Polylepis spp.*, aliso *Alnus furulensis*, ccolle *Buddleia coriacea*) to recover degraded areas. This work is being carried out in order to compensate for the use of th park's grasslands by users, who must produce 5,000 seedlings per year, for which purpose they have set up a nursery and are reforesting degraded areas.

.The *Ampay National Sanctuary* is currently managing Intimpas (*Podocarpus spp.*) through nurseries for the supply of seedlings for reforestry purposes.

.The *Manu Biosphere Reserve* has a similar programme of to improve the populations of native Amazone forest species.

.The *Tumbes Mangrove Recovery Plan* is also being implemented.

d. Protection of natural environments and maintenance of viable natural populations (8d).

In the rainforest area, the law on private investment governing an economic activity on state owned lands and those owned by native or rural communities (Legislative Decree # 26505) acknowledges that **concession for the use of land in a protected ecological zone** must comply with the current environmental protection laws. Besides a natural protected area, these protected ecological zones also include land protected according to the *Regulations for Land Classification* that also governs the protected swamplands and shores of rivers and nearby land.

INRENA is currently involved in defining a protected ecological zone in the Amazon Basin. The preliminary calculations -not including riverbanks- reveal a total area of 31 277 000 ha, distributed as follows:

- 7 869 000 ha in protected areas
- 418 000 ha in protected regional areas
- 5 221 000 ha in swamplands
- 7 783 000 ha in protected slopes

The Ministry of Fisheries has decreed the restriction of a 5 mile coastline water strip to preserve artisanal fishing .

Most of the State and legal institutions and entities that are involved in biodiversity have not fully understood the concept of a viable population and have not included this subject in their respective norms and legislations, except for the *Law for Wildlife Breeding and Hunting Grounds* (D.S. 018-92-AG). This law specifies that the heads of natural animal wildlife management areas are committed to "maintaining the

population of authorized species genetically viable".

Each of these areas was studied and the results were used to draft the *Plan Director* of Protected Areas.

e. Development of buffer zones (8e)

The subject of Protected Area Management Plan has included the concept of buffer zone (resulting from the Biosphere Reserves). These buffer zones have a series of different uses around the nuclei or protected zone. The Protected area receives the assistance of the local villages for resource management, dissemination and other aspects. However, in most areas specified into a category, resource management is only present at the level of a pilot project, in the best of cases, and has yet to be applied in a more efficient manner. This is quite an interesting challenge for the system.

The new law on protected areas defines the buffer zones as those that are close to a Protected Area and due to their nature and location, require a special treatment in order to guarantee the conservation of the protected area. The Master Plan of a protected area must identify and described each surrounding buffer zone. Any activity carried out in a buffer zone shall not risk the fulfillment of the goals of a Protected Area.

The following projects are being implemented in buffer zones of several Protected Areas: the Rural Sustainable Development Programme IDMA-Abancay, in the Ampay National Sanctuary Buffer Zone; the Rural Development Support Programme of Areas Bordering the Abiseo River

National Park (APECO); the Manu Biosphere Reserve Environmental Education Programme (APECO) and Manu Biosphere Reserve Ecological Sustainable Development and Conservation Projects and Manu Biosphere Reserve Support in the northwest (PRONATURALEZA), among others.

f. Restoration of degraded ecosystems (8f).

Restoration projects and activities are being carried out mainly in Protected areas and in zones with reforestation projects. One example is the recovery of the mangrove swamplands, the reforestation of certain areas in the Amazon Basin, the combat against desertification, and the repair and use of ancient terraces (*andenes*).

Reforestation first took place in Peru in 1870. Until 1963, the forest plantations were exclusively run by private initiatives, basically by mining companies and with very poor technical support, resulting in a scarce 44 970 ha of forest plantations after about 100 years of activity.

These trees were generally planted in rows as wind breakers to protect farmland, to indicate the boundaries of a plot or a small forest which usually fell prey to domestic needs for firewood or were used by mining companies as sources for lumber pillars in the mining shafts.

Between 1964 and 1970, the first stage of reforestation started with a major thrust throughout the highlands, where almost all the indigenous communities, farmers associations and cooperatives *inter alia*, planted this species *Eucalyptus globulus* resulting in a total amount of 15 434 ha.

Other species were also planted on a lesser scale, such as, *Eucalyptus*

rostrada, *Eucalyptus botryoides*, *Eucalyptus citriodora*, *Pinus radiata*, *Cupressus macrocarpa*, *Casuarina spp.*

In some cases, reforestation has focused upon native species. In the north of Peru, for example, **algarrobo** (*Prosopis sp.*) has been planted covering an area of over 1 000 ha.

In general, plantations created until 1975 covered 100 423 hectares, as compared to 168 476 ha between 1976 and 1991, and, 370 867 ha up to 1995.

g. Recovery of endangered species (8f).

The case of the vicuña is the best known successful example of fauna management reaching an actual recovery from 5 000 samples in 1966 to a present estimate of 66 500 vicuñas. This has allowed the relocation of this specie from CITES Appendix I to CITES Appendix II.

At present, efforts are being displayed to save threatened wild animal species. However, except for the private *pava aliblanca* (*Penelope albipennis*) animal breeding project and the previously mentioned vicuña project, plans for threatened animal species are still at the initial stages. Among these plans mention must be made of the Management Plan for alligators (*Melanosuchus niger* and *Caiman sclerops*), for psitácidos of the northeast forest and the Amazon aquatic turtles (*Podocnemis spp.*), which is also a threatened specie.

As specifically concerns Amazon species, a Supreme Decree protecting all Amazon wildlife species has unfortunately recently been abolished.

Since 1995 the Ministry of Fisheries has forbidden (MR 103-95-PE) the catch of marine turtle species and marine cetaceous species as well as Amazon dolphins and has declared these species to be protected by law (Law 26 585). However, no mention has been made of accidental catches.

As concerns the large quantities of scallops found in the breeding grounds in the Paracas National Reserve, 47 000 MT were harvested in 1985 which adversely affected its population. In 1990, the catch dropped to 1 000 MT and in 1994 and 1995, to an estimated 4 000 MT. In order to recover these populations, the Ministry of Fisheries has limited the catch of scallop larvae in the *Paracas National Reserve* (MR 646-97.PE) and solely authorizes re-population initiatives.

h. Prevention or control of modified living organisms (8g)

The *Sub-Working Group on the Control of Living Organisms (FONABIO)* has drafted a *Protocol on Biosafety and a Bill*.

i. Control over exotic species (8h)

Concerning the fishing sector, there are certain specific provisions of the Regulation of the General Law on Fishing which specifies that the importation of hydro-biological ornamental species requires due authorization by the Ministry of Fisheries (Art. 67).

However, up to date there are no regulations governing the introduction of exotic species in natural aquatic environments (for instance, rainbow trout and Malaysian shrimp), however, *tilapia* breeding has been forbidden in natural and artificial environments throughout the Amazon Basin (Supreme Decree 002 91 PE). The Ministry of Fisheries and the IIAP are recently assessing the impact of introducing exotic species in the Huallaga Basin in order to determine the possibility of re-introducing tilapia fish farms.

The regulation on the Law of Fishing specifies that " whenever a new species is introduced into Peru, a corresponding Environmental Impact Assessment must be also carried out and submitted". At the same time, if native species are to be transported to other eco-systems throughout the national territory, the Ministry of Fisheries has to issue an authorization (Art. 126).

The Ministry of Agriculture has issued certain sanitary provisions to control exotic species although there are no laws regarding other possible harm. The use of improved varieties of potatoes are known to cause genetic erosion in an indirect manner by replacing traditional crops and varieties of local potatoes. Efforts are being displayed in the Ampay National Sanctuary to help the local peasants to keep 55 varieties of potatoes they have registered, instead of solely favouring improved varieties of potatoes which are not well adapted to the area and are therefore sensitive to pests.

The same is happening to local crops which are being substituted for barley to meet the demand of local breweries. Local farmers are being

encouraged to sow barley by the large breweries who buy their harvests and also provide free technical assistance.

Before corrective measures to control exotic varieties are introduced, an Impact Assessments should be made on the agricultural trade practices and the introduction of improved varieties, into the genetic diversity of native crops.

j. Maintenance of traditional knowledge

During the last 6 years, Peru has recognized the urgent need to protect the rights of indigenous and local communities regarding their know-how, innovations and practices in an effective manner. For this purpose, certain legal measures have been taken geared towards implementing Article 8 (j) on the Convention on Biodiversity through a special system to protect the Traditional Knowledge of indigenous and local groups.

Article 7 of Decision 391 of the Andean Pact specifies that the Member States -in keeping with their national laws- recognize and value the rights of indigenous and local communities, as well as the capacity to decide over their traditional know-how, innovations and practices.

The 8th Temporary Provision foresees the formation of a draft special scheme or harmonization proposal to strengthen the protection of the rights of indigenous and local communities concerning their traditional know-how, innovations and practices. This proposal shall be drafted by the Junta del Acuerdo de Cartagena.

On the other hand, at a national level, Legislative Decree 823, *Law on Industrial Property*, made effective on May 24, 1996, is an initial effort to legally protect indigenous traditional knowledge.

The creation of a *sui generis* traditional knowledge protection system for indigenous communities is justified since the present system of industrial property rights (and more specifically copyrights), has neglected the efficient protection of such knowledge.

Through a joint initiative, the Ministry of Agriculture and INDECOPI have created a Multi-Sectoral Working Group, amongst others. One of these groups has been preparing a Draft Supreme Decree in order to implement an effective Protection Scheme.

However, the major progress achieved in this respect that been the Law on the Conservation and Sustainable Use of Biodiversity which, under *Title VI, Concerning Rural and Native Communities (Article 23 and Article 24)*, specifies the need to establish protection mechanisms to foster the use of such knowledge -prior informed approval by the members of the communities holders of such knowledge - considered to be the "cultural heritage" of these indigenous communities.

k. Control and management of threats to biodiversity (8l)

Environmental regulation, territorial regulation (OT) and ecological economic zoning (ZEE) are planning tools used to reverse disorderly territorial occupation and the destruction of habitats. In recent years, some regional and local efforts concerning environmental regulation have been displayed. Most however, are only at the planning and study stage,

as in the case of the proposed territorial regulation of Ucayali (CDC and FPCN in 1991) and of the San Martín Region (APECO in 1995). The Peruvian Amazon Region has also been the subject of several ecological economic zoning proposals and studies (TCA et al in 1996), among others. In other cases, environmental regulation efforts in the field have also been carried out, such as the Tambopata Candamo Reserved Zone.

Environmental regulation is one of the stipulated management instruments of the Structural Framework for Environmental Management (MEGA) and is expected to be considered in the ENCBD process.

In 1997 INRENA classified the production forests into different zones, dividing them into Freely Usable Forests and National Forests in order to facilitate the regulation of logging concessions. In this way, certain areas are excluded from possible concession: forested areas located on sharp slopes, swamp forests, forests located in land belonging to indigenous communities, etc., as well as areas that have already been deforested.

Due to failure to comply with certain forest management plans and reforestation programmes, the Ministry of Agriculture declared a temporary closed season on logging activities. Through Supreme Decree 013-96-AG, logging contracts and permits were suspended throughout seven Amazon catchments, the highlands of an eighth catchment watershed, all the forested area of a National Forest, and in all of the forests in two provinces. Five Special Regional Commissions have been established. These Regional Commissions have evaluated 46 logging contracts and permits in areas larger than 1,000 hectares each and have

issued the respective recommendations. These recommendation involve the annulment of certain contracts, the non-renewal of some contracts or the adjustment of the Management Plans of some other contracts. The result of the work of the 5 Special Regional Commissions has been submitted to the Ministry of Agriculture that has instructed the *Direcciones Regionales* or Regional Head Offices to enforce these recommendations.

In order to control the foreign trade of wildlife, in 1989 INRENA decreed that any wild plant or animal specimen of Peru to be exported must have a *CITES Export Permit* (and not only those listed in the CITES Appendix). In 1990, the CITES Secretariat notified the Parties to assist the Government of Peru in controlling its wildlife exports.

INRENA has worked throughout 1997 to secure a firmer control over the traffic in wild fauna and flora species. INRENA is currently coordinating with the *National Customs Superintendency (SUNAD)* in order to adopt the CITES-OAM Convention Guidelines to enable the Customs of Peru to control the international trade of wildlife species and to establish the way in which violations of the law to this regard can be constantly surveilled and reported.

INRENA is exerting direct control over the international trade of wildlife via a team of inspectors posted at Peru's five major airports, from where most of Peru's wildlife species have traditionally been shipped abroad. The inspectors operate in co-ordination with the Ecological Police and the Judiciary. INRENA is responsible for the administrative sanctions by levying fines that reached up to US\$ 90,000 this year. The instruments

for criminal punishment, however, have been a failure. Wildlife traffickers are liable for up to three years of jail, but courts grant them bail, with the result that foreign defendants skip the country without even paying their fines.

In order to strengthen its customs system, the Government of Peru has decided to adopt the *INTERPOL Ecomensaje Format* used to report information on wildlife traffickers.

While the inspectors posted at the national airports are on duty they also prepare a diagnosis of the illegal trade prevalent in the area where they work.

Meanwhile, in order to improve the wildlife conservation and management guidelines and reformulate the trapping quotas, CITES currently funds three projects: aquatic chelonian management by coastal communities; the assessment of *psitacid* colonies on the northern coast and, the evaluation of the peccary population throughout the rainforest.

The law clearly specifies that fishing with the use of explosives is a criminal offense. The General Port Authority and Coast Guard Bureau of the Peruvian Marine Corps, Ministry of Defence, is in charge of patrolling the coastline; the regional fishing bureaus in charge of monitoring the continental waters.

1. Financing and support for in situ conservation (8m)

The expenses involved in conserving a Protected area are usually no

less than US\$ 5.00 per hectare/yr. which amounts to US\$ 5,248,600 for the 46 Protected areas in Peru. . Gross estimated research and monitoring expenses usually represent 10% of the total figure.

Some 89% of the SINAPE personnel are paid by sources other than INRENA (regional governments, international technical co-operation, NGOs, etc.).

State contributions to SINAPE have risen considerably in recent years. While the global figure was US\$ 73,415 in 1991, by 1996 it had reached US\$ 459,850, with funds from the Public Treasury, investment projects, regional governments and own income.

According to DGANPES/INRENA, in 1996 PROFONANPE paid in nearly US\$ 195,083.75 and, from January to September 1997, the amount approached US\$ 352,047.

This increase is attributable to the creation of FONANPE and the existence of debt-swap mechanisms for projects in protected areas, thereby raising the country's investment in conservation.

The National Fund for Protected Areas (FONANPE) was set up in 1992, with the advisory assistance of the World Bank, the United Nations Development Programme (UNDP), the United Nations Environmental Programme (UNEP), sponsors of the Global Environment Facility – GEF. It also had the support of the officials of the Government of Peru as well as local and international non-governmental organizations. Contributions to the fund supplement State funding, but do not annul the

obligation of the State to guarantee the development of the System.

PROFONANPE, a private non-profit entity of public interest, was created in 1993 to administer this Fund. Its function is to raise funds, particularly in the form of trust funds, from bilateral or commercial public debt donations or via other strategies. The funds are then funneled into a variety of activities to ensure the best possible management of SINANPE. These resources are expected to back the development of management plans for the System areas; promote the sustainable development of the zones under the influence of the protected areas; and, provide institutional support for INRENA and DGAPFS, to train professionals in the administration and management of the areas, and to execute projects to reach a sustainable use of the renewable natural resources located inside those areas (insofar as their category permits), among other matters.

In 1994 PROFONANPE set a US\$80 million fund-raising target for FONANPE, in order to ensure an annual flow that would finance the SINANPE annual budget, estimated at US\$5 million. In four years of operation, PROFONANPE has raised over US\$16 million, of which at least US\$6 million are part of the trust fund (Table 14), with the balance going to projects under PROFONANPE administration (Table 15).

In 1996 the trust fund produced a financial return of US\$ 919,569.

Despite the fact the PROFONANPE management devoted a greater amount of funds for SINANPE, this does not suffice. The future prospects for PROFONANPE are encouraging, though not completely

problem-free. On the one hand, debt-swap schemes enjoy considerable credibility in most developed countries. However, the fact that the PROFONANPE Executive Council and its Executive Director have been unable to reach an understanding obliged the latter to resign from his post/non-renewal of his contract has delayed the ongoing negotiations and has vaguely tarnished the image of the institution. No clear idea exists as yet about how the creation of FONAM may effect the future prospects of PROFONANPE. In any case, this will depend to some extent on its capacity to compete with and/or complement the new fund, together with the political trends of the moment.

Ex Situ Conservation (Article 9)

a. The national capacity for ex-situ conservation

There are a number of institutions in Peru that are repositories for fauna and flora. Among them are 1 State primate breeding facility and 49 private animal breeding farms; 2 zoos, 3 botanical gardens, 4 arboretums, 3 natural history museums and 15 herbariums.

Table 14

CONTRIBUTIONS TO THE FONANPE TRUST FUND (1995-1996)

SOURCE	US\$
Debt-swap scheme with Canada	360,000
Debt-swap scheme with Finland	352,427

Contribution from the Global Environment Facility - GEF	5,000,000
TOTAL	5,712,424

Source: PROFONANPE (cited in Guinand and Chavez, 1997)

Table 15

**CONTRIBUTIONS FOR PROJECTS
ADMINISTERED BY PROFONANPE
(1993 – 1997 period)**

Source	Project	US\$ Amount
MacArthur Foundation	Study of Biological Diversity in Tumbes	12,000
MacArthur Foundation	Institutional Support for the study of debt-swap options	50,000
Debt-swap scheme With Finland	Integral Management of Machu Picchu SH (*)	4,000,000
GEF	Various projects defined by PROFONANPE and institutional support	223,000
Debt-swap scheme with Germany	Financing of recurrent costs of 9 protected natural areas for 10 years	6,293,706
FONANPE financial return	Various projects defined by PROFINANPE	919,569

TOTAL

11,498,275

(*) To be executed jointly with FONCODES

Source: PROFONANPE, FANPE (cited in Guinand and Chavez, 1997)

At the level of genetic diversity, there are 8 national germ plasma banks and 4 specialized germ plasma collections. Furthermore, IMARPE, IVITA, La Molina National Agrarian University, the Agrarian University of the Rainforest, and the UNMSM, among others, possess miscellaneous collections.

INIA has a project that is currently developing genetic banks and at present has 12 germ plasma banks with their respective stocks for the different coastal, highlands and rainforest species. These germ banks are for: grain legumes (7 species), oil-seeds (3 species), Andean grains (4 species), tropical and coastal roots and tubers (6 species), medicinal plants (23 species), cereals (6 species), horticultural crops (6 species), industrial crops (3 species), Andean fruits (16 species), and rainforest fruits (31 species).

The *University of Cusco School of Agronomy and Animal Husbandry* has a *Andean Crop Research Centre (CICA)*, that works *in situ* mainly with tuberous plants and the *Regional Centre for Genetic Root and Tuber Resources (CRTA)*, that is devoted for the most part to roots *ex-situ*. The purpose of the two institutions is to develop methodology and to train students to manage and investigate genetic resources of Andean root and tubers in order to prevent genetic erosion. The crops dealt with are: **potato** (*Solanum spp*), **oca** (*Oxalis tuberosa*), **yacón** (*Polymnia*

sonchifolia), **achira** (*Canna edulis*), **olluco** (*Ullucus tuberosus*), **mashwa** (*Tropasolum tuberosum*) and **virraca** or **arracacha** (*Arracacia xanthorrhiza*). The data collected is stored in a computerized data base. Their efforts have also yielded a new variety of potato.

b. Ex situ conservation of animal wildlife

Animal breeding farms are being proposed in Peru as a mechanism for alleviating pressure on fauna species in the wild. These would furnish specimens reproduced in captivity (commercial animal breeding farms) for national and international trade; contribute to public education and awareness (cultural animal breeding farms); contribute to a better knowledge of the biology of certain species (scientific farms); and permit species to be reintroduced into their natural habitats (CITES certification of farm breeding).

The success of commercial animal breeding farms is closely tied-in with increased control over and disincentivation of illegal trade in wildlife species.

The *Wildlife Bureau (DGANPES-INRENA)* has 49 animal breeding farms on record today, of which 19 are cultural, 17 commercial, two scientific and 11 multi-purpose (mostly cultural/commercial). Of these, only two have as their main objective the reintroduction of threatened species into their natural habitats (the white winged guard , *Penelope albipennis*, for example). Furthermore, the *Centre for Primate Reproduction and Conservation* has been in existence since 1976, as part of the *Peruvian Primatology Project* under the Ministry of

Agriculture/IVITA/PAHO.

With the enactment of the *Law on Animal Breeding Farms*, work started on the definition of general guidelines to ensure that they operate in the best way possible. While the breeding herds come from the wild, it has been stipulated that they can only be delivered in custody for usufruct (they cannot be sold). Plans are underway to mark these herds as soon as possible. The composition of the breeding herds of certain species (i.e. the Tumbes crocodile) will also be defined technically.

DGANPFS is currently promoting a pilot project in the business management of peccary (*Tayassu pecari*) breeding farms by five native Ashaninka communities in the Lower Ucayali, using public treasury funds.

Sustainable Use of the Components of Biodiversity (Article 10)

Plans regulate the fishing of highly commercial sea species, establishing the allowable size of the catches and the temporary closed seasons to allow for their reproduction. Plans have been approved and are in effect for tuna, hake and its 16 accompanying species and are under preparation for anchovy, sardine, prawn, jack, mackerel and scallop fishing.

The regulations issued by the Ministry of Fisheries for the Peru's continental waters this year include, for example, closed seasons during the breeding period, on **paiche** (*Arapaima gigas*) throughout the Amazon region, except on the Putumayo River; **suche** (*Trychomycterus sp*) in Puno; and **boga** (*Orestes pentlandi*) and **mauri** (*Trychomycterus sp*) everywhere they are found. In the latter case, Lake Umayo in Puno has

been established as a fishing reserve for the recovery and study of *boga*, *suche* and *mauri*, which are native to the Andean highlands plateau. Even the exotic species of trout and silversides, both introduced in the lake have been declared off season. The stocking was stopped because of the adverse effect of the silversides on the native species.

A temporary closed season has also been declared on the fishing of river shrimp (*Cryphiops caemantarius* y *Macrobrachium spp*) on the western slope of the Andes. The ending date will depend on the results of studies to be made.

There is no legislation that deals exclusively with sea fish farming, although general guidelines do exist as part of the General Fishing Law and its Regulations.

As for the harvesting of sea bird guano, Ministry of Agriculture Law 26857 established the ***Special Project for the Promotion of Sea Bird Fertilizer Use***. The project will take charge of the commercial collection, processing and marketing of island guano on the islands and points along the Peruvian coast, except for Punta Islay and Punta Morro Sama. Its purpose is to improve the access of small farmers and peasant and native communities to that supply.

In the area of fauna in the wild, the primates project is, together with the vicuña project, one of the best examples of the possibilities for sustained use of one or more wild animal species. Both of these projects have gone through long learning, testing and adjustment processes.

The *Peruvian Primatology Project (PPP)* was set up in 1975 for the following purposes: to evaluate and investigate non-human primate populations, to advance their conservation and management, and to promote education, training and extension that will help to accomplish the first two objectives.

One of the most interesting experiences of the PPP has been the handling in semi-captivity of the white bearded **pichico** (*Saguinus mystax*) on Padre Island in Iquitos for the purpose of stabilizing migratory farming by simultaneously practicing agroforestry, enriching the forest through the introduction of promising species like the **camu-camu**, and managing populations of the *Saguinus mystax*. Every three years primates are harvested for biomedical purposes at a value of US\$ 18,000, while the agroforestry plots produce US\$ 2,500 a year.

In the case of the vicuñas, now that their populations in Pampas Galleras have reached their former size and that several high-lying Andean zones have been repopulated with vicuñas, a Management Plan is being implemented through the participation of peasant communities. These are already benefiting economically from the marketing of vicuña fiber. They also expect to profit from the tourist trade of people interested in taking part in the **chacco**, or traditional round-up of vicuñas for shearing.

In the forestry sector, work is being started on the management of natural forests like the Von Humboldt National Forest, under a model adapted to the situation that exists in Peru. The plan provides for 30- and 60-year periods depending upon the length of time needed to regenerate the forest naturally. At the same time, plantations for enrichment will be

maintained on a limited scale, in five discontinuous lots. Annual management units will be considered and, inside them, 200- to 400-hectare plots will be offered to the private sector in public auction. The first 10 Permanent Forestry Units in the Andean Amazon region are expected to be set up by next year.

PERMANENT FOREST AREAS

• Biabo Blue Range	2,100,000 ha
• Alexander Von Humboldt	400,000
• Tamaya River Basin	900,000
• Pebas	1,400,000
• Yurimaguas	500,000
• Contamaná	500,000
• Yavari River Basin	1,000,000
• San Martín	300,000
• Tambopata	500,000
• Puerto Inca	400,000

As a member of the *International Tropical Timber Organization (ITTO)*, Peru has provided for forest management plans to be carried out so that by the year 2000 all of the tropical timber that Peru exports will come from managed forests.

In November of 1997 the policy recommendations were drawn up for the sustainable management of the dry forests that cover 2.8 million hectares in northern Peru. These include a closed season on logging up to the year 2000, research and education for monitoring and safeguarding the operation of this ecosystem and its natural phenomena, and the execution of production projects to alleviate the poverty of almost 50 thousand families settled in the dry forests.

Incentives (Article 11)

None of the economic and social measures that would incentivate the conservation and sustainable use of the components of biodiversity in Peru could be identified. It is expected that by preparing the ENCBD, a more in-depth study of the issue will

be made and some incentives will be proposed that are politically acceptable to the Government of Peru within the context of its neo-liberal policy.

An incentive policy has been applied recently, for example, to downsize the state and to privatize state-owned corporations through citizen participation. However, there are no experiences as concerns biodiversity management or conservation.

One area where incentives for the management of biodiversity could be institutionalized most easily is the promotion of farmers who help to maintain agricultural diversity.

In this respect, there has been certain experience with seed fairs, promoted by PRONARGE (INIA) and carried out with the collaboration of universities, NGOs and INIA through its regional stations. This project received financial and technical support provided by the *CRTA-COTESU-CIP Biodiversity Collaboration Programme*. Its main purpose is to demonstrate through seed fairs the existence of consolidated microcentres (small genocentres) and continuous exchanges between and inside communities, as a strategy for *in-situ* conservation as well as salvaging traditional technology and know-how.

Another of the incentives that could be provided for within the framework of the CBD could have to do with facilities for scientific research that would contribute directly to increasing knowledge about biodiversity.

Research and Training (Article 12)

Systematic basic research about stocks, the genetic and biological characterization of species, and biological conservation is limited by the small number of professionals who are trained in the subject. In fact, there is little motivation for developing these subjects. Most studies are conducted by institutions, funded by international sources and refer generally to collections. The most specialized characterization work is usually done abroad. To be able to manage biodiversity, investments and incentives are needed to promote these activities, as are the education and training of national capacities.

The *National Council for Science and Technology (CONCYTEC)* has started to diagnose the situation of biological sciences (human resources and curricula) in Peru. Its intention is to propose guidelines that will improve research and training in this basic science, which is essential for conserving biodiversity. At present data has been collected about universities and specialists that teach biology in the country; it is not possible, however, to break down that information on the basis of its specific application to biodiversity.

Training of human resources in biotechnology and the management of

genetic diversity is in its early stages at the pre- and post-graduate levels, but should improve with the establishment of a *National Biotechnology Programme*. Masters' programmes exist at San Marcos University in Lima and the University of Trujillo. Cayetano Heredia University also confers degrees in biotechnology.

With regard to *in-situ* conservation (in protected areas), while the educational level of SINANPE personnel is above average for Peru, their training in specific subjects for Protected area management is a matter of continuing concern in SINANPE. The Training Area of the FANPE Project (Assistance in Planning a National Strategy for the Conservation of Protected Areas) addresses this problem.

Of the 31 courses and other training events attended by SINANPE personnel between 1996 and 1997, only eight had a fairly broad content in subjects connected with biodiversity and only 45 members of the SINANPE staff participated.

Training of SINANPE personnel must be stepped up in the different aspects and levels of biodiversity, especially the technical considerations stemming from the Conservation Biology, which have not been disseminated widely enough in the country.

Educational Level of ANP Personnel

Educational level	% of Personnel
University completed	22.7
University not completed	3.4
Technical school completed	13.9
Technical school not completed	5.9

Secondary school completed	35.3
Secondary school not completed	8.8
Primary school completed	7.5
Primary school not completed	2.5

Source: FANPE Project

Education and Public Awareness (Article 13)

The encouragement of public awareness and changes of attitude are of essence to the successful achievement of biodiversity conservation and sustainable use. Some steps have been taken in this direction at both the levels of formal education, of nonformal and informal education (or dissemination).

At the formal level, in recent years several universities have added courses dealing with aspects of biodiversity to their pre- and post-graduate curricula, among them one about conservation biology. The San Marcos State University and the Inca Garcilaso de la Vega University confer Master's Degrees in Ecology. Furthermore, the Enrique Gonzáles Valle National University of Education is currently introducing courses on environmental education at the specialization level for students of education.

In the area of teacher training, there is an agreement between the Ministry of Education, INRENA and APECO and another between the latter and La Molina National Agrarian University, under which an Environmental Education Programme is offered for teachers. Most of its 13 courses touch upon aspects of biodiversity. In its four years of operation, training has been given to nearly 110 teachers from Lima and

other parts of the country, especially towns located near the PNAs.

Science and the environment are one of the five basic subject areas covered in primary and initial education, during which issues related to biodiversity —although they are not called that— are touched upon very briefly. Children are clearly expected to recognize that the changes man makes in nature are the result of his attempt to obtain better living conditions, but that in making these changes man should strive to maintain an ecological balance.

The transversal contents of “Population and the Environment” states that one of the attitudes to be created among children is that they “recognize and value life in all its forms and the biodiversity of the environment.”

The curriculum for initial education describes an objective of the Science and Environment Area, “to develop a positive conservationist attitude in the face of the exploitation and pollution of the environment and of respect for the lives of the plants and animals around them” and “to be initiated in the understanding of the scientific ecological concepts.”

Among the lines of educational action under Nature, Community and Work (1st through 3rd grades) and Education for Work (4th through 6th grades), the Ministry of Education has proposed to schools in the Andean area that the Forestry Education Programme be adopted as a work option.

This programme promotes local reforestation and the conservation and good use of natural resources.

Some of the most important initiatives of formal environmental education

are: the *School, Ecology and the Peasant Community Project (PEECC)* under the direction of the Ministry of Education, with the advisory assistance of FAO and Swiss-COTESU Technical Co-operation, through which more than 160 schools have been selected in the Andean region; a bi-national experience through the *Putumayo Special Project*, and a regional experience in San Martín, spurred by the local government under an education plan. As for the private sector, there is the example of the *Environmental Education Programme of the Manu Biosphere Reserve (APECO-WWF)*, in which 25 communities are involved in both the formal and informal levels.

In recent years various public and private institutions have been carrying out dissemination activities related directly or indirectly to biodiversity. These include painting contests (INRENA, APECO-KYODAI, Señal Verde – WWF); radio programmes (Señal Verde); documentaries about protected areas (TV channels 2 and 5); parks and gardens contest (Continental Bank); prizes (Environmental Prize – Bank; San Luis Prize – San Luis-FPCN); and the celebration of several days (Environmental Day, Earth Day, Tree Day, Forestry Week, and so forth).

These initiatives, although they are valuable, until now have been totally dispersed, and in some cases, have even overlapped and competed amongst each other.

The process for the National Biodiversity Conservation Strategy bears in mind the development of a workshop for journalists, within the framework of promoting the subject of biodiversity in informal education.

It is expected that the process for the strategy shall facilitate a holistic approach to education and awareness and will furthermore encourage the proposal of concrete actions which will link, in a much better manner, the initiatives of the different entities. It also may derive in an Action Plan on Education taking into consideration the perspective of biodiversity .

Impact Assessment and Minimization (Article 14)

Article 80 of the Code of the Environment (Legislative Decree #613, dated September 7th, 1990) mandates that any project that may be potentially harmful to the Environment must include an Environmental Impact Assessment (EIA). Legislative Decree #757 has repealed the article of the Code that specifies the type of projects that are subject to an EIA, and has delegated to each Ministry the task of deciding those projects which are potentially harmful and must therefore include an EIA.

As a result, several governmental sectors share in the decision making of when an Environmental Impact Study is needed viewed from their respective scopes of interest and governance: the National Council on the Environment (CONAM); the Ministry of Energy and Mines (MEM) the Ministry of Fisheries (MIPE); the Ministry of Agriculture (MAG); the Ministry of Industries, Tourism, Trade and Integration (MITINCI); the Ministry of Transport, Communications, Housing and Construction (MTCVC); the Ministry of the Defence and the Municipality of Metropolitan Lima (CONAM 1997^a).

Several organisations have introduced important aspects regarding biodiversity. For example:

- The *Regulation on the Environmental Protection for Hydrocarbon Activities* specifies the need to conduct an inter-sectoral consultation concerning the development of hydrocarbon activities in an ANP.
- The Ministry of Fisheries has determined that an EIA must be carried for activities such as the aquaculture (fish farms) of exotic species and the transportation of such hydro-biological species throughout the national territory.
- Prior to operations, fishing companies must submit an Environmental Adjustment and Management Plan, called PAMA, or an Environmental Impact Study (EIA) before the Ministry of Fisheries, seeking the approval of their future activities;
- Since 1994, INRENA demands that whenever a request is submitted for a forestry permit to extend the agricultural frontier it should be accompanied by an Environmental Impact Assessment.
- Companies who wish to carry out activities in a Protected Area of the Amazon Basin (*Zonas de Protección Ecológica*) must submit their project together with an Environmental Impact Assessment to INRENA.

INRENA (1997) has evaluated 67 Environmental Impact Assessments presented between 1994 and 1997, most of which are from the ME (39), while the rest have been presented by the Ministry of Agriculture (21) and a few by the MITINCI Ministry, the MTCVC Ministry and the Ministry of Fisheries (4,2, and 1 respectively). In 1997 INRENA evaluated five irrigation and dam projects in the field in order to measure the impact on ecosystems.

Despite this effort, each Ministry does not adequately manage coordination and integration mechanisms for an Environmental Impact Assessment, nor its specific scope and procedures, and often disregards the viewpoints that other Ministries may have on the subject. (CONAM 1997^a).

On the other hand, although the Code on the Environment describes the public nature of an Environmental Impact Assessment, in practice, most Ministries do not facilitate access to their studies and only the ME carries out a Public Hearing before approving one. The ME and the MTCVC are the only Ministries who do follow up an EIA through regular environmental audits.

In some sectors, the terms of reference of an Environmental Impact Assessment are just a table of contents and most frequently the factors that should be born in mind as concerns the component of biodiversity have not been adequately specified. For example, in most cases, if not all, the Terms of Reference per Sector for an Environmental Impact Assessment neglect mentioning the fact that the choice of the place where a project is to be implemented is of any particular importance as

concerns the conservation of biodiversity. As compared to other environmental impacts that can be reduced, such as air and water pollution, once a place or location has been chosen it is difficult, if not impossible, to drastically reduce the direct impact of the project on the surrounding biodiversity.

Vis a vis this situation CONAM (1997) designed a *National Environmental Impact Evaluation Assessment (SEIA)*, that describes a unique process on a national level. With this purpose CONAM shall develop a proposal on technical and administrative policies and procedures to govern an environmental assessment and shall develop a national programme to systematise the prevention measures for the environment.

In order to carry out this initiative, a formal technical group called *the Environmental Impact Evaluation Programme –PREVIA-* has been established which is in charge of co-ordinating and directing taking into consideration the attributes and competencies of each Ministry and territory.

When preparing a the Draft National Biodiversity Conservation Strategy mention should be made of the need to study aspects concerning different levels of biodiversity that must be included in an Environmental Impact Assessment. Once this is done the Draft Strategy must be submitted to the Environmental Impact Evaluation Programme – PREVIA.

Access to Genetic Resources (Article 15)

Peru openly admits that it has a keen interest in its genetic variability and the fact that it can use this resource as an instrument of negotiation, for instance, in the case of a transfer of technology. However, the Government of Peru still needs to study and define many legal and political aspects on the subject of access to genetic resources, such as new domestic and international laws.

Peru and Decision #391 on Access to Genetic Resources.

Peru is a member of *the Andean Community* (formerly *Junta del Acuerdo de Cartagena JUNAC*). After negotiations held within the Andean Group (since the Government of Peru was about to decide withdrawing its membership), the Member States accepted the permanence of Peru, and as a result, since July 18, 1997, Decision #391 has become a law and is being enforced on a national level.

A Multi-Sectoral Working Group on Access to Genetic Resources has been established in co-ordination with the National Institute of Agrarian Research (INIA) and other members, such as, the National Council on the Environment (CONAM); the National Institute for the Defence of Fair Competition and the Protection of Intellectual Property (INDECOPI), the National Institute of Natural Resources (INRENA), as well as independent experts.

This *Multi-Sectoral Working Group* has drafted a proposal to regulate

the enforcement of the *Law on Access to Genetic Resources, Decision #391* throughout Peru. This Bill is practically ready and shall be submitted to the Executive Branch for consideration and shall be enacted through a Supreme Decree. The National Authority on Access to Genetic Resources is expected to be appointed on the day the Supreme Decree is issued.

Access and Transfer of Technology (Article 16)

As concerns bio-technology in Peru, apparently there hardly is any at all, in view of the low impact on the productive sectors. The reasons behind such a situation are: that the Government of Peru does not target this subject as a top priority for the national development. Peru has a low critical mass of research scientists who work in poorly equipped laboratories, have scarce logistical support and information, and are devoted to very few research lines that focus upon medium and long term solutions to priority national problems.

Human resources present in the *REDBIO-FAO Board of Directors* are from : 14 state universities, 2 private universities, one international organization, 3 institutes related to agriculture and 10 companies who have an installed capacity, which make up a total of 92 people who are responsible for laboratories that cover 4 sectors: human and animal health, agribusiness, chemistry and pharmaceutical industry and mining and the environment. The professional training provided by each sector varies greatly from Bachelor of Science in some areas up to Post Graduate degrees, including Ph.Ds studied abroad since up to now no Peruvian university has an equivalent curricula.

Three priority areas have been identified to develop biotechnology in Peru: a) the biology of flora b) the biology of microorganisms and industrial biology c) human health and animal reproduction. Of these, flora biology is the only area that has prepared certain guidelines for its development, within the framework of CONCYTEC.

Peru is one of the 43 member countries *of the UNIDO International Centre of Genetic Engineering and Biotechnology (ICGEB)* which has two centres, one in Trieste, Italy for virology, cellular biology and molecular biology, molecular pathology, micro-biology, structure and function and, another in New Delhi, India, that specializes in the biology of plants, structural biology, virology and human parasitology. Contacts shall be closed with these centres in the near future in order to improve Peru's level of biotechnology.

The Ministry of Agriculture has invested: US\$59,000 in 1994 and US\$112,000 in 1995 to develop a national biotechnology. This undoubtedly reflects the low governmental status of biotechnology in Peru, which is an oversight since the country's wealth in biodiversity is an untapped source, which could yield a considerable domestic income.

Patents and intellectual property rights

Intellectual property rights is an important subject of the CBD and is closely linked to the transfer of technology, in particular, to biotechnology. In Peru the *INDECOPI Office of Inventions – OINT-* dictate the regulations regarding intellectual property.

At present, the laws of Peru do not allow plants or animals to be patented. In effect, *Article 27 of the Law of Industrial Property (Legislative Decree #823)* forbids a living organism to be patented (animals and plants). However, Supreme Decree#010-97 issued by ITINCI makes an exception by stating that microorganisms and the procedures involving living organisms that live in nature or in controlled environments have not been mentioned in this law and therefore they can be patented.

As concerns the Rights of Obtentors of Flora Varieties, Decision#345 of the Andean Pact (Acuerdo de Cartagena) has been regulated and is in force.

In May 1996, *the Regulation on the Protection of the Rights of Obtentors of Flora Varieties (Supreme Decree#008-96-ITINCI)* that regulates Decision 345 of the Committee of the Cartagena Agreement, Common Agreement on the Protection of the Rights of Obtentors of Flora Varieties applied in Andean Group Member States.

The Regulation specifies that the National Authority in charge of the administrative functions described in Decision#345, is the *INDECOPI Office of Inventions and New Technologies (OINT)* and as concerns the technical functions, the *INIA National Programme of Genetic Resources and Biotechnology (PRONARGE)*. Aside from the functions needed to recognize a new variety of an obtentor, PRONARGE also is in charge of entering into agreements with other national or foreign institutions, in coordination with the OINT as well as

publishing an *Annual Bulletin of the National Registry of Protected Flora Varieties*. The OINT is the entity in charge of issuing the *Certificate of Obtentor*, prior technical approval of the PRONARGEB.

This regulation specifies that the term for such protection is 25 years in cases of vines, fruit trees, forest trees, including their grafting plant and, 20 years for all other species.

The OINT (INDECOPI) is the primary entity that represents Peru before *the Andean Group Sub-Regional Committee for the Protection of Flora Varieties* and other international entities, and PRONARGEB (INIA) is the secondary entity.

In compliance with Article 7 of Decision#345, the criteria for such recognition is: the variety must be new, must be distinct, homogeneous and stable and must be obtained through scientific methods. There is a large gap as concerns the protection of varieties obtained by farmers through their own traditional methods.

Special mention must be made of the role played by traditional farmers who pick and choose plants and seeds maintaining their characteristics by managing the genetic diversity of their crops. *Decision#345* omits this concept and several Ministries have expressed their concern to this regard. Discussions held in appropriate circles on this subject are geared towards designing the appropriate mechanisms to secure Obtentors Rights ensuring a fair and equitable distribution of the benefits derived from these new varieties.

The Exchange of Information (Article 17)

In order to draft the National Study INRENA prepared a proposal for a *Protocol on the Exchange of Information (See Annex 5)*. This proposal was later taken up by CONAM, that submitted it to the *Technical Meeting on Clearing House Mechanisms* (Cartagena de Indias, October 13 to 15, 1997).

The extensive application of this Protocol is closely linked to the future development of the *National Environmental Information System (SINIA)*, included in the *1998 CONAM Programme for Environmental Institutional Capacity Building* . During its initial stage SINIA will focus upon seeking the necessary information that will enable CONAM to assess Peru's environmental policies. Depending upon how well SINIA can manage this situation, it can become the biodiversity database for Peru.

On the other hand, the *Inter-Institutional Commission of Environmental Statistics*, which is made up by the Environmental Office belonging to each Ministry, certain private institutions (for instance, the CDC) and the National Institute of Statistics and Information (INEI), collects data on the environment and related issues.

There is no detailed information from computer databases containing partial or detailed data from each Ministry concerning Peru's biodiversity. A very rough list (Table 16) identifies 22 places in 9 entities. Of these only two are included in any network: the IIAP databases are part of the *Peruvian Amazon Information Network*

(*RIAP*); and REDINFOR is a university network from Lima, Huancayo, Pucallpa, Iquitos and Cajamarca.

It is worth noting that the databases available in Peru have not yet been included in worldwide networks such as *SPECIES 2000*, *BioNET*, *IOPI*, etc.

The problems involved in the exchange of information go beyond the collecting, systemizing and drafting the protocol on the exchange of information. Most government entities that are responsible for the conservation or sustainable use of biodiversity, do not consider themselves to be providers of information; they do not have the installed capacity nor the adequate procedures to deliver information in a timely and efficient manner nor have they determined the rationale for each strategic information level.

This is made evident in the difficulty found in this report in order to collect information on the size of the budgets for biodiversity; how many people are working on the subject of biodiversity or, documents known to exist but unavailable to those interested.

Financial Resources (Article 20)

The funds available for the conservation and sustainable use of biodiversity are usually channeled through three sources: the Government of Peru, International Technical and Financial Cooperation and a special combination of both through a Trust Fund.

Foreign debt swaps for conservation and sustainable development are a special modality to finance projects in support of communities, to protect the environment and alleviate extreme poverty. Central Government funds are channeled to the budgets of each Ministry via the Public Treasury and the own income of certain institutions.

It is quite difficult to determine with precision how much of the budget of a given office, management area or institution has been applied or has been allocated for biodiversity activities. Most institutions are reluctant to deliver information concerning their budgets or expenses.

No less than 8 institutions and 5 offices of the eight Ministries (See Table 17) use part or all of their budgets in activities regarding conservation and the sustainable use of biodiversity.

In 1997, nine of the main organizations invested approximately US\$15,640,100. in Biodiversity activities. The greater share of this figure comes from its Public Treasury and Own Funds Budgets and 12% comes from non-refundable loans (See Table 18). IMARPE and INRENA are the institutions that have a larger budget. These figures do not include the budgets of the *Direcciones Generales* of the Ministry of Fisheries nor of SINITA, information that was not available at the time this report was prepared.

Mention should be made of the fact that the 1996 budgetary information of most of the institutions has not been available, and even less so the data from previous years; annual information on this item would enable us to identify trends as concerns the budgetary priorities per institution or

sector.

Table 17

STATE INSTITUTIONS WITH RESPONSIBILITIES
RELATING TO BIODIVERSITY

SECTOR:
Institution
Office

Presidency of the Ministry Council.:

CONAM

- National Biodiversity Conservation Strategy Project
Ministry of the Presidency
Presidency of the Council of Ministers

INEI

IIAP

- Environmental Regulation
- Sustained Production in Terrestrial Ecosystems
- Sustained Production in Aquatic Ecosystems
- Sustained Utilization of the Biodiversity

Ministry of Education:

CONCYTEC

- PRONADIB
- RIBEN

Ministry of Fisheries:

- National Catch Bureau
- National Environmental Bureau
- Aquaculture Bureau

IMARPE

Ministry of Defence:

- SENAMHI

Ministry of Agriculture:

INIA

- SINITA
- PRONARGEB

INRENA

- DGANPFS
 - DANP
 - DFS
- DGF
- DGEP
- DGMAR
- SENASA
- CONACS

Ministry of Industry, Tourism, Integration and International Trade
Negotiations:

INDECOPI

Ministry of Foreign Relations:

- Bureau of Special Affairs

Table 18

1997 Budgets by Main Economic Sectors
Related to Biodiversity

(in thousands of US\$)

SECTOR: Public non-reimbursable Others Total
Institution Treasury loans
Office

Ministry of the Presidency:

CONAM

- National Strategy for the Conservation of Biodiversity Project

IIAP

- Environmental Regulation
- Sustained Production in Terrestrial Ecosystems
- Sustained Production in Aquatic Ecosystems
- Sustained Utilization of the Biodiversity

Ministry of Agriculture:

INIA (1)

- SINITA
- PRONARGEB

INRENA

- DGANPFS
- DGF
- DGEP
- DGMAR
- CONACS (7)

Ministry of Fisheries: (8)

- National Catch Bureau
- National Environmental Bureau
- Aquaculture Bureau

IMARPE (9)

Ministry of Education:

CONCYTEC

- PRONADIB
- RIBEM

Ministry of Defence:

- SENAMHI

- in US\$ converted at the rate of 1US\$ per S/. 2.65.

-

- (1) The SINITTA budget was not available, therefore the total figure for INIA does not reflect its total investment.
- (2) Includes project execution costs (about US\$ 52,830) and monthly payments for part of the personnel reported in the institutional capacity Table (33) plus 20 temporary workers employed in other INIA offices.
- (3) Includes project execution costs (about US\$ 38,490) and payments for some of the staff.
- (4) Budget provided by KFW and GEF via PROFONANFE.
- (5) Funds collected directly.
- (6) The value of user payments has not been estimated.
- (7) As concerns CONAC only wild camelid budgets have been considered, not domestic camelids. And own income corresponds to the funds obtained by the National Vicuña Association by marketing its wool. (prepared by D. Hoces).
- (8) Information on the budgets the General Bureaus most active in Biodiversity were not available.
- (9) Consolidated from all sources.

Table 19

**BIODIVERSITY: TOTAL BUDGETS
(CONSOLIDATED FROM ALL SOURCES) OF EIGHT
STATE INSTITUTIONS FOR 1997 (MEF, 1996)**

INSTITUTION TOTAL 1997 BUDGET TOTAL 1997 BUDGET
%APPLIED(MILLIONS OF S/.) (MILLIONS OF US\$)* TO BD

.....

Source: Draft 1997 Public Sector Budget Law. Ministry of Economy and Finance, General Bureau of Public Budget, August 1996

(*) Estimated rate of exchange S/. 2.65 = 1 US\$

Should the percentages of all the 1997 budgets (public treasury, donations and own income – MEF 1996) be compared, seven of the main institutions carry out activities related to biodiversity (Table 19), while one organization (IMARPE) allocates almost all of its budget to biodiversity; a second entity, (INRENA), devotes over 50% and another three entities, barely 10%.

No institution reported having applied income from non-reimbursable loans to biodiversity.

(2) Technical and International Financial Co-operation includes bilateral and multilateral sources and NGOs. According to a recent study made by Guinand and Chavez published in 1997, co-operation presently furnishes 411 million dollars in non-reimbursable funds and 735 million dollars in reimbursable funds for 211 environmental projects and 10 projects that have environmental components.

A preliminary analysis based on the project list presented by Guinand and Chavez op. cit, and complementary information from some of the projects, leads to the inference that some 40 projects financed between 1992 and 1997 and currently underway, totaling approximately US\$ 38,544,071, are those most directly connected with biodiversity (Table 20). All together they represent one-third of the projects financed by non-reimbursable funds.

The total dollar amount of the biodiversity projects corresponds to only 9.3% of the total non-reimbursable funds, reflecting the trend of relatively low budgets for environmental projects in general and of Biodiversity projects in particular.

Guinand and Chavez (op. cit.) suggest that over the next few years, environmental co-operation in Peru will remain at its present investment level and in some cases will increase biodiversity projects and those that have BD components should increase proportionately.

Some new initiatives of the co-operating sources could result in an increase of funds both percentage-wise and as concerns the total volume.

As of 1998, *United States Agency for International Development (USAID)* and the *Fund for the Americas* will launch two projects via grants with non-reimbursable funds, directly related to the conservation and sustainable use of biodiversity, the SENREM Project: Sustainable Management of the Environment and Natural Resources.

The purposes of two of the four components of the SENREM Project are, among other things, to fund projects and activities directly related to biodiversity: BIOCOP, which has received about US\$ 500,000 for 1998 and is expected to secure substantially more in the next few years and the “*Environment, Participation and Private Management Project*” (APGEP-SENREM). It has been estimated that some 30% of the US\$ 1,200,000 available will be used to finance pilot projects for the sustainable use and conservation of biodiversity.

The *Fund for the Americas* amounts to US\$ 23 million, which are to be distributed among projects dedicated to children and others connected with the environment. The percentage of the total amount to be distributed among these major components has not yet been defined, but it is expected that between 10% and 12% of that fund could be funneled directly into aspects of conservation and sustainable use of the biodiversity.

Furthermore, two *Global Environment Facility – GEF “windows” have been opened for Peru, the Small (GEF-PPP) and Medium Projects (GEF-PMP) Programmes.*

The GEF-PPP, endowed with close to US\$ 500,000 for 1998, will be administered by the UNDP and will target demonstration activities and the community level. The GEF-PMP, on the other hand, will be negotiated through the focal point (CONAM) and will probably be aimed at the implementation of the ENCBD.

One of the GEF’s macro projects is about to start; the *Titicaca Basin*

Biodiversity Conservation Project, which will cover a period of 5 years at a cost of US\$ 4 million. The Projects for the In Situ Conservation of Native Crops and their Wild Relatives in Peru, a centre of global origin are still in the planning phase. The lines of action for these projects still need to be further defined as well as the corresponding executing entities.

(3) The trust funds shall channel funds from bilateral and multilateral sources and foreign debt-swaps for conservation. Through this financial mechanism, the government shall acquire a portion of its external debt from certain creditors and in exchange shall deliver a given sum in dollars or local currency. The government shall assume the commitment to channel these funds to projects geared towards the conservation of natural resources and sustainable development. In Peru the precursor of this method is the National Fund for State Protected areas (FONANPE).

In early 1997 the *National Environmental Fund (FONAM)* was created and is comprised by the MEF, the MAG, representatives of environmental and development NGOs, CONFIEP and representatives of the university community, it is presided by CONAM. Actually, this Fund has not started to operate nor attracted funds yet. There is no certainty that FONAM shall raise funds and supply them for projects (programmes, plans and activities) for the conservation and/or sustainable use of the biodiversity or for projects that have components of conservation and/or sustainable use of biodiversity that are not envisaged among PROFONANPE objectives.

BIODIVERSITY PROJECTS (in US\$)

CO-OPERATING SOURCE Duration Starting Contribution Executor
Project Title (years) year of co-operation agency_

(US\$)

Germany (GTZ):

Conservation, Management and Sustainable Use of the Biological
Diversity in the Paracas NR
Strengthening of Protected areas (FANPE)

United States (USAID):

Integral Development and Conservation Programme for the Pacaya-
Samiria NR

Holland – The Netherlands:

Ecodevelopment of the Lagunas de Mejía National Sanctuary and the
Iberia Irrigation
Management and Integral Use of the Mangrove Swamps on the
Northwestern Coast of Peru
Local Fund for the Environment (9 projects)
Conservation of the Upper Amazon Forests in the Central Rainforest of
Peru – Yanachaga Chemillén PN
Support for the Bahuaja Sonene

WWF:

Additional Funds for Assistance to the Manú PN
Additional Funds for Assistance to the Abiseo River PN

WWF – Denmark:

Integral Conservation and Development Programme for the Pacaya
Samiria National Reserve

WWF – Sweden:

Conservation and Development Programme in the Northwestern BR

WWF – United Kingdom:

Conservation and Sustainable Development Programme in the
Northwestern BR
Conservation of the Ampay National Sanctuary
Conservation and Development in the Manú BR
Environmental Education Programme in the Manú BR
Tikay Wasi Environmental Education Programme

Protection and Management of the Abiseo River PN

WWF – UK – ODA:

Environmental Education Programme in the Manú BR

Arnhold Foundation:

Tambopata Conservation-Based Development Programme
(PRODESCOT)

Doer Foundation:

Support for the Yanachaga Chemillén National Park Buffer Zone

Mac Arthur Foundation

Support for Education and Training Components in Ecotourism
in the Ese'Eja Community

Integral Protection and Sustainable Development Programme
for the Tambopata Candamo ZR

Integral Protection and Sustainable Development Programme
for the Tambopata Candamo ZR

Support for the Brazil Nut Programme for Sustainable Community
Development around the Tambopata Candamo ZR

Tambopata Conservation-Based Development Programme
(PRODESCOT)

The Nature Conservancy:

Support for the Yanachaga – Chemillén National Park

Management Support for the Pampas del Heath National Sanctuary

Integral Development and Conservation Programme for the Pacaya
Samiria National Reserve

Park Endowment Foundation:

Conservation of the Cordillera de Colán Range (1)

Global Environment Facility – GEF/UNDP:

Conservation of the Lake Titicaca Ecosystem

International Tropical Timber Organisation ITTO:

Reforestation, Management and Sustainable Utilization of the Natural
Cloud Forests in Jaén – San Ignacio

Participatory Forestry Development Programme in the Upper Mayo
Region

Establishment and Operation of a Strategic Forestry Information Centre
(CIEF), Phase I

Assistance in Formulating the Forestry and Fauna Law

UICN – Holland:

Forest Management in the Palcazu Valley of the Central Rainforest

European Union:

Utilization and Sustainable Management of the Manú BR and NP

Ecodevelopment Programme in the Pantanos de Villa

Regional Programme for the Planning and Management of Protected

Natural Amazonian Areas UE – TCA

Peru – European Union Countervailing Fund/INTERMON:

Sustainable Fauna Development in Aguaruna and Huambisa

Communities

Organization of American States – OAS:

Support for the Network on the Biological Impact of the El Niño Events

RIBEN (2)

Sources: based on the files contained in Annex III in Guinando and Chavez's study of 1997 (Projects of under US\$ 20,000), information incorporated from APECO (1) Acero.com.pers (2)

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ANNEXES

Annex 1

MEMBERS OF THE NATIONAL BIODIVERSITY COMMISSION

Public Sector

CONCYTEC
National Council on Science & Technology
Nature

DIGESA
Head Office of Environmental Health
Promotion

IIAP
Peruvian Amazon Research Institute

IMARPE
Peruvian Marine Institute

INDECOPI
Peruvian Institute for Fair
Competition and Intellectual Property
Rights

INIA
National Agrarian Research Institute

INMETRA
National Institute for Traditional Medicine

INRENA
Natural Resources National Institute

Private Sector

APECO
Peruvian Association For
the Conservation of

EL TALLER
Association for
and Development

AIDSESEP
Inter-Ethnic Development
Association of the Peruvian
Rainforest

CAME
Andean Council for
Ecological Management

PRONATURALEZA
Peruvian Foundation for
the Conservation of
Nature

PROTERRA

Pachamama Society

SPDA
Peruvian Society for
Environmental Rights

International Organizations

IIP Peruvian Institute of Indigenous Peoples	CIP International Potato Center
Ministry of Agriculture	
Ministry of Economy and Finance	United Nations Development Programme UNDP
Ministry of Industry, Tourism, Integration & International Trade Negotiations Treaty	TCA Amazon Cooperation
Ministry of Fisheries	Universities
MIPRE Ministry of the Presidency	La Molina National Agrarian University
National	San Antonio Abad University, Cusco
MIN RR.EE. Ministry of Foreign Affairs	San Agustin National University, Arequipa National University of Piura
Municipality of Metropolitan Lima	National Experts
SENAMHI National Hydrology and Meterology Service	Carlos Arbizú Avellaneda Antonio Brack Egg
SENASA	

National Agrarian Health Service

Annex 2

CONADIB WORKING GROUPS AND MEMBERS

WK Genetic Resources

INIA
INRENA
CONCYTEC
MIN RR.EE.
INDECOPI
SPDA
DIGESA
National University of Piura
CONAM
Dr. Arbizu

WK Marine Biodiversity

MIN RR.EE.
CONCYTEC
DIGESA
IMARPE

K Forestry Biodiversity Biodiversity

INRENA
MIN RR.EE.
CONCYTEC
PRONATURALEZA
MIN RR.EE.
Dr. Arbizu

WK Agricultural

INIA
INRENA
CONCYTEC
MIN RR.EE.
APECO

Working Groups to be set up (not officially established)

WK Continental Waters

Natural History Museum
APECO
CONAM
IIAP
GAP
CONAM
Brendan Tobin
Erick Pajares

WK Traditional Knowledge

AIESEP
Defensoría del Pueblo
SPDA
PROMUDEH
ASPADERUC

***PROTOCOL FOR THE EXCHANGE OF INFORMATION
DRAFTED FOR THE WORK ON 8 REGIONAL FOCAL AND 3
THEMATIC NATIONAL ITEMS ON BIODIVERSITY
FOR THE NATIONAL BIODIVERSITY SURVEY
Montreal, Canada, September 1996***

**REPUBLIC OF PERU
PROPOSAL FOR A PROTOCOL TO EXCHANGE
INFORMATION SECURITY ON BIODIVERSITY**

GOALS:

To establish the:

1. Bases for joint actions on data organization, users, information quality, information exchange and diffusion on biodiversity at a national and an international level.
2. Strategies on information safety levels.
3. Technical and scientific cooperation mechanisms on biological diversity information.

1. BASES

- This agreement is based on the principle that the information generated by government institutions shall be considered as a service and not be restricted, except whenever this involves a point of national security of interest to sectoral actions.
- The information generated by each government institution participating on

the network is owned by that institution and should therefore be stated as such on reports, publications and any written or oral data mentioned therein.

- Each institution shall draft an overall list of the available information and the access level it has available .
- Biodiversity information shall be organized in compliance with a national data base scheme, defined by the national information organization system.
- The relevant variables for each institution on the net included in the data base shall be discussed both with the institution and the database programmer.

1.1 INFORMATION PROCESSING:

This refers to the way and methods of processing and standardizing data for planning and service purposes. It involves a data ownership agreement :

- a) The information shall be stored under the following two modalities:
 - Data chips for information collection, in WP60 format, subject to unsubstantial additions and changes by the Centers, according to their needs and realities.

Data bases processed suitable to the country's needs.

1.2

TYPE OF INFORMATION AND USES:

It refers to the type of gathered, compiled and organized information, of interest for (the goal of) Biodiversity sustainable conservation and use, as well as it's final destination.

• **TYPE OF INFORMATION**

Basic: National Biodiversity components:

- a) Information on: ecosystems, species (inventories, biology, ecology, physiology, etc.), genes, including active principles and ecological processes.
- b) Application of the knowledge/understanding including traditional and modern technology, techniques, methods.
- c) Conservation mechanisms, including scientific collections entrusted to national institutions.
- d) Biodiversity programmes and projects, as well as on their sustainable conservation and use.
- e) Geographical distribution of Biodiversity components and their by-products.
- f) Records of researchers, institutions and bibliography.

Environmental: Threats due to natural and anthropic activity, affecting national biodiversity components:

- a) Habitat loss and/or fragmentation .
- b) Species extinction and decrease of populations.
- c) Genetic erosion.

- **USE OF THE INFORMATION**

a) General public: The information contained in the systems' first levels shall have the nature of a service to the user and shall be offered free from restrictions. A quarterly bulletin shall be published, referring to services and information content.

b) Government: This design will allow the information to have access to the Government institutions included in the systems and relevant to sectoral and intersectoral programming and planning process.

c) Academic: Scientific research universities and institutions needing the information for research programmes and projects.

USERS

This refers to institutions, individuals or legal entities users of the stored information such as: Government institutions, private companies, researchers, teachers, students, NGO's and the public in general.

- **DATA**

This refers to the units that shall be used to store information, suitable to the type of information required in the chips and database. The INEI official units of measurement shall be applied to organize data required for the research programmes and projects.

Data quality: Data quality will initially be of three different types:

- a) Type A data: The most reliable and precise data, obtained through publications, reports, scientific research, and no older than ten years.
- a) Type B data: Data from publications, reports, scientific research, (over ten years old).
- b) Type C data: Data derived from spoken and written sources such as reports, magazines in general not easily verified and not as reliable.

1.3 INFORMATION DISTRIBUTION AND DISSEMINATION

This refers to the manner and method of data processing based on the implementation of the information system organization on biodiversity.

- System references:

Any publication derived from the database and processed by the Regional Center, shall also specify:

- Project name and code: “ASSISTANCE TO DRAFT THE NATIONAL STUDY ON BIODIVERSITY IN PERU, N° 6105-92/gf/pnu”.
- The coordinating national system institution, including the Ministry of Agriculture and INRENA’s logotype.

- Source of financing: *United Nations Programme for the Environment UNEP and the Global Environmental Facility, GEF*
 - The data processed, duly stored and organized, to be distributed and/or disseminated by the institutions participating on the net, shall specify its source on reports, publications and any written or oral information.
- ***Means of distribution:***

Written material: information bulletins, publications in magazines, newspapers. Electronic means: user service programmes, information exchange with other institutions, electronic networks.

Spoken means: conferences, seminars, workshops on information dissemination.

2. STRATEGIES

2.1 INFORMATION SAFETY LEVELS

This refers to data access levels stored and organized in the biodiversity database according to the type of user.

- **Access Levels**

The basic design determines pre-established access levels according to the type of information and user. Each access level shall have an entry code,

known by each institution up to a certain level of maximum safety and containing information classified as national safety.

a) General access (or level I): Unrestricted, general and informative data available to the general public, corresponding to the first and second organization levels, i.e.: generalities, bibliography.

b) Overall semi-restricted access type (or level J): this level contains information that may be known to government and local and foreign non-government organizations and institutions.

For example: conservation mechanisms, including scientific collections entrusted to national institutions. Conservation and sustainable use programmes and projects of Biodiversity as well as a researchers' registry and institutions. Threats due to natural and anthropic activity affecting national biodiversity components: habitat loss and/or fragmentation. Species extinction, decrease of populations.

c) Academic semi-restricted access (or level [^]) : This level contains scientific information for academic institutions and national research which is not subject to the national safety criteria. It may be sent abroad under equitable information exchange conditions.

For example: Conservation mechanisms, including scientific collections entrusted to national institutions. Generalities on biodiversity programmes and projects, its conservation and sustainable use and researchers' registry, institutions, bibliography. Genetic erosion.

d) Government semi-restricted access (or level K): Relevant information for government levels. Strictly available for government institutions of

different sectors, i.e.: genetic resources active principles, specific information on biological diversity, its conservation and sustainable use and researchers' registry, national institutions. Genetic erosion.

- e) Restricted access (or level ;): Information that may be known only to network government institutions and to high ranking officials from the Executive, Judiciary and Legislative Branches. This information is not intended for a widespread use and shall only be available under pre-established criteria such as unpublished information under revision, statistics, quota, prices, values, ecosystems' ecological processes.
- f) Safety access (or level A): National safety information restricted to the individual in charge of the national and regional database through a pre-established code. The network government institutions and high-ranking sectors of the Executive, Judiciary and the Legislative Branches of Government shall have access to it only under pre-established criteria.

3. TECHNICAL AND SCIENTIFIC COOPERATION ON BIODIVERSITY INFORMATION

The methods and ways employed by inter-institutional cooperation as concerns the components of national biological diversity in order to secure a reliable and adequate exchange of information for research, planning and for the sustainable development of Peru.

- All possible efforts shall be displayed by institutions to adapt these systems to national needs and for the benefit of Peru's development, striving towards top-quality information.

- Motivation strategies shall be implemented by institutions to include other national organizations on the network, in order to avoid monopolizing information and to work jointly for the biodiversity conservation and sustainable use. While the system is being implemented work shall focus upon self-financing mechanisms.
- All available efforts shall be undertaken to establish laws, agreements, rules and regulations, and/or criteria to prevent any informative material of biodiversity components, involving a social, economic or scientific potential resource, necessary and relevant for Peru's national policy and development, from leaving the country.

The data which is stored and organized shall be used to plan and carry out sectoral and trans-sectoral research actions on national biodiversity conservation and sustainable use.

DEFINITIONS:

- Information: Refers to organized, integrated and analyzed data.
- National security information: Considers as such information on biodiversity of strategic use to government policy actions, i.e.: distribution and quantity of key genetic resources, considered key elements due to present and potential usefulness, research on active principles, property rights on specie variety and risks of being used for other ends.