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EXECUTIVE PROFILE OF ENVIRONMENTAL MANAGEMENT ANDEAN REGION

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ABBREVIATIONS USED IN THE DOCUMENT

GENERAL

BID	Banco Interamericano de Desarrollo
BM	Banco Mundial
CAN	Comunidad Andina
CCD	Convención de Lucha contra la Desertificación
CDB	Convenio de Diversidad Biológica
CEPAL	Comisión Económica para América Latina y el Caribe
CEPIS	Centro Panamericano de Ingeniería Sanitaria y Ciencias del Ambiente
CFC	Clorofluorocarbono
CIGB	Centro de Ingeniería Genética y Tecnología Biológica de La Habana (Cuba)
CIMT	Convenio Internacional de Maderas Tropicales
CITES	Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestres
CITMA	Ministerio de Ciencia, Tecnología y Medio Ambiente CITMA de la República de Cuba
CNUMAD	Convención de las Naciones Unidas sobre el Medio Ambiente y Desarrollo
DANIDA	Gobierno de Dinamarca
EIA	Estudio de Impacto Ambiental
EPA	Environmental Protection Agency
FAO	Organización de las Naciones Unidas para la Agricultura y la Alimentación
FMAM	Fondo para el Medio Ambiente Mundial
FSC	Forest Stewardship Council

GEI	Gases Efecto Invernadero
GLP	Gas Licuado de Petróleo
GTZ	Organización de Cooperación Técnica de Alemania (Deutsche Gesellschaft für Technische Zusammenarbeit)
ICMA	Asociación Internacional de Administración de Ciudades y Condados
ISO	International Organization for Standarization (Organización Internacional para la Estandarización)
LMP	Límite Máximo Permisible
LULUCF	Uso de la tierra, cambio del uso de la tierra y forestería
MDL	Mecanismo de Desarrollo Limpio
OIMT	Organización Internacional de las Maderas Tropicales
OMC	Organización Mundial del Comercio
OMS	Organización Mundial de la Salud
ONG	Organización No Gubernamental
OPS	Organización Panamericana de la Salud
PAHO	Panamerican Health Organization
PIB	Producto Interno Bruto
PHI	Programa Hidrológico Internacional
PK	Protocolo de Kyoto
PNUD	Programa de las Naciones Unidas para el Desarrollo
PNUMA	Programa de las Naciones Unidas para el Medio Ambiente
PYME	Pequeña y Mediana Empresa
RAMSAR	Convención sobre Humedales de Importancia Internacional Especialmente como Hábitat de Aves Acuáticas
SAO	Sustancias Agotadoras de la Capa de Ozono
UICN	Unión Mundial para la Naturaleza
UNCTAD	Conferencia de las Naciones Unidas sobre Comercio y Desarrollo

UNESCO	Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura
UNICEF	Fondo de las Naciones Unidas para la Infancia

BOLIVIA

BOLFOR	Proyecto Bolivia Forestal
CAT	Cuerpo de Asesoramiento Técnico para el Acceso a Recursos Genéticos
CODENA	Consejo Nacional de Desarrollo
MDSMA	Ministerio de Desarrollo Sostenible y Medio Ambiente
SNAG	Secretaría Nacional de Agricultura y Ganadería
VMARNDF	Viceministerio del Medio Ambiente, Recursos Naturales y Desarrollo Forestal

COLOMBIA

AAR	Autoridades Ambientales Regionales
ASOCAÑA	Asociación de Cultivadores de Caña de Azúcar de Colombia
CAR	Corporaciones Autónomas Regionales
CEPAL	Centro Latinoamericano de Estudios Políticos
CIF	Certificado de Incentivo Forestal
CONPES	Consejo Nacional de Política Económica y Social
CORNARE	Corporación Autónoma Regional del Oriente Antioqueño
CVC	Corporación Autónoma Regional del Valle del Cauca
DADIMA	Departamento Administrativo Distrital del Medio Ambiente
DAMA	Departamento Técnico Administrativo del Medio Ambiente
DANE	Departamentos Administrativo Nacional de Estadística
GNV	Gas Natural Vehicular
IDEAM	Instituto de Hidrología, Meteorología e Investigaciones Ambientales
IGAC	Instituto Geográfico Agustín Codazzi
INDERENA	Instituto Nacional de Recursos Naturales
INVEMAR	Instituto de Investigaciones Marinas y Costeras "José Benito Vives de Andreis"
IVA	Impuesto al Valor Agregado
MMA	Ministerio del Medio Ambiente
NSS	Estudio de Estrategia Nacional
PAN	Plan de Acción Nacional
SIA	Sistema de Información Ambiental
SINA	Sistema Nacional Ambiental
SINCHI	Instituto Amazónico de Investigaciones Científicas

ECUADOR

CEPL	Centro Ecuatoriano de Producción más Limpia
CONADE	Consejo Nacional de Desarrollo
CORPEI	Corporación de Promoción de Exportaciones e Inversiones
DINAREN	Dirección Nacional de Recursos Naturales Renovables
ECOCIENCIA	Fundación Ecuatoriana de Estudios Ecológicos
INEFAN	Instituto Ecuatoriano Forestal y de Áreas Naturales y Vida Silvestre
PAE	Plan Ambiental Ecuatoriano
PEAMCO	Programa de Educación Ambiental Marino - Costera
PLANFOR	Plan Nacional de Fomento de Plantaciones Forestales

PERÚ

CAR	Comisión Ambiental Regional
CONAM	Consejo Nacional del Ambiente
CPPS	Comisión Permanente del Pacífico Sudeste
CTAR	Consejo Transitorio de Administración Regional
FONAM	Fondo Nacional del Ambiente
FONDEPES	Fondo Nacional de Desarrollo Pesquero
GEO	Global Environmental Outlook
IMARPE	Instituto del Mar del Perú
INRENA	Instituto Nacional de Recursos Naturales
ITP	Instituto Tecnológico Pesquero
MEGA	Marco Estructural de Gestión Ambiental
MIPE	Ministerio de Pesquería
PAMA	Programa de Adecuación al Medio Ambiente
PROMPERÚ	Comisión de Promoción del Perú
PROMPEX	Comisión para la Promoción de Exportaciones
PROMUDEH	Promoción de la Mujer y del Desarrollo Humano (Ministerio)
SGA	Sistema de Gestión Ambiental

VENEZUELA

CONARE	Compañía Nacional de Reforestación
MARNR	Ministerio del Ambiente y de los Recursos Naturales Renovables
PDVSA	Petróleos de Venezuela, S.A.

0. SUMMARY

During the last years, the countries from the Andean region have carried out important efforts aimed at improving their administration of environmental issues, as well as incorporating new concepts on sustainable development in the sector's policy. This document is a synthesis of the region's most pertinent top priorities, of achievements undergone during recent years, and of the challenges and opportunities the region will face in the near future. Its objective is to become input for decision-making, providing the knowledge of each country's lines of action and particular experience, benefiting their neighbors' policy and administration with this exchange, and identifying common topics that may ultimately constitute an agenda for collaboration.

Top Priorities

The region's environmental priorities have centered upon three basic action groups: management of natural resources, urban and industrial environment and competitiveness.

The priorities for the environmental management of *natural resources* continue to be forests, biodiversity, water resources and soils. Colonization and inadequate exploitation, obsolete agrarian legislation, the lack of an appropriate definition of the rights of property and exploitation, and the absence of elements which would enable an adequate assessment of the resources, all contribute to encourage inappropriate practices that affect these resources. On the other hand, interventions on basins and ecosystems due to urbanization and the construction of sites, among others, alter water patterns and diminish the availability of water for consumption.

Despite legislative efforts, a lack of correspondence between the formulation of basic legislation and its corresponding regulation persists in some cases. In others, the existence of complex and ambiguous regulatory frameworks, institutional ineffectiveness to enforce existent laws and regulations, and a lack of adequate guidelines for control and surveillance, limit the possibilities to administrate and develop projects for sustainable management.

In regard to *urban and industrial environment*, the region's attention is focused on problems related with water, cleaning up, air quality and refuse collection and disposal. The complexity of legal and institutional frameworks that are centralized in many cases, the scant institutional development and the inadequate assessment of public service utilities, limit the recovery of costs, and therefore, their quality. Likewise, the absence of information and the citizens' low level of education and participation reduce the environmental authorities' capacity to administrate.

Institutional ineffectiveness concerning control and surveillance as well as the absence of adequate strategies to make law enforcement possible, reduce the effectiveness of existent legislation on atmospheric contamination control. In some cases, public initiatives have encountered strong opposition by transporters and vehicle fleet owners.

In regard to *competitiveness*, due to the globalization of the markets, exports have become a factor of prime economic importance for the region's countries. They are facing changing conditions and new regulations that must be complied in order to maintain themselves successfully in the world market. These new regulations are closely connected with the current trend for green markets, ecolabeling, environmental certifications and cleaner productions, factors that impose new and different restrictions on export products. These restrictions in turn encourage sustainable exploitation and administration of the resources, as well as the introduction of new investment opportunities.

Achievements

During the last decade, the Andean region has advanced considerably in environmental administration and in management and conservation of natural resources. In some cases, environmental achievements are circumscribed to structural changes such as the introduction of modern systems based on decentralization, citizens' participation and self-management.

Traditional regulatory devices are still the principal environmental administration tools used in Andean countries. In legal matters, efforts are focused on regulating important environmental aspects in unregulated aspects, and in revising existent norms. During the last five years, these countries have drafted and passed laws and norms on sustainable forest development, sustainable biodiversity protection and exploitation, and integration, among others.

The development and implementation of plans, programs and strategies have provided relevant results for the policy's application. The activities of conservation, basin recuperation and protection, establishment and strengthening of systems for protected areas, generation of information chiefly on flora and fauna species inventories, and the integration of native, indigenous and Black communities in the administrative efforts, have been the most relevant results for objectives on integrated management of *natural resources*.

In regard to *industrial and urban environment,* the following stand out, efforts centered on compliance with new laws on atmospheric quality, generation of plans for wastes and integrated handling, and financing of programs for decontamination of municipal wastewater.

The introduction of new tools based on non-regulatory mechanisms constitutes an important progress. Programs for a cleaner production based on the generation of information and consultancy to the sectors, have produced concrete results in terms of contamination reduction, cost minimization and increased efficiency of resource utilization. Likewise, the use of economic instruments for contamination control — although incipient in the region — have been successful and have generated additional resource sources for environmental administration.

Efforts on *competitiveness* improvement have centered on the development of green markets, biotrade and ecolabeling programs. Activities within the framework of these programs focus on the definition of criteria for product identification, project evaluation and classification, definition of the portfolio, development and implementation of promotion mechanisms and financing of projects such as Clean Development Mechanism, and the introduction and adoption of certification tools such as the ISO norms and the FSC seal.

Challenges

The main challenges identified for the region during the following years are the creation of new incentives to promote investment and sustainable management of their resources and the strengthening of existent mechanisms, the consolidation of certification systems as mechanism to improve efficiency and competitiveness of national production, the development of national and international markets for environmental services and green products, the adequate valuation of the resources and of the benefits derived from their conservation, the consolidation of self-management mechanisms, the internalization of environmental costs generated in production processes, and the institutionalization of information, consultancy and citizen participation mechanisms.

Activities during the following years must center on creating proper conditions to develop markets, such as developing further their concepts on ecobusiness, information diffusion, identification of new markets and opportunities, and promotion. Support to certification processes is fundamental. To attain this, it is fundamental to build up certification capacity and to introduce new promotion and financing mechanisms such as the clean development mechanism.

The integration of the private sector with environmental administration must advance more, reinforcing those initiatives based on information and technical assistance such as the clean production programs and the environmental windows program.

Economic instruments are useful tools to change the perception on environmental administration — from one of control to one of prevention. Efforts centered on development and implementation of these mechanisms must continue. These make possible the internalization of environmental costs generated by productive processes and provide incentives to reduce contamination by adopting clean technologies.

The progress achieved in information generation must be consolidated in the short run, ensuring models of integration, interrelation and exchange that provide the means for an adequate and prompt supply of information for decision-making at a national and regional level. It is equally necessary to reinforce national information systems in terms of their technical capacity and the availability of equipment and personnel for data collecting, data processing and diagnosis. The coverage of stations for physical surveillance of soils, forests and biological resources, is still insufficient.

It is essential to expand financial capacity in order to improve water quality and treatment of water supplied to residences, and to promote integrated management of wastes. The introduction of public utility tariff systems that reflect the real cost of the resource and the consolidation of financial investment resources are part of the pending agenda in some of the region's countries. Promotion of integrated management of wastes must be accompanied by an increase in the technical capacity and in the deployment of activities to educate the community and raise public awareness. The consolidation of financial and technical resources is equally important to increase the coverage of monitoring systems that quantify environmental effects on health, productivity and ecological capital, and which make possible an evaluation of the environmental administration's performance.

The integration of the community in decisions must be intensified. Within this framework, the region must use the capacity of institutions such as NGOs (Non-Governmental Organizations) in terms of human resources, technical knowledge, and their proximity to environmental problems specific to each region.

I. TOP PRIORITIES ON THE ENVIRONMENTAL SITUATION

Due to its geographic, topographic and geologic characteristics, the Andean region has a great diversity of ecosystems and a great diversity of biological resources. Most of the countries that comprise this region are classified as megadiverse or high diversity countries. However, and despite efforts carried out in environmental administration during the last years, problems like deforestation, loss of biodiversity, overexploitation of resources, shortages in supply of drinkable water and contamination persist in the region. Some of these cause important environmental degradation. The region's environmental priorities may be classified into three basic action groups: management of natural resources, urban and industrial environment and competitiveness.

1. Natural Resources

Forest Resources

In terms of forest resources, the region had approximately 233 million hectares of forests in 1990; 99.73% of these were natural forests and 0.27 % were plantations. In 1995 forest reserves went down to 224 million hectares, with an average yearly deforestation rate of 0.75%[1]. Ecuador, Bolivia and Venezuela have considerably higher deforestation rates in relation with the regional average. These are1.63, 1.17 and 1.11 respectively.

Natural Forests						
	REGIÓN	**BOLIVIA**	**COLOMBIA**	**ECUADOR**	**PERÚ**	**VENEZUELA**
Extension in 1990 (thousands of ha.)	232,756	51,217	54,299	12,082	68,646	46,512
Extension in 1995 (thousands of ha.)	223,992	48,310	52,988	11,137	67,562	43,995
Average yearly percentage of change 1990 – 1995	-0.75	-1.17	-0.49	-1.63	-0.32	-1.11

Source: Appendix 1

The chief causes of deforestation are colonization activities; inappropriate practices of forest exploitation to use wood products for commercial or domestic purposes; the development of government and private economic activities such as the construction of roads, dams, oil pipelines, urban developments and industrial sites; the establishment of farming land; and activities related to oil and mining exploration and exploitation. Some countries — like Colombia and Peru — have serious deforestation problems related with the establishment and eradication of illicit crops.

Deforestation is closely related with growing demographic pressure, the expansion of the agricultural frontier and subsequent colonization of tropical forest zones. The expansion of the agricultural frontier also bears relation with a stagnation of productivity in the

[1] Value estimated by the authors, based on World Resources Institute data. (http://earthtrends.wri.org/datatables/index.cfm)

sector. In some cases, efforts to fight poverty and reactivate the economy constitute determinant factors for this situation in some of the region's countries. Although the region's agricultural area decreased from 18.1 million hectares in 1987 to 17.2 in 1997 with an average yearly decline of 0.46%, in some countries like Ecuador and Peru positive rates of surface growth were maintained, being these 0.58% and 1.08% respectively.

On the other hand, the pressure generated by the rural population — mainly on mountainous regions — striving to obtain firewood as fuel, have generated serious problems of loss of forest surface. The problem is more critical considering that the inter-Andean valleys have one of the highest deforestation indexes (2% to 3% per year) and have been classified as one of the six regions on the world with the highest plant fuel deficit (Ulloa, 1997, cited by BID, 2000b).

The supplantation of forests for crops is mainly seen on coastal regions where, in detriment of natural forest zones, the planting of products such as palms, bananas, coffee and cacao has developed as well as the exercise of methods that are hardly technical and scarcely sustainable in some cases.

Activities related with oil extraction affect forest surface to a different degree, chiefly during the exploration and perforation phases. These produce circumscribed forest damage of limited duration, caused basically by the seismic studies and the utilization of native wood to construct housing infrastructures.

In some countries, the existence of obsolete agrarian legislation and the lack of an appropriate definition of the rights of property and exploitation lead to inadequate practices that destroy this resource. In Peru, for example, the law on agrarian reform required proof of the exploitation of the land to assign title deeds, a condition that lead to the felling and burning of forests. In Ecuador, the possession of land in protected areas generates aggressive colonization and the extension of the agricultural frontier.

In regard to exploitation practices, the Andean region produces of 42,466 cubic meters of timber (1996 - 1998), equivalent to 14.31% of South America's timber production[2]. However, this exploitation is very low, with cases like Venezuela whose timber potential is equivalent to a volume of 6.800 million cubic meters and only produces 3.6 million cubic meters, equivalent to 0.05% of said potential. In Peru there is a similar situation. 45 million forest hectares have potentials for timber production but only 5000 thousand hectares are exploited (1.11% of its potential), yielding a volume of 1.5 million cubic meters of timber.

Correspondingly, national timber prices do not reflect their real market value due to the lack of adequate commercial policies and regulatory and institutional frameworks that would favor the existence of appropriate exploitation authorization frameworks, the absence of economic incentives to assess the resource adequately, and the want of

[2] Comprises the Andean region plus Brazil, Argentina, Uruguay, Paraguay, Surinam, Guyana and Chile.

suitable marketing systems. This, coupled with a growing external demand for tropical wood, increases the existent pressure on the product.

Factors that obstruct the existence of appropriate legal and institutional frameworks are, among others, the absence of reliable statistics; the scarcity of investigation on silviculture, forests, protected areas and biodiversity management; the lack of knowledge on natural forest exploitation and management; the absence of economic studies on plantation production; insufficient identification and delimitation of areas demarcated for permanent forest use[3]; unsubstantial participation of community members in formulating and executing plans and in managing wildlife and natural regions (INEFAN, 1997 cited by BID, 2000b); and insufficient funds.

Likewise, in most cases the State lacks the necessary means to administrate and exert control over forests considered to be public resources.

The chief impacts associated with deforestation are reflected on the availability of timber and other forest commercial products, and on the decline in environmental forest services such as protection of basins and aquifers and the maintenance of soil productivity and fertility. Likewise, in some cases, biodiversity is severely affected by species migrations generated by exploitation operations — especially during the extraction phase — which are usually massive and unsustainable.

Water Resources

The Andean region has important water resources. The yearly average of surface renewable water is 5,503 km^3, with a yearly per capita average that goes from 316 m^3 in Ecuador to 2,133 m^3 in Colombia. The region's mean yearly replenishment of aquifers is of 1,304 km^3. Water resource utilization includes human consumption, irrigation, hydroelectric generation, mining, oil exploitation, industrial and recreational uses.

Despite global offer, problems related with drinkable water supply and basic sanitary services still persist. According to projections carried out by some countries, these problems will be extremely serious in the future if the same administration policies that have been employed up to now continue being employed[4]. On average, 72.4% of the entire population has access to drinkable water and 69.8% to sewer systems. The rural population is at a disadvantage with relation to the cities, since only 49.0% of the population have access to drinkable water and 41.8% to sewer systems.

On the other hand, although it might be true that the majority of the urban population has access to drinkable water (85.4%) and basic sanitary services (83.8%), the quality of these public service utilities is questionable. There is a strong need for this resource in

[3] Protection forests, production forests, protected areas, exclusive forest use lands, management units, hydrographic basins and buffer zones.

[4] In Colombia, the Institute of Hydrology, Meteorology and Environmental Studies (Instituto de Hidrología, Meteorología y Estudios Ambientales - IDEAM) prognosticated that by 2015, 70% of the municipalities within the Andean region would suffer shortages in drinkable water during dry seasons.

urban centers due to the growing demand associated with population growth. In some cases, this pressure leads to the depletion of aquifers and groundwater reserves. In some cities, the supply of these public service utilities becomes more difficult and expensive as humans settle in areas that have a difficult access or an insufficient provision of services. Similarly, water measures are altered and the availability of water for consumption is reduced due to interventions on basins and ecosystems as part of urbanization processes, construction sites, diversions of waterway courses, increased sedimentation, deforestation, erosion, alterations of natural replenishment processes, over-exploitation and contamination.

Maritime and Coastal Resources

Maritime and coastal resources provide a great diversity of goods and services. Among other things, it harbors aquatic life of great genetic diversity, stores nutrients, filtrates contaminating elements, protects against erosion and climactic phenomena such as storms — thus regulating global climates and hydrology — and absorbs carbon from the atmosphere.

Due to the continental shelf and the presence of deep waters, there are pelagic resources such as tuna, sardines, barracuda, dorado and swordfish, as well as some demersal species that make the operation of industrial fleets possible.

In some of the countries, exports by this sector have become an important source of income during the last years. Mariculture subsector exports in Ecuador occupy a third place as source of foreign exchange; in Peru, the fishing sector generates 2% of the nation's GDP, producing an income for fishing exports of US $ 746.3 million in 1994.

The chief maritime and coastal resource problems arise from the accelerated population growth and the subsequent urbanization process; the over-exploitation of this resource due to an increase in fishing activities; the destruction of mangrove swamp vegetation — sometimes to build shrimp pools; the conversion of coastal forests into grasslands and the growth of beachside tourism.

The chief negative effects are the increase in water contamination produced by the disposal of wastewater and untreated wastes, the massive death of coral reefs due to tourism's impact and the accumulation of sediments dragged by currents oozing from the inland into coralline areas, and the depletion of mangrove swamp forests and subsequent destruction of marsh habitats and many fishing resources. These factors also affect the fishing, shrimp and agricultural industry and constitute a threat to tourist activities based on scenic beauty. It becomes, thus, a vicious cycle that affects the sustainability of the resources and the income of the population that depends on its exploitation.

In Venezuela, particularly, the chief activity affecting environments in maritime and coastal regions is the oil industry through its activities of exploration, exploitation, refining and storing petroleum. Other activities that have a negative impact are tourism, urban and industrial development, fishing and mariculture.

Likewise, the growth of the fishing industry has intensified contamination problems due to the establishment of fish oil and flour processing plants that dispose untreated liquid wastes and putrescent blood into the water, and that contaminate the air with gasses emitted by the drying chambers.

Most of the environmental problems in this sector are caused by institutional weakness to enforce existent laws and regulations; the lack of an adequate license granting framework for mariculture pool establishments; the incapacity to regulate and exert control over industrial, municipal and wastewater discharges into estuaries, rivers and coastal waters; the absence of urban planning; the want of technical considerations in decision-making; the insufficient knowledge of the general population, and of those government employees responsible for this resource, on the applicable laws and regulations for this sector.

Institutional weaknesses that affect adequate resource management and exploitation are: the existence of complex and ambiguous regulatory frameworks; the absence of elements that would facilitate an adequate assessment of the resources and their exploitation[5], impede their inefficient exploitation, and generate the necessary income to recover and restore ecosystems; the lack of regulation and organization for the fishing industry; scant reliable statistical information; inadequate fishing methods; and lack of coordination between competent entities.

On the other hand, the existence of management programs based on development programs that support short term production projects instead of long term management initiatives, constitute an obstacle for the implementation of integral resource programs based on a joint administration by the various users (Robadue, 1995, cited by BID, 2000b).

Biodiversity

Biodiversity is the variability among living organisms of any source, including among others land, marine and other aquatic ecosystems and the complex ecological processes they are part of. It encompasses diversity within each species (genetic), among species and between ecosystems[6]. In this sense, the five countries in the Andean region are classified as megadiverse along with twelve other countries in the world.

Looking at biodiversity with numbers, Ecuador has 8 zoogeographic regions and 26 life zones, Colombia has 7 altitudinal gradients and 22 biotic zones, and Venezuela has 27 climatic zones that have been acknowledged[7]. Megadiversity may be observed in the number of species that coexist in the ecosystems. For example, a great number of

[5] In Ecuador, there are some "hidden" subsidies for the shrimp industry related with the annual rental fee for land leased by the government for the development of this activity: while the rental fee per hectare employed in mariculture is less than US $3, the income generated in that same hectare oscillates between US $4,000 and US $12,000.

[6] www.ecociencia.org/biodiversidad

[7] Sources are BID's Environmental Strategy (Estrategia Ambiental) and http://www.ecologia.edu.mx/pubs/biodiv/bdcolest.htm for Colombia.

mammal species have been identified in the region: 316 in Bolivia, 359 in Colombia, 302 in Ecuador, 460 in Peru and 323 in Venezuela[8]. The gross average indicates that each country has an equivalent of 8% of the total number of mammal species in the world. Numbers are also high in studies on birds, reptiles, fish, amphibians and plants.

Despite these countries' biological wealth, many species are endangered, among other things, by destruction of natural forests, domestic and industrial contamination of water resources, lack of information on available resources, unplanned city urbanization, river damming, expansion of the agricultural frontier, sedimentation, desertification and mining activities. These have fostered the region's genetic erosion. On the other hand, some countries have clearly lagged behind in formulating specific regulations for protected areas after having created basic legislation on this respect. This limits the formulation of projects and postpones sustainable management and development of those areas. In buffer zones, the development of activities is limited due to the absence of adequate regulations.

Soils

The main problem for Andean region soils is closely related with the deterioration suffered as consequence of tropical forest deforestation to establish grasslands and crops, and the agricultural methods employed in these activities.

Traditional pasturage methods that include periodic vegetation burning and excessive grazing, weakens grasslands and the land destined for the livestock industry in general and fosters wind and rain erosion, and along with this, the loss of fertile soil. The same situation is present in agricultural practices for some crops where farmers commonly apply excessive use of irrigation and insufficient drainage systems, mechanized farming techniques, farming of land prone to erosion, and immoderate use of agrochemicals. The most significant impacts are desertification and drought, and in some cases, soil salinization in coastal zones.

The main causes of soil deterioration are related with the presence of policies and governmental practices that discourage conservation. Moreover, the downfall in agricultural product prices caused by macroeconomic factors, the sector's discriminatory policies and the lack of liquidity due to financial crises, has fostered capital withdrawal from agriculture, thus hindering investment in soil management and conservation. In some cases, due to the lack of formal credit, farmers have resorted to short term loans from informal sectors with very high interest rates and which do not justify further investments on soil improvement.

An important limitation to soil conservation promotion is the lack clarity in property rights over the land. Deficiencies in rural real estate registers hinder access to credit sources. In Colombia, where violence in the countryside has been the chief factor of the rural population's displacement, the uncertainty on the political situation discourages long-term investments on agricultural lands. On the other hand, in some cases agrarian

[8] http://earthtrends.wri.org/datatables/index.cfm

reform laws do not take into account the negative consequences of small-scale agricultural practices nor do they permit the adoption of judicial measures for cases of soil deterioration due to negligence or malpractice.

Mining and Oil Industry

Although mining, oil and carbon resources are not affected per se by anthropogenic factors, their exploitation directly affects other natural resources and the environment in general.

Oil

Oil is one of the most important resources for the countries' economies. In 1998 the region produced 4.6 million barrels a day. Of these, it exported 2.8 barrels of crude oil and 0.9 million barrels of refined oil products.

However, activities related with oil exploitation affect the environment directly. The exploration and perforation stages are generally accompanied by deforestation. Likewise, the mud produced during this last stage contains toxic substances that are discharged into reserve pits liable to spills or filtration. Afterwards, during the production stage, a great quantity of liquid wastes is discharged into the pits. During the separation there is a great amount of water contamination generated by the chemical products needed to separate oil from this water. This water is poured at temperatures of 54º C into pits that are not lined with any coating, where it mixes with heavy metals. Furthermore, the transportation phase generates a big environmental impact, especially when spills occur.

Mining

In countries like Peru and Bolivia, the mining activity is relatively important representing 8.1%[9] and 6.0%[10] of their GNP, respectively. Its exploitation generates a certain degree of impact, closely related with the size of the enterprise and its age.

In Peru, for example, there are three sizes of formal operations. Large-sized mining is composed of state companies that were privatized during the last few years and that manage great volumes of mineral (more than 3,500 tonnes per day). Middle-sized mining produces between 350 and 3,500 tonnes of material per day and is basically comprised of private companies. Small-sized mining produces less than 350 tonnes of mineral per day and is operated at family company levels and only when international prices are favorable. In terms of environmental administration, only companies belonging to the large-sized mining sector may be easily controlled and supervised. Only these companies have enough resources to implement cleaner technology through productive reconversion.

[9] National Institute of Statistics and Computing (Instituto Nacional de Estadísticas e Informática), Peru, http://www.desarrollo.gov.bo/mindeco/vice_mm/contexto_eco.html

[10] http://www.desarrollo.gov.bo/mindeco/vice_mm/contexto_eco.html

New companies usually begin operating in accordance with stringent environmental standards and introduce equipment and machinery that have environmental protection mechanisms and that are more production-efficient. On the other hand, older companies operate with old technology and machinery that does not have contamination control mechanisms. Concentrating plant sluices carry discharges of contaminant elements such as sulfurous anhydride and heavy metal particles like sulfur dioxide.

There is one particular problem connected with informal gold mining, whose impact is directly related with the use of mercury, which contaminates rivers, and with the use of frontal loaders, which destroy soil and vegetation and increase water turbidity due to the presence of suspended solids. The different mining activities affect forest reserves, destroy vegetation, ruptures the soil's conformation and changes relief configuration and atmospheric contamination.

In some countries, the use of hydraulic monitoring in mining activities produces the removal of important quantities of fertile soil.

2. Urban and Industrial Environment

Despite efforts carried out in environmental management during the last thirty years in Latin American and Caribbean countries, there are significant problems related with the contamination and deterioration of renewable natural resources and of the environment in general, that affect the quality of life and the economic development of these countries. The Andean region is no exception. Economic reforms such as commerce liberalization and direct foreign investment flows have exerted important effects on these countries' contamination, partly due to the change in productive specialization towards a more contaminating industry, and partly due to an increase in production. After effecting economic openness emissions increased substantially, especially in export-related activities due to the dynamism the export sector achieved. Exports on manufactured goods increased, representing 57% of all exports in 1980 and constituting 77% in 1995. The present trend is an increase in emissions as per capita income increases[11].

Table 1. Industrial Production vs. Increase in Contamination Intensity

Country	Industrial Value Added* 1980-1982	Industrial Value Added * 1992-1994	Increase in Contamination Intensity**
Bolivia	3,747	3,972	4,034
Colombia	10,336	16,421	12,439
Peru	13,402	13,521	- 4,935

* Million dollars in 1987

** Tons of contaminants

Source: CEPAL

[11] CEPAL, 1999. Industrial Contamination in Latin America Before and After Economic Reforms (Contaminación industrial en países latinoamericanos pre y post reformas económicas). In Medio Ambiente y Desarrollo, No. 22, December.

Table 2. Exports vs. Increase in Contamination Intensity

Country	Industrial Value Added* 1980-1982	Industrial Value Added * 1992-1994	Increase in Contamination Intensity**
Bolivia	669	623	-4,039
Colombia	1,151	4,206	18,221
Peru	1,609	3,791	18,230

* Million dollars at current value
** Tons of contaminants
Source: CEPAL

At the same time, the region has experienced increased urbanization rates, not only from demographic growth, but also from rural population migrations into the cities. In all these countries urban population comprises more than 60% of the national population, with extreme cases like Venezuela where more than 87% lives in urban centers.

A planning process has not accompanied population growth, thus generating shortages in the supply of basic public service utilities, high contamination levels, human settlements in high-risk areas, traffic disorder and chaotic occupation of space in general.

Among the chief urban environmental problems are the deterioration of drinkable water and basic sanitation public service utilities, air and water contamination, and inadequate collection and disposal of solid and hazardous wastes.

Water and Sanitation

The administration of the drinkable water — usually centralized — and the complexity of legal and institutional frameworks hamper recovery of distribution costs and affect the operation, maintenance and quality of the service. Additionally, some of the region's countries adopted policies related with financing new distribution systems without doing any real investments aimed at solving waste disposal problems or improving already existent systems. Water is wasted in urban and rural areas despite its shortages, and yet very little has been made to solve this problem or improve the quality of this service, thus causing infectious diseases such as diarrhea, hepatitis and dengue fever.

WATER AND SANITATION						
	REGION	**BOLIVIA**	**COLOMBIA**	**ECUADOR**	**PERU**	**VENEZUELA**
Population that has access to drinkable water						
Rural 1990 – 1997	49	32	56	49	33	75
Urban 1990 - 1997	85	86	97	80	84	80
Total 1990 - 1997	72	63	85	68	67	79
Population that has access to sewer systems						
Rural 1990 – 1997	42	37	56	49	37	30
Urban 1990 - 1997	84	74	97	95	89	64
Total 1990 - 1997	70	58	85	76	72	58

Source: Appendix 1

One of the resource's most important implications in terms of human settlements is related with effects on public health. The Andean region has average infant mortality rates of 15.9 from acute diarrhea, with extreme cases such as Bolivia and Ecuador where in 1996 20 of 100 children younger than age 5 died from this kind of diseases. (Appendix 1)

The deaths, a consequence of water transmitted diseases, are attributed both to the supply of drinkable water and to the disposal of wastewater[12]. It is estimated that between 70 and 80% of the water consumed by the urban population returns with a great contaminating potential in the form of wastewater, generally with high concentrations of suspended solids, sedimentable solids, nutrients, pathogenic organisms. However, efforts to reduce contamination in wastewater — and consequently in bodies of water — are scarce throughout the Andean region. There are very few treatment plants, and some of these are only basic and/or with low efficiency levels. Most of the sewage is thrown into rivers without receiving any previous treatment. The volume of treated wastewater coming from sewage systems is very low, being this 30% in Bolivia, 10.8% in Colombia, 5% in Ecuador, 14% in Peru, and 10% in Venezuela.

The use of bodies of water as receptors of wastewater entails the deterioration of health and sanitary conditions at bcal levels, of the quality of water for future use, of public urban space, and of the natural conditions of recipient basins and of its biological populations and ecosystems in general. It also generates sources of infection and propagation of insects and rodents, the presence of foul odors, aquiferous contamination, landscape deterioration and the need for big investments on environmental recovery.

The contamination generated by the industrial sector and other activities such as mining is considered more damaging for urban environment than the one coming from domestic sectors, since its discharged waters usually contain chemicals or heavy metals.

Air

Repercussions of atmospheric contamination are not only observed in effects on public health — cardiac and respiratory failures, respiratory illnesses — but also on global phenomena such as the greenhouse effect, acid rain and damages to urban infrastructure.

Industrial activity and the motor vehicle sector are responsible for atmospheric contamination in the Andean region's urban centers. In most cities, the measurement of contamination due to gasses and particles surpasses quality norms. Some cities within valleys whose geographical characteristics and atmospheric conditions in general — and of winds in particular — hinder adequate ventilation, have high concentrations of particles and nitrogen oxide.

[12] Diseases such as diarrhea, typhoid fever and hepatitis are directly related with the disposal of wastewater. Contaminated water adhered to food, the exposure of soil contaminated with excrements and transmission vectors such as insects that live in this water, are among the main sources of infection.

Pollutant elements found in high concentrations are ozone, hydrocarbons and carbon monoxide, as well as metallic elements such as lead, nickel, cobalt, zinc, and other metals such as cadmium, chromium, manganese, iron, copper and vanadium. Most of these come from industrial activities, refuse burning in open areas, unpaved roads or areas stripped of vegetation, and in some cases, mining exploitation near population centers.

Likewise, the biggest emissions of SOx, NOx and suspended particles[13] are produced by the manufacturing industry, burning in open areas, extractive exploitation and the use of fossil fuels in processes to generate energy. This last activity furnishes the largest quantity of contaminants due to the quality of the fuels and the technology used. The second most contaminating activity is the manipulation and processing of fine solid materials, followed by oil refining, basic chemical industry and petrochemistry.

Despite regulatory endeavors, most enterprises in the Andean industrial sector do not have emission control systems, and consequently, a large number surpasses permissible limits established in the corresponding regulation[14]. Contaminant machinery and technology of low efficiency characterize industrial sites.

Motor vehicles are the second source of contamination. This contamination is related with multiple factors such as the number of vehicles, their obsolescence, the lack of adequate infrastructure, fuel price and quality, maintenance of the vehicles, mass transportation deficiency, insufficiency of control and tax instruments, and the private vehicle culture. Problems related with big city transportation — such as traffic congestion — generate high concentrations of CO, SO_2 and particles.

In regard to contamination by mobile sources, government initiatives aimed at exerting control over atmospheric contamination have met, in some cases, strong opposition from contamination generating sectors, particularly among transporters and vehicle fleet owners. Moreover, economic obstacles persist for contamination control related with the production of unleaded gasoline and octane facilitators.

Solid Wastes

Solid waste generation and handling still constitutes one of the major environmental problems in urban centers. In general, handling has been carried out only in function of rendering refuse collection services parting from sanitary considerations, without paying attention to its final disposal. This service has been characterized by covering an insufficient area, using inadequate equipment and outdated tariffs. This bars improvements on this service and gives rise to methods such as unloading into open areas

[13] In Colombia, fixed sources generate 99% of the particulated material and the sulfur oxides and 73% of the nitrogen oxides in the industrial areas. (Política Nacional de Producción más Limpia, 1997, cited by MMA, 1999). In 1989, the concentration of particles in suspension surpassed the100 µg/m³ limit in four important cities: Barranquilla, Bogota, Cali and Sogamoso (MMA, 1999)

[14] In Venezuela, 45% of the industry is not equipped with emission control systems and 30% produce emissions that surpass permissible levels.

— accompanied by uncontrolled burning — or into bodies of water, without carrying out real efforts to treat or use these wastes.

The effects of said vision are observed in the quantity, heterogeneity and dangerousness of the wastes that are currently generated[15]; the loss of potential to use and take advantage of the materials these wastes contain; the limited treatment of wastes without taking into consideration their environmental impact, not only during the collection and transportation phases, but also during the production of goods and services; the inadequate methods for final disposal concerning location, construction and operation of garbage dumps and sanitary landfills; the contamination of aquifers with lixivium from the wastes and from uncontrolled burning; and the scant participation of citizens in environmental handling of wastes.

The problems and the general lack of planning that affect the sector are related with lack of information on the production, type, handling and potential use of the wastes that are generated by the various activities; scant institutional development; lack in technical, human and financial resources dedicated to control; and the citizens' low education and participation levels. In some cities there is still scant experience on services managed by third parties, a situation that leads to problems in bidding processes, contractual negotiations and supervision of the services rendered.

3. Competitiveness

Due to the globalization of markets, exports have become a factor of prime importance for the economies of developing countries. For this reason, they must face changing conditions and new regulations that must be complied in order to maintain themselves successfully in the world market. These new regulations are closely connected with green markets tendencies, ecolabeling, environmental certifications and cleaner productions, factors that impose new and different restrictions on exported products.

The region's countries perceive business opportunities in increasing their offer of competitive ecological services in national and international markets. In this sense they consider top priority identifying green products and services derived from sustainable exploitation of natural resources and biodiversity, and disseminating, promoting and supporting green markets projects.

Likewise, preventive action and permanent improvement of environmental performance is essential to adjust entrepreneurial performance to the new standards and requirements of the markets. Environmental administration systems are beginning to include criteria

[15] In most countries there is almost no information on the quantity of industrial and hazardous waste produced, their degree of dangerousness, or their risk on health or on the environment. For example, in Ecuador there is no hazardous wastes classification or inventories on these. Likewise, wastes from governmental entities, commercial establishments, hospitals, boats and airplanes are handled like any other waste and transported with domestic wastes (BID, 2000). The production of hazardous wastes in health establishments throughout the Andean region was estimated at 32,580 tons per year, being Bolivia the country with the least production (1,916 tons per year) and Venezuela the biggest producer (10,337 tons per year).

such as the ISO 14000 norms which will help improve environmental administration standards, facilitate adoption of preventive contamination measures and guide production towards a continuous improvement of products and services.

The introduction of environmental factors in consumption decisions is more frequent every time. Each time more markets demand more information on the environmental impact of the products and services offered, and throughout their selection they favor — each time more frequently — those products that are least hazardous for the environment. Ecolabeling becomes an important tool to introduce the region in international markets, thus generating an interest for "green" products in national markets. The introduction of this variable in all the production cycle becomes a priority if the region wants to have access to the markets, not only with clean products, but also with all its production, distribution, consumption and final disposal process.

The new vision of a cleaner production within the environmental administration becomes additional investment opportunity for companies, not an additional cost. The sectors are now striving to market their products more effectively in international markets, while increasing at the same time their efficiency in the use of consumables and reducing the costs derived from refuse generation. Correspondingly, relationships with the community improve substantially, reducing their vulnerability to public opinion complaints.

II. ENVIRONMENTAL ADMINISTRATION ACHIEVEMENTS

During the last decade the Andean region has accomplished considerable progress in environmental administration and natural resource management and conservation. National environmental policy, which began to be implemented at the onset of the 90s, has been characterized by endeavors to achieve adequate legislation and institutions, financial resources for environmental administration, and mechanisms to generate citizen participation. In four of the five countries in the region there were important legal and institutional reforms that led to the creation of Ministries and other institutions with the characteristics and legal capacity to conduct legal and regulatory activities aimed at changing its administration concept, from a protectionist understanding, to a sustainable exploitation vision (Table 3).

In some cases, environmental achievements are circumscribed to constitutional structural changes. In Colombia and Ecuador, new constitutions enacted in 1991 and 1998 defined as a state duty everything concerning their defense of the nation's natural and cultural heritage and environmental protection. Based on new constitutional principles, both countries issued laws that established the principles and guidelines of environmental policies; and defined the governing body on environmental affairs and the functions of this body; determined new obligations, responsibilities, and participation levels of communities — as well as of the public and private sectors — on matters connected with environmental administration. In Bolivia, one of the most important changes in the environmental administrative structure was carried out under the legal reform of the executive by creating the Ministry of Sustainable Development and the Environment (Ministerio de Desarrollo Sostenible y Medio Ambiente). At the same time, Peru experienced an important change upon issuing the Environmental and Natural Resources Code (Código del Medio Ambiente y los Recursos Naturales) in 1990 that furnished a clearer orientation on environmental administration. This regulatory framework, which created the National Environmental System (Sistema Nacional Ambiental), introduced among other things the contaminant - payer principle and highlighted the importance of environmental factors in national productive activities. In 1994 the National Council for the Environment – CONAM (Consejo Nacional del Ambiente) was created as an alternative to the ministerial administrative model developed in the other countries of the region[16], and whose chief goal was to articulate environmental competencies that had been previously disperse in sectoral units and municipalities.

[16] Environmental administration in Peru has a transsectoral vision. In 1999, the Framework Law for Private Investment Growth (Ley Marco para el Crecimiento de la Inversión Privada) defined a model of environmental administration where environmental management and responsibility remain within each sector, thus making each Department an environmental authority within its sector. However, this actually generates some contradictions, since the Departments become arbiters and part of the environmental problems by being responsible not only of promoting production and economic development in their respective sectors, but also of conserving and protecting natural resources and the environment.

Table 3. Judicial Account of Andean Region Environmental Administration: The New Reforms

Country	Judicial Norms
Bolivia	✍ 1990. Supreme Decree for the Establishment of a Historical Ecological Pause (Decreto Supremo para el Establecimiento de la Pausa Ecológica Histórica), in respect to a forest pause to allow for the reorganization of processes related with the exploitation of forest resources. ✍ 1992. Law 1333 on the Environment (Ley 1333 del Medio Ambiente), whose object is environment protection and the promotion of sustainable economic development to improve the quality of life of the population. ✍ 1993. Law on Executive Ministries (Ley de Ministerios del Ejecutivo). The Ministry of Sustainable Development and the Environment was created with the object of achieving national sustainable growth and acting as governing body of the National Planning System (Sistema Nacional de Planificación). ✍ 1995. General Regulations of the Law on the Environment (Reglamento General de la Ley del Medio Ambiente), which stipulates environmental policies, its planning processes and instruments, the judicial-administrative regulations, norms and procedures, and which defines competencies and hierarchies, instances for citizen participation, and the administration of economic and financial resources. It indicates the institutional framework to establish prevention and environmental control systems and to establish environmental administration competencies of municipal governments.
Colombia	✍ 1993. Law 99 on the Environment (Ley 99 del Medio Ambiente). Creates the Ministry of the Environment (Ministerio del Medio Ambiente), reorganizes the public sector in charge of administration and conservation of renewable natural resources, organizes the National Environmental System and dictates the foundation of the Colombian environmental policy based on sustainable development principles.
Ecuador	✍ 1999. Law on Environmental Administration (Ley de Gestión Ambiental), establishes, among other things, principles and guidelines on environmental policy and the functions of the Ministry of the Environment, and determines the obligations, responsibilities and participation levels of public and private sectors in environmental administration. Furthermore, it indicates permissible limits, controls and sanctions.
Peru	✍ 1990. Environmental and Natural Resources Code. Introduces orientations, dictates norms in a more integral form. ✍ Creation of the National Council for the Environment – CONAM, as part of a process for articulating environmental competencies. ✍ 1997. Structural Framework on Environmental Administration (Marco Estructural de Gestión Ambiental - MEGA). Implementation of national structure of environmental administration that ensures an adequate coordination between the different government levels and an efficient administration of conflicts, superimposition and competence vacuums, as well as the strengthening of administrative capacity and the coordination between the private sector and the communities.
Venezuela	✍ 1976. Organic Law on the Environment (Ley Orgánica del Medio Ambiente) Establishes governing principles for environmental improvement, conservation and defense. ✍ Organic Law on Territorial Regulation (Ley Orgánica para la Ordenación del Territorio) Strengthens competence of the Ministry of the Environment and Natural Resources (Ministerio del Ambiente y Recursos Naturales) with respect to planning and physical organization of the territory. ✍ 1989. Organic Law on Decentralization (Ley Orgánica de Descentralización). Regulates state and municipal government participation in environmental policy formulation, execution and evaluation. ✍ 1992. Penal Statute on the Environment (Ley Penal del Ambiente): Categorizes environmental crimes and describes types of penalties.

In Venezuela, where the creation of an environmental governing body (Ministry of the Environment and Natural Resources) was carried out early in time[17], changes have also been made in constitutional and legal aspects. The new constitution introduced a new state vision, particularly on what concerns generational rights and responsibilities, protection of environmental heritage and resource sustainable exploitation and administration, among other things. Recent legislation has reinforced the Ministry in regard to planning and physical organization of the territory and has changed its orientation converting it into an institution that promotes sustainable development from a perspective of social justice, the improvement of the quality of life and the preservation of ecological equilibrium, and environmental policy based on joint participation and responsibility among various sectors.

1. Environmental Policy

Since the Rio Summit, or more specifically since the mandates and compromises of Rio 92 and Agenda 21, the region's countries have incorporated the principles of sustainable economic development in their environmental policy. The region has developed numerous plans, programs and strategies converging around priority aspects such as biodiversity, forest resources, water, environmental quality and institutional administration.

Natural Resources

Forest Resources[18]

Forest plans, programs and strategies developed in the region during the last years have focused on development of conservation activities, recuperation of the forest cover and maintenance of existent forest plantations, using tools such as sustainable management plans as well as those related with the integration of the community in this enterprise.

In this sense, efforts carried out by some countries are remarkable on aspects such as the definition, delimitation, and land allocation in favor of Black and indigenous communities and ancestral users; and forest regulation and concession (See Appendix 2). In Ecuador, during the year 2000 more than 15,000 hectares of forest heritage were allotted to ancestral communities and 12,900 hectares of mangrove swamp forests were allotted to ancestral users. Likewise, 45 communities were identified as beneficiaries of forthcoming concessions, and agreements have been reached with the Siona and Secoya indigenous communities to set boundaries on their territories.

On the other hand, Colombia, with its green plan directed towards the recuperation of forest cover, contracted during the last three years the establishment of at least 25,000 hectares of protection and protection-production plantations and the maintenance of

[17] In 1977 Venezuelan legislation reassigned the diverse responsibilities related with environmental administration — previously dispersed in several organizations — to the Ministry of the Environment and Natural Resources, the first ministry of this nature created in all Latin America.
[18] For more details on results of administrative efforts, see Appendix 2, Section A.2.1.1.

40,000 hectares of plantations established during that period. In 1998 the generation of 2,482 new permanent jobs were reported related with the establishment of new plantations. In regard to title deeds, 167,561 hectares were granted to Black communities and were demarcated, and indigenous reserves were constituted and demarcated in an area corresponding to 69,727 hectares. Up to July 200, 32 of 40 planned indigenous reserves had been constituted.

Bolivia, due to the implementation of its Forest Law (Ley Forestal) in 1996, has to date 6.06 million hectares managed under forest concession. With this new law, eight related technical norms were formulated detailing, among other things, activities for the development of maintenance plans, forest inventories and activities for the extraction of timber-yielding and non timber-yielding products. To 1998, 96 general forest management plans had been made for concessions, private properties and communal lands. Likewise, 41.2 million hectares were declared permanent production zones as an administrative measure on territorial regulation for the conservation and sustainable management of tropical forests.

Although Peru does not report particular methods for forest policy, inventories report a total of 605,825 reforested hectares up to 1998. In that year alone, 67,625 hectares were reforested[19].

Venezuela has signed agreements with the national oil industry for basin reforestations. The National Reforestation Company (Compañía Nacional de Reforestación - CONARE) executes the same kind of projects.

Biodiversity[20]

The region's biodiversity administration progressed with the consolidation of national policies and strategies. In this context, besides the aforementioned granting of title deeds and concessions, it worked on the design, implementation and consolidation of systems for protected area. Colombia structured the Protected Areas National System (Sistema Nacional de Áreas Protegidas) and to date has conducted nearly 45 investment projects in different areas. It is now conducting eight participatory projects for the Protected Areas National System. In Ecuador, the creation of the system has made possible the expansion of protected area zones, and Bolivia is set on designing management plans for prioritized areas and the establishment of administration committees.

One significant improvement is related with the protection of traditional knowledge, viewed in the context of access to genetic resources. In this sense, Peru created the publication titled "Proposal on Protection Regime on the Collective Knowledge of Indigenous Communities" ("Propuesta de Régimen de Protección de los Conocimientos Colectivos de los Pueblos Indígenas") and presented a proposal for the protection of intellectual property rights on traditional knowledge from indigenous and local communities. This initiative is being prepared for the WTO World Conference in Seattle.

[19] CONAM, 2001a
[20] For further details on these undertakings see Appendix 2, Section A.2.1.2

Likewise, Bolivia worked an interinstitutional cooperation agreement to carry out the National Study to Create Legal Instruments for the Protection of the Cultural Heritage of Indigenous and Native Communities (Estudio Nacional para la Elaboración de Instrumentos Legales de Protección del Patrimonio Cultural de los Pueblos Indígenas y Originarios).

The implementation of programs for conservation and sustainable management of species has obtained important results. In Bolivia the Program of Conservation and Management of the Vicuna (Programa de Conservación y Manejo de la Vicuña) managed, from 1996 to date, population recuperation of 15,356 individuals. In this same context, the country carried out activities to raise public awareness and provide training to different sectors and declared 250 areas of communal management. Under the framework of the Convention on International Trade in Endangered Fauna and Flora Species - CITES, it could lift the zero quota on vicuña fabric exports. This year production of vicuña fiber was initiated, with a result of 80 kg stockpiled for posterior transformation and marketing. With the National Lizard Program (Programa Nacional de Lagarto), on 1999 the Beni Department harvested and exported, with certification and sealing, 30,000 skins to an amount of US $1.2 million.

Another important biodiversity improvement is related with the generation of knowledge. Numerous studies have been made throughout the region to improve knowledge on biodiversity. Those focusing on the making and updating[21] national flora and fauna inventories stand out. Other results on biodiversity policies are related with two international agreements: CITES and the Convention on Biological Diversity (Convenio sobre la Diversidad Biológica). These results shall be mentioned below.

Water Resources[22]

Water resources are one of the most important priorities for the region, since in most cases they constitute the articulating core of environmental policies. Due to this, efforts have focused on establishing integral administration and protection systems of basins. In Colombia, conservation and sustainable growth areas were determined. These are known as strategic ecoregions. Due to their physical and biological characteristics, they constitute permanent water factories and represent a guarantee for long term sustainable exploitation. To date, the environmental administration has carried out the delimitation and general characterization of the seven national strategic ecoregions[23], identified — through participation processes — 90 continental regional strategic ecoregions and 8 marine and coastal ecoregions, and delineated organization and environmental administration plans for the Colombian Massif and the Perija Mountain Range. In Bolivia, the National Planning System defined three big macroregions starting from the

[21] Venezuela, for example, carried out a preliminary fauna inventory at Tirimiquire Massif and Buja – Marichal River. Similarly, it conducted an evaluation on the "Rancho Grande Biological Station Museum National Inventory of Wild and Aquatic Fauna" ("Inventario Nacional de Fauna Silvestre y Acuática del Museo de la Estación Biológica de Rancho Grande").

[22] For more details on results of this endeavor see Appendix 2, Section A.2.1.3

[23] Characterization base: National localization layout, regional and local layouts, characterization of municipalities and follow up charts on formulation processes of territorial regulation plans.

macrobasins that encompass the country, in an effort to articulate in a coherent way the natural areas with the political and administrative demarcations, so as to encourage an integral use of the resources. In Peru, technical work teams were established to administrate the basins of Osmore and Moquegua, work in the recuperation and conservation of Chinchaycocha Lake and work in the decontamination and preservation of water in rivers from the Piura region. In Venezuela, proposals were delineated for the administration and conservation of the upper basins of the Hueque (Falcon State), Uribante (Tachira State) and Manzanares – Carinicuao (Sucre State) Rivers.

Other important results in environmental administration were related with activities developed within the frameworks of international agreements at the Ramsar Convention and the United Nations Convention to Combat Desertification, results that shall be detailed hereunder.

Marine and Coastal Resources[24]

The chief achievements were related with the administration of mangrove swamp protection and conservation, the establishment of integrated administration of coastal zones and activities related with the contamination of this resource.

Ecuador, within the framework of its Coastal Resource Administration Program (Programa de Manejo de Recursos Costeros), conducted the Study on Mangrove Swamp Protection (Estudio sobre la Protección de los Manglares), and created a committee for interinstitutional protection and conservation of mangrove swamp ecosystems. In like manner, Colombia defined strategic lineaments for mangrove swamp conservation, zoning and sustainable administration, based on its Mangrove Swamp National Program (Programa Nacional de Manglares) and designed the binational project Colombia – Ecuador for the joint management of a bordering zone of mangrove swamps and associated resources. Furthermore, it established plans for integrated administration of coastal zones and conducted a regional agreement for the establishment of Integrated Administration Units (Unidades de Manejo Integrado) for coastal basins, developed as a pilot program.

In regard to resource decontamination programs, the following stand out: the creation of a technical group for the decontamination and preservation of the bay waters of Sechura, Paita and Talara in Peru and the development of a National Program for the prevention, control and evaluation of terrestrial and marine contamination sources in Colombia. This country established a surveillance network for the conservation and protection of marine and coastal water quality, in order to contribute with scientific referents on environmental quality.

[24] For more information see Appendix 2, Section A.2.1.4

Soils[25]

Although the region's environmental sector has not accomplished major programs related with soil resources[26], the activities encompassed by the forest, biodiversity and water resources programs have a positive impact on soil resources. However, national and regional plans against desertification have been carried out within the framework of the United Nations Convention to Combat Desertification, and subregional action programs have been created consolidating the participation of some of the region's countries[27]. Peru created technical work groups to preserve agricultural soils from degradation due to irrigation methods and design the Plan to Combat Desertification in Arequipa (Plan de Lucha contra la Desertificación de Arequipa). Bolivia created the Special Project for the Rehabilitation of Impoverished Soil (Proyecto Especial de Rehabilitación de Tierras Degradadas) for Tarija's Valle Central. On the other hand, the Ministry of the Environment and Natural Resources (Ministerio de Ambiente y Recursos Naturales) in Venezuela, conducted agreements with the national oil industry to carry out conservation practices at the Barinas and Tachira soils.

Urban Environment[28]

Air

The chief efforts in relation with atmospheric quality have centered on issuing norms related with quality standards and permissible emission limits and on improving monitoring systems.

In terms of programs, Peru's National Program for Monitoring Air Quality (Programa Nacional de Vigilancia de la Calidad del Aire), whose objective is determining air quality in the main cities of the nation and its relation with its citizen's health, as well as evaluating the impact of established regulatory and technical measures in their efforts to reduce contamination. During the first phase of this program, base line studies were conducted in Lima and Callao, Arequipa, Trujillo, Cusco[29], Iquitos, La Oroya, Ilo, Chimbote, Tacna, Huaraz and Cerro de Pasco. In like manner, as part of a quality monitoring network subprogram, five permanent monitoring stations were established in Lima and Callao; two were established in Arequipa, and six in Ilo. They also created the Administrative Committee of the Clean Air Initiative (Comité de Gestión de la Iniciativa del Aire Limpio), which coordinates public and private organizations in order to arrange actions aimed at integrating air quality administration. Arequipa, Lima, Chimbote and La

[25] For more details on the results of these undertakings see Appendix 2, Section A.2.1.5.
[26] However, coordination activities have been carried out with Agriculture Ministries and Secretariats. These have soil administration plans and programs that are more elaborate.
[27] American Puna Program (Programa Puna Americana — Argentina, Bolivia, Chile, Ecuador and Peru) and American Chaco Program (Programa Chaco Americano) — Argentina, Bolivia and Paraguay)
[28] For more details on the results of this endeavor see Appendix 2, Table A.2.2
[29] The Cusco municipality banned the circulation of vehicles that surpass the established permissible limit. Due to this measure, the number of vehicles requesting reworking services has increased from 16 to 44 vehicles per day.

Oroya also created regional decontamination plans and technical groups in charge of developing an air decontamination strategy for Arequipa, Chimbote and La Oroya.

In Venezuela, the Secretariat of Air Quality of the Ministry (Dirección de la Calidad del Aire) carries out national air quality evaluation programs (through a national air quality evaluation network), control programs on atmospheric contamination caused by fixed and mobile sources, and national evaluation and supervision of environmental laboratories specialized in the evaluation of atmospheric contaminants. In Colombia, the implementation of atmospheric contamination control programs has provoked the technological improvement of new motor vehicles, reducing emissions by about 80%, approximately 290,000 tons of emissions (See Box 1). Likewise, seven air quality-monitoring networks were established in the main cities.

1. Programs for Air Quality Control in Bogota: Mobile Sources

In Colombia, the city of Bogota is implementing a series of programs designed to control and reduce urban atmospheric contamination originated by mobile sources. Details on the programs is presented in the following box:

Program	Comment
1. Conversion of vehicles to natural gas	420 converted vehicles; 302 of these certified
2. Vehicular emission inspection and certification	Data not available
3. Mobility improvement:	
✍ *"Pico y placa" (Peak Hour/License Plate)*	✍ Average restriction of 5,454 vehicles a day (Monday through Friday) ✍ 13% reduction in concentration peaks during peak traffic hours
✍ *"Transmilenio" (Transmillennium)*	✍ Development of main avenues ✍ Fixed stations ✍ Main avenue routes ✍ Feeder routes ✍ Replacement of public utility service vehicles ✍ Bi-articulated buses ✍ 25 diesel buses. 95 natural gas buses under negotiation
✍ *"Ciclo-rutas" (Bike Routes)*	✍ Alternative means of transportation ✍ Routes parallel to main city routes ✍ 300 kilometers of routes ✍ Estimated reduction: 4,300 tons of contaminant emissions
✍ *"Sin mi carro" (Without My Car)*	✍ Urban experience. No motor vehicles circulate during one given working day. Results of Thursday February 24, 2000 vs. an average Thursday: - PM10 reduced 23% - CO reduced 28% - NO2 reduced 9% ✍ In relation with the four main avenue routes monitored with respect to the 4 previous days' average - CO reduced 47% - SO2 reduced 86% - PM10 increased 3% - Sound pressure levels reduced 3%

Source: SANCLEMENTE, X.

Water and Sanitation

The most important progress is related with the administration of urban wastewater. Peru created regional water decontamination plans in Arequipa, Lima, Chimbote and La Oroya and technical groups for treatment of residual water at Moquegua. Colombia designed its National Plan for the treatment and final disposal of municipal wastewater, as a technical instrument to facilitate the decision-making process on investments. It also reorganized the technical regulations for the drinkable water and sanitation sector, articulating it within the aqueduct, sewage and residual water treatment area. The Program of Urban Quality (Programa de Calidad Urbana) managed project financing for adequate disposal of municipal wastewater, for an amount of US $ 1.4 million.

Another interesting practice was the implementation of the first system in the region for the imposition of charges for water contamination, which imposes fees over generated contaminant discharges, both at an industrial as well as a domestic level. This program began to be executed in 1997 and to date it has been established by 23 of the 37 Colombian environmental authorities. The first evaluation of this program's results is being carried out currently (See Box 3).

In regard to the availability of the resource, Bolivia designs a project to execute the "Water Balance at Basin Level" ("Balance Hídrico a Nivel de Cuencas") to provide basic information on the supply of water from basins. Likewise, this country signed a technical and financial cooperation agreement with UNESCO's International Hydrologic Program (PHI-UNESCO) to structure the sector. This agreement provides for the structuring and operation of the National Water Authority (Autoridad Nacional de Aguas) and the institutional structuring at a departmental level, which will provide the means to administrate this resource comprehensively and efficiently.

Solid and Hazardous Wastes

Activities in this field have focused on establishing adequate collection, disposal and recycling practices, and in an integral management of this process.

As a result of the Program for the Monitoring of Domestic Solid Waste Management (Programa de Vigilancia de la Gestión de los Residuos Sólidos Domésticos) established in the Peruvian districts of Ate, El Agustino, Santa Anita, La Molina, Lurigancho, Ricardo Palma, Santa Eulalia and Chaclacayo, waste collection improved and the sanitary risk was considerably reduced in 2000 with respect to previous years. In Peru, too, agreements were signed with some municipalities to execute the Program of Integral and Sustainable Management of Urban Waste (Programa de Gestión Integral y Sostenible de Residuos Urbanos). It also established technical groups for the integral management of urban waste at the Piura region. Furthermore, activities related with recycling and hazardous waste handling were carried out in the region. (Appendix 2).

Competitiveness [30]

In order to improve competitiveness in international markets, programs on green markets, biotrade and cleaner production were established in the region. Although most of these programs are incipient, to date progress has been achieved on the identification of products, markets, producers' information[31], certification, financing and potentials[32].

[30] For more details on the results of these undertakings see Appendix 2, Section A.2.3.

[31] With the support of the Netherlands government, Colombia has developed activities aimed at improving information on markets, products, contacts and institutional support. Within this framework, a web page and four modules were designed: information, network of entrepreneurs dedicated to biobusiness, investigation on markets and financial incentives.

[32] Peru carried out a diagnosis on the potentials and possibilities of biotrade in the country, in the following areas: biological, legal, commercial and in agribusiness.

The progress obtained from the application of cleaner production programs executed during the last years must be highlighted. National and regional centers on clean production were established throughout the region. In this context, Ecuador created the Corporation for Clean Development Promotion (Corporación para la Promoción del Desarrollo Limpio), with public and private participation, as an authority to manage and promote funds for environmental businesses and services.

Recently, Peru published guides on better environmental practices for the tanning, paper and foundry sectors. Correspondingly, during the last three years Colombia wrote 19 environmental guides for the hydrocarbon, energy, mining, construction materials and transportation sectors. This country has signed about 15 cleaner production agreements with different sectors, obtaining concrete results in contamination reduction along the industrial corridors of Mamonal – Cartagena, Eastern Antioquia and Valle del Cauca's sugar producing sector. Similarly, Ecuador has worked jointly with some business sectors[33] to increase its market competitiveness.

2. Legislation and Regulation

The region's countries have a long history on environmental legislation and regulation. This legislation, however, has been characterized by its heterogeneity between the various economic sectors and by the unequal applicability of existent norms. In most cases, the norms are confusing, contradictory, inflexible and inapplicable, imposing compliance with high economic costs and creating confrontational situations.

As of now, regulative efforts have centered on regulating important environmental aspects that lacked regulation, and on revising existent norms so as to articulate them and eliminate those that are obsolete, superposed or contradictory.

In addition to new laws determining the region's present environmental administration framework, during the last five years the countries passed laws and norms on sustainable forest development, sustainable protection and exploitation of biodiversity, licensing, environmental warrant processes, environmental impact studies, integral management of water and solid waste and environmental administration (See Appendix 3).

As regards forests and biodiversity, laws have been passed to regulate forestry and sustainable use and protection of forest lands, develop national strategies to stop deforestation processes, simplify the application of intellectual property rights on traditional forest knowledge, develop mechanisms to ensure possession of land, promote reforestation and forestry activities in general, regulate sustainable use and conservation of species, and regulate access to genetic resources and investigation activities[34].

[33] National Federation of Chambers (Federación Nacional de Cámaras), Industrialist Chambers (Cámaras de Industriales) of Pichincha, Guayas, Azuay and Manta.

[34] In the year 2000 Colombia issued the Statute of Scientific Investigations (Estatuto de Investigaciones Científicas), which sets the lineaments for scientific investigation on biologic diversity.

Laws and regulations related with environmental impact studies and the granting of permits and licenses were issued in almost all countries in the region. These mechanisms were developed as control instruments to ensure completion of environmental impact studies as prerequisites for granting exploitation or project development permits, thus preventing, controlling and mitigating possible effects on ecosystems.

Progress achieved on norms on maximum permissible limits and norms on environmental quality related with air, noise and solid waste, have been remarkable in the entire region. On water, Venezuela issued in 1998 sanitary norms on drinkable water quality and norms for classifying and controlling the quality of bodies of water and liquid discharges, which substituted and complemented previous regulations, and issued its new regulations on air.

Table 4. Venezuela: Regulation on Air Quality and Atmospheric Contamination Control

Regulation	Characteristics
Air quality and atmospheric contamination control	Standards for air quality and fixed source emission limits for CO_2, suspended particles, CO, nitrogen dioxide, ozone, hydrogen sulfur, lead in suspended particles, hydrogen fluoride, fluorides, hydrogen chloride, chlorides.
Emission of fixed sources	Norms for the control of exhaust and evaporative emissions coming from mobile sources, gasoline or diesel.
Certificates on emissions coming from mobile sources	Procedures that must be followed by gasoline or diesel motor vehicle manufacturers, assemblers or importers in order to obtain a mobile source emission certificate.

Source: The authors, based on information from the Ministry of the Environment and Natural Resources, 1997

Regulatory efforts carried out throughout the region bear relation with the creation of financial instruments to protect natural resources and support environmental administration. Four new environmental funds were created to channel resources and ensure stable long-run financing of plans, programs, projects and activities for resource conservation and sustainable development that stimulate decentralization, reinforce territorial environmental administration and promote participation from the private sector.

3. Institutionalization

Until some years ago, the structure of the state in environmental aspects was sectoral and centralized. Environmental administration carried out by each sector was of a different nature, with little or no coordination between these. The development of environmental institutionalization had not created clear political definitions in terms of information, financial and human resources. Participation from the private sector was nonexistent.

The challenges imposed on the new legal and regulatory frameworks for environmental administration have brought forth important changes in the structure of the institution. There are tree major fields of action where undertakings are being executed and where concrete results on environmental administration and responsibility have been achieved.

Decentralization and Interinstitutional Coordination

All of the region's countries, some faster than others, are heading towards decentralized environmental administration that implies transference of responsibilities from the central power to regional and local authorities. Correspondingly, special emphasis has been made to implement interinstitutional administration mechanisms that facilitate the design and implementation process of environmental norms and strengthen competent institutions; promote private sector participation in the processes of decision-making, management and supervision of environmental norms; and incorporate criteria on resource sustainable exploitation in various sectors.

That is how in Ecuador the new organic bylaws of the Ministry direct administration towards a model where competencies are transferred to regional entities. Furthermore, the Decentralized Environmental Administration System (Sistema Descentralizado de Gestión Ambiental) became the mechanism of transsectoral coordination, integration and cooperation among the various authorities in charge of the administration of natural resources. This system embraces undersecretaryships and units in charge of environmental administration in the ministries (Energy, Health, Housing, and Public Works) and in Petroecuador. The Ecuadorian model pursues the privatization of some utility services and technical assistance to reinforce its administrative capacity. As part of the process, agreements have been made with provincial councils to define actions and obligations of the parties involved, so as to direct the transference of environmental administration competencies. Interinstitutional and technical cooperation agreements were made with municipal governments to strengthen their environmental administration.

In Colombia, Law 99 of 1993 defined the Ministry of the Environment as governing authority on policies and regulation and as executors, the Regional Autonomous Corporations – CAR (Corporaciones Autónomas Regionales), which are public corporate institutions. Territorial organizations conform these corporations according to their characteristics (if they constitute the same ecosystem geographically or the same geopolitical, biogeographical or hydrogeographic unit). Among their most important responsibilities is administrating, within their jurisdiction, environment and renewable natural resources within the framework of sustainable development. The system, which is thoroughly implemented, also expects these corporations to achieve self-sustainability. They have administrative and financial autonomy, their own resources and legal status.

On the other hand, and derived from experiences obtained by the National Environmental System, a new instrument was developed to support municipalities and environmental authorities and to fortify and consolidate them from a political administrative angle. This new instrument, denominated Municipal Environmental Administration System (Sistema de Gestión Ambiental Municipal), takes into account those lessons learned, among others, from local environmental action plans and environmental agendas, as well as from Local Agenda 21 implementation processes. The publication of a handbook titled "Participatory Planning for Sustainable Development" ("Planeación Participativa para el Desarrollo Sostenible"), becomes a new instrument for the creation of new development

and territorial ordering plans and for the formulation of Administration and Action Plans (Planes de Gestión y de Acción) by environmental authorities.

In regard to interinstitutional cooperation, during the last years the Ministry has drawn up work agendas with other sectors (agriculture, mining, energy, transportation, health, development) and joint agendas with the private sector, concerning clean production and the introduction of environmental criteria in the different sectors' plans and programs.

In Venezuela, the Ministry is undergoing a reorganization process to perform additional functions on renewable natural resources administration under the postulate of sustainable economic use. Efforts are also centered on decentralization of responsibilities and tasks. Environmental policy formulation is not the central government's exclusive responsibility; it is also responsibility of provincial governments and municipalities. The same situation exists on prohibitions and regulations for environmental impoverishing activities, forest resource administration and control, and the encouragement of environmental education.

Peru has not been an exception in administration decentralization. Upon the approval in 1997 of MEGA — Structural Framework on Environmental Administration — they begin a process of implementing a national administrative structure to guarantee an adequate coordination among the different governmental levels and an efficient administration of aspects concerning conflicts, superimposition or competence vacuums. The Environmental Regional Commissions (Comisiones Ambientales Regionales - CAR) defined by MEGA, constitute since then the institutional mechanism for execution and decentralization of environmental administration (see Box 2). Likewise, the organic law for municipalities confers local governments — identified as municipalities — a series of environmental competencies or other competencies that have environmental relevance. Some mechanisms used by these authorities to develop their environmental functions are the operating and building permits, sanitary inspections and forest exploitation permits.

Bolivia, upon issuing its Law on Decentralization and Popular Participation (Ley de Descentralización y Participación Popular) as part of the tools created to achieve sustainable development, established adequate mechanisms to integrate the environment in departmental and municipal development management. The coordination of environmental administration is undertaken by the Council of Ministers (Consejo de Ministros), the National Development Council (Consejo de Desarrollo Nacional - CODENA) and the National Secretariat of Planning (Secretaría Nacional de Planificación) of the Ministry of Sustainable Development and the Environment. At departmental level, the administration is undertaken by the Prefecture and sustainable development departmental secretariats; at a municipal level, by municipal governments.

In regard to public services administration such as environmental cleansing, this has been, since a few years ago, a responsibility of local governments in the Andean region.

Citizen Participation

In some countries — since the establishment of new principles in new national constitutions — efforts have been taken to create systems that allow citizen participation, not only in environmental administration, but also designing local management plans[35].

Currently, great part of the space for community participation in environmental administration is circumscribed to procedures to dispute projects or measures that may threaten the environment. That is how, as participation mechanisms developed during the last few years, public hearings and advice processes have stood out, usually related with procedures to obtain environmental licenses or permits. Likewise, some countries have developed and implemented the right of petition of information, which grants citizens the right to request personally any information related with elements that may produce contamination or damages on public health.

In relation with administration of public funds, Monitoring Committees (Comités de Vigilancia) were created. These are conformed by civil representatives, NGOs and voluntary community organizations. Their main function is to see that public funds assigned to the municipalities are used on production and social development projects.

Achievements are still limited in terms of participation in the decision-making of plans on local environmental administration and sustainable resource management. However, some particular cases stand out — where participation opportunities developed — such as the case of Colombian environmental authorities whose executive councils constitute a first attempt to open spaces for the different representatives of society[36] and the case of the new Environmental Regional Commissions in Peru (see Box 2).

Self-Support

Currently, the Andean region's administrative model is inclined towards the development of mechanisms that finance endeavors of those institutions responsible for the environment. One of the mechanisms being developed in most of the countries is the imposition of charges for institutional services such as the granting of environmental licenses and permits. This financial self-supporting effort is being carried out not only at governing levels, but also at local executive levels where the execution of budgets has been decentralized. Moreover, activities aimed at assessing natural resources, biodiversity and the promotion of environmental services, are considered top priorities.

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[35] In Bolivia, the indigenous population participates fully in resource ordering strategies and programs, both at national as well as local levels. The NGOs contribute by formulating, establishing and evaluating official mechanisms.

[36] The Directive Council is the administrative branch of environmental authority. It is conformed by the governor or governors of the departments within the corresponding jurisdiction, a representative of the President of the Republic, a representative of the Ministry of the Environment, up to four municipal mayors, two private sector representatives, one representative of indigenous communities or ethnic groups and two representatives of non-profit organizations domiciled within the corresponding jurisdiction.

In Ecuador some intersectoral agreements have been undertaken to pay environmental services. In conservation zones, policies have been developed to promote tourism so as to achieve the administration's self- financing. In this country, where 50% of the budget assigned comes from resources obtained through self-management, studies have been carried out to implement collection systems for institutional services. They are expected to generate an increase of no less than 100% with respect to current self-management resources. Correspondingly, between 1996 and 1997 Colombia — in order to ensure environmental authorities' self-management — carried out a significant adjustment on tariffs on access to protected areas and issued regulations aimed at defining the value of rendering services that such as evaluating and monitoring licenses, permits, concessions and other environmental management and control instruments. In Peru, national parks and biological reserve tariffs finance part of the system's administration expenditures.

In countries where legislation defined resources for their regional environmental authorities, efforts have centered on said authorities' institutional strengthening so that these may implement and make said sources effective. In Bolivia, the decentralization law assigned new sources of resources to departmental and municipal governments to promote sustainable development and environmental administration in their respective jurisdictions. Among these resources are those from forest exploitation. The Bolivian forest model emphasizes departmental and municipal financial strengthening by means of economic distribution of forest exploitation taxes generated in each region, according to the productivity of each municipality and department. In Colombia's case, the implementation of a system for the imposition of charges for contamination (see Box 3) and other mechanisms defined by the law, have enabled the system to finance itself these days in up to 70% of its financial resource requirements[37]. This system has had some inequity problems with respect to the distribution of resources of among environmental authorities. The Ministry is channeling its efforts on developing an environmental compensation fund that ensures the redistribution of resources coming from institutions with high incomes among organizations with unsubstantial resources.

[37] Personal communication Dr. Mary Gomez, Head of Planning Office (Oficina de Planeación), Ministry of the Environment.

2. CITIZEN PARTICIPATION: THE CARs IN PERU

CONAM, through a national consultation process denominated Environmental Dialogues (Diálogos Ambientales), began identifying their private and public institutions' capacity to formulate environmental policies, adopt effective solutions, identify strengths and weaknesses, and national, regional and local levels of coordination necessary to implement Agenda 21. As a result of these Dialogues, CONAM and UNDP (United Nations Development Programme) agreed to develop Capacity Program 21 (Programa Capacidad 21) in Peru with the "Program of Regional and Local Administration for Sustainable Development" ("Programa de Gestión Regional y Local para el Desarrollo Sostenible").

The program promotes participation of all entities involved in environmental management problems of each zone, both in public as well as private sectors, incorporating the environmental variable in regional development plans by creating, in participatory way and approved by common agreement, its Regional Environmental Action Plans (Planes de Acción Ambiental Regionales) and the exchange of knowledge and experience by means of training courses and information compilation for plan conception and treatment of specific problems. To achieve their goals on participation, integration and information, decentralization, strengthening of management and planning, and interaction between national, regional and local levels, the Program promoted the creation of Environmental Regional Commissions - CARs, Technical Groups and the strategy of national and regional training. There are 15 CARs distributed around Peruvian coasts, mountains and jungles, covering 63% of the territory.

Some of the CARs' functions are formulating Environmental Action Plans and their respective Agendas, as instruments that enable them to identify and prioritize those problems that will be tackled. By considering planning as a process, they have been able to deal with controversial topics and generate stances in defense of the interests of its respective regions.

CARs are conformed by public and private institutions, organizations that represent economic and social sectors, and eventually, by persons appointed for their professional and personal qualities. With this multisectoral composition, CARs endeavor to develop a compound vision on regional sustainable development, dealing with priority environmental problems in a comprehensive way. Since CARs respond to the reality of a determined region, its composition varies according to the region's needs and its economic, social, cultural and environmental particularities. As common denominators, each CAR has a representative from CONAM, CTAR, local governments, NGOs and private economic sectors. Among the representatives that vary are the Ombudsman of the People (Defensoría del Pueblo), the Departmental Network for the Advancement of Women (Red Departamental de Promoción de la Mujer), native, peasant or farmer community associations or unions, professional associations, Chambers of Commerce and the Church.

The Directive Council may create the Regional Executive Secretariats of the Environment (Secretarías Ejecutivas Regionales del Ambiente), when necessary. They are entities responsible, upon delegation by CONAM's Executive Secretariat, of promoting the creation and execution of Regional Environmental Action Plans and Regional Environmental Agendas. The Regional Executive Secretariats of the Environment depend upon the Executive Secretariat. The Directive Council determines their composition, functions and jurisdiction. The Secretariats that are currently operating contribute to citizen participation, as they are in charge of collecting citizen concerns and ideas within their jurisdictions.

Source: CONAM, 2001a.

4. International Agreements[38]

The main agreements ratified by the countries of the Andean region are:

- Framework Convention on Climate Change and Kyoto Protocol
- Montreal Protocol and its London and Copenhagen Amendments
- RAMSAR Convention on Wetlands of International Importance
- Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES
- Convention on Biological Diversity – CBD and Protocol on Biosafety
- United Nations Convention to Combat Desertification and Drought

[38] For details see Appendix 4: Environmental Administration Achievements, International Agreements.

Within the framework of these agreements, diverse activities were carried out during the last years. Worthy of special mention are the efforts conducted — in accordance with the agreement on climate change — to complete studies on vulnerability, adaptation, definition of inventories on GEI emissions, reduction of GEI emissions, and definition of portfolios for projects on reduction that shall be financed with the Clean Development Mechanism – CDM, in the following sectors: energy, energy efficiency, transportation, activities related with the land use, land use change and forestry – LULUCF.

Similarly, in order to comply with commitments acquired at CITES and the Convention on Biological Diversity, the Biosecurity Protocol was ratified and efforts were carried out to define national fauna and flora inventories and endangered fauna and flora inventories, and to update norms related with sustainable use and exploitation of the species.

As to the RAMSAR Convention, 17 wetlands of international importance were identified in the region, and strategies and national policies on wetland conservation and recuperation were developed.

5. Other Regulatory Mechanisms

Permissible Limits and Quality Standards

As mentioned before, the region has developed important regulations related with maximum permissible emission limits and environmental norms on air and water quality, and has established maximum sectoral permissible limit. In Peru, for example, the government recently approved national regulation on environmental quality standards for eight parameters of air, and is now examining a proposal to determine some sectors' maximum contamination limits (mining, fishing and industrial).

Environmental Licenses: Environmental Impact Studies –EIS and Environmental Quality Control Systems

The introduction of licenses and other environmental permits — and along with them — of Environmental Impact Studies – EIS, have given the area a new tool to control possible impacts generated by projects. Within this framework the region has developed laws and regulations stemming from the environmental impact evaluation system, many times as result of joint projects between public and private sectors. In this sense, Colombia has outlined, up to now, terms of reference to formulate EISs in five sectors: mining (7), hydrocarbon (18), electricity (7), infrastructure (3), and transportation (11). Similarly, Peru has carried out activities to design guidelines to formulate EISs, and to date it has determined and published the terms of reference for the road construction sector. The Peruvian mining, transportation, communications, housing and construction sectors implemented registers by companies qualified to perform EISs.

In parallel with the implementation of the EIS systems, the region has developed a tool to control activities established before the introduction of EIS. Bolivia's ruling on environmental improvement and Peru's environmental management and improvement

programs (programas de adecuación y manejo ambiental – PAMAs), enable environmental authorities to establish environmental improvement terms and measures, so that companies can follow those established norms. Until June 1999 8 PAMAs had been drafted for the mining sector. Currently, the PAMAs[39] are integrated into the environmental administration of all the sectors in the country.

Table 5. Investment Allotted in PAMAs and EISs for Fishing Processing Activities. (000 US $)

Activities	Number of Plants	Allotted Investment	Executed Investment
Fish Flour*	140	155,200	152,000
Freezing**	80	11,200	9,000
Canning **	124	15,500	9,000
Curing**	30	2,000	600
Total	**374**	**183,900**	**170,600**

* Includes residual flour plants
** Information up to July 2000
Sources: Ministry of Fishing, Directorate for the Environment, in CONAM, 2000.

Environmental Guides: Up to 1999, Colombia had formulated 19 sectoral environmental guides on environmental criteria and guidelines for activities developed in the hydrocarbon, energy, mining, transportation and construction materials sectors.

Economic Instruments

In some countries, efforts were undertaken to design and implement economic instruments as tools to administrate the resources. They implemented incentive-type tools such as imposing charge rates/exploitation and charges on water contamination (see Box 3). The following table shows the most notable experiences in this field.

Table 6. Economic Instruments for Environmental Regulation

Instrument	Affected Resource	Comment
Charge rates/exploitation on forests	Forest	NA
Charges for contamination	Water	Colombia has obtained important results in reducing SST and DBO5 contaminant discharges. See Box 3.
Payments for environmental services	Water, forests and biodiversity	Some initiatives have been carried out: **Ecuador** ✍ Joint undertaking between Ministry of the Environment and Ministry of Agriculture to develop payments for environmental services as part of the project on water resources integrated management. ✍ Cooperation agreement with Ecociencia, charges for environmental services in uplands.
Tariffs to use of national parks and biological reserves	Biodiversity	Used as financial tool that contributes to self-management of national protected area systems.

Source: The authors.

[39] Investments, policies and action programs aimed at implementing technologies, changing production processes, and revising operation and use of consumables, in order to reduce quantity of contaminants.

6. Non-Regulatory Mechanisms

In relation with non-regulatory instruments applied, the following results were obtained:

Natural Resources and Urban Environment

Economic and Financial Incentives

Notable among the economic and financial incentives developed during the last years in the region are efforts to create or modify funds to finance environmental administration nationwide to support the execution of diverse environmental policies and natural resource administration. Likewise, the use of other instruments such as property rights and certification, has contributed to the achievement of some of the policy' objectives.

Table 7. Economic and Financial Incentives: Some Experiences

Incentive	Affected Resource	Notable Achievements
Forest certification	Forest	✍ One million certified hectares in **Bolivia** ✍ Creation of multidisciplinary and intersectoral work group to define national forest certification standards within the FSC initiative framework in **Ecuador**
National Environmental Funds	Natural resources and urban environment	NA
Regional funds for water decontamination	Water	Its adoption is not compulsory. To date, there are 9 implemented funds in Colombia.
Regional funds for environmental investment	Air. Not yet operating	**Colombia** Financed by resources from authorities according to charge rates. Objective: Finance projects that improve productive processes in terms of contaminant emissions.
Certificate of Forest Incentives (Certificado de Incentivos Forestales - CIF): reforestation	Forests	**Colombia** State's recognition of positive aspects of reforestation, insofar as population may appropriate those environmental and social benefits generated. Designed to promote new plantations with a protection/production aim on forest apt land. From 1995 until December 1995 26,054 million pesos were invested, amounting to a total of 41,046 benefited hectares and 717 projects throughout the country.
National Fund of Royalties (Fondo Nacional de Regalías): funds from oil, carbon and gas exploitation. A % of these is allotted to environment.	Water	**Colombia** Creation of environmental guides on requisites and procedures to be eligible for funds to finance projects on residual water; technical assistance; and municipal residual water management, treatment and final disposal.
Property rights	Biodiversity, forests, water, soils	Two fronts: establishment of intellectual property rights and definition of property rights over the land. Land ownership: Granting title deeds, delimitation, and constitution of indigenous reserves. Socioeconomic studies to constitute indigenous reserves. Intellectual property: Proposals on laws and activities to protect indigenous collective knowledge. *See Appendix 2, Sections A.2.1.1. and A.2.1.2.*

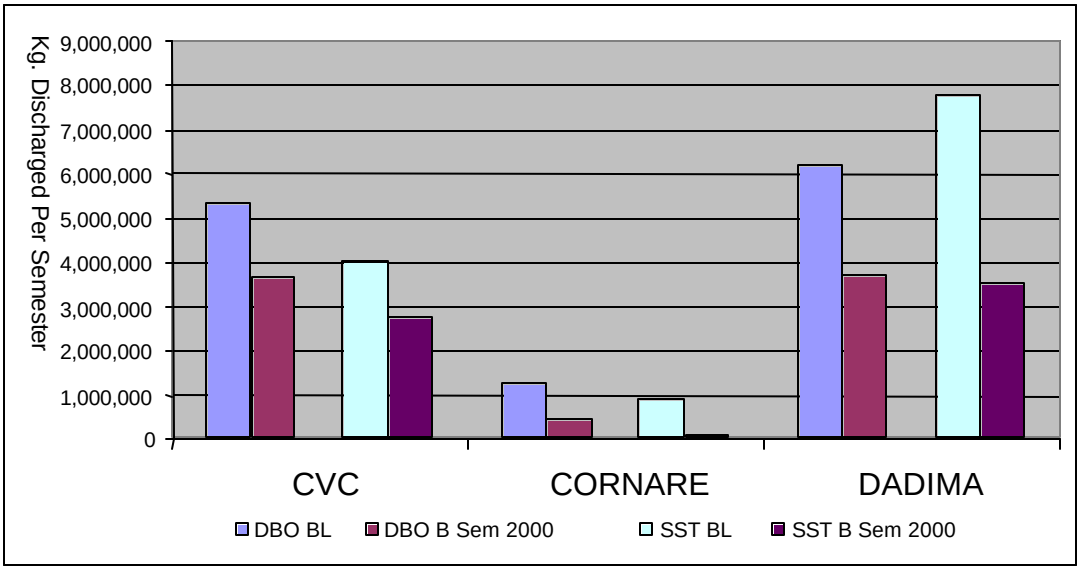
Source: The authors

3. ECONOMIC INSTRUMENTS: INCOME-PRODUCING RATES IN COLOMBIA

In 1996 the Ministry of the Environment designed in 1996 a program to impose charges for water contamination, better known as income-producing rate, so as to face the accelerated process of deterioration of the country's water resources as a consequence of industrial and population growth, deficient sewage and municipal residual water treatment systems, and the ineffectiveness of traditional command and control instruments. The program began to be implemented in 1997 under the Regional Environmental Authorities (Autoridades Ambientales Regionales - AAR), responsible for the control, administration and surveillance of natural resources within the regions of Colombia. The program has been implemented 100% in 18 AAR, and it is expected that within a year, the instrument shall be implemented in the country's 33 AAR jurisdictions.

In some of the regions where the program has been implemented effectively, reductions in industrial contamination of about 65% in DBO and SST were achieved. Financially, contamination charges has guaranteed the collection of a sum of almost US $20 million, allotted for investment in contamination reversion programs of the basins where this instrument has been applied. With these collections, the AAR have been able to finance 100% of its water resource administration, control and surveillance programs, also generating considerable social saving. In authorities such as CORNARE - Eastern Antioquia's Regional Autonomous Corporation (Corporación Autónoma Regional del oriente antioqueño), the instrument has generated, simultaneously, an increase in institutional efficiency. This is how, comparing the command and control program results with the contamination charges, the administrative cost per unit of reduced contamination decreased from US $18.46 to US $15.17 per ton, respectively, generating savings of 17.8% in institutional expenditures.

Income-producing Rates and Response of Contaminant Load[2]



BL = Base Line

Source: CEPAL. Evaluation of Environmental and Economic Effectiveness on Income-Producing Rate for Liquid Discharges in Colombia (Evaluación de la Efectividad Ambiental y Económica de la Tasa Retributiva por Vertimientos Líquidos en Colombia), August 2001.

Information Dissemination

Throughout the region, national environmental information systems were created and are currently at the implementation phase. Within this framework, investigation institutes[40] were created, specialized on topics related with biodiversity, weather, marine and coastal resources, and water resources. In this context, the main activities carried out have been related with institutional strengthening in financial, human and technical resources, and in generating information.

Environmental Education

During the last years, environmental education programs were implemented in schools and universities. In Peru, 260 educational centers distributed in 8 cities apply the environmental education guides for Elementary Education, designed by the National Council for the Environment – CONAM and approved by the Ministry of Education. Furthermore, 800 schools distributed in 11 cities execute the RECICLA program that promotes paper recycling. In relation with higher education, four universities made official their compromise to carry out pilot programs, and one university has a program to form and train environmental monitors.

Competitiveness

Mechanisms introduced to promote competitiveness are the environmental certification with ISO[41] norms, the forest certification, and the Clean Development Mechanism, as well as the education and technical assistance activities contemplated in the clean production, green markets and biotrade programs. In relation with environmental certification, Peru obtained important achievements during the last two years. The ISO Club was constituted in this country. It is an agreement among companies to participate in a certification process for environmental administration systems in accordance with ISO 14001. CONAM participated in this process and became the first environmental authority certified in accordance with ISO 14001. To date, in Peru has adopted 9 of the 10 internationally approved ISO 14001 norms.

40 In Colombia, Law 99 defined the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM), the "Jose Benito Vives de Andreis" Institute of Marine and Coastal Investigations (Instituto de Investigaciones Marinas y Costeras "José Benito Vives de Andreis" - INVEMAR), the "Alexander von Humboldt" Institute for the Investigation of Biological Resources (Instituto de Investigación de Recursos Biológicos "Alexander von Humboldt"), the Amazonian Institute of Scientific Investigations (Instituto Amazónico de Investigaciones Científicas - SINCHI) and the "John von Neumann" Pacific Institute of Environmental Investigations (Instituto de Investigaciones Ambientales del Pacífico "John von Neumann"), as scientific entities reporting to the Ministry of the Environment.

41

Table 8. Non-Regulatory Instruments for Competitiveness

Competitiveness	
Mechanism	**Important Achievements**
Forest Certification	Carried out by third parties. The certified company receives a seal from the Forest Stewardship Council – FSC **Bolivia** ✍ One million certified hectares. **Ecuador** ✍ Conformation of multidisciplinary and multisectoral work groups to define national forest certification standards within the framework of the FSC initiative.
ISO Environmental Certification	**Peru** ✍ ISO 14000 Club. Intention agreement among participating companies to instate a certification process for environmental administration systems in accordance with ISO 14001. ✍ CONAM is the first environmental authority certified in accordance with ISO 14001. ✍ Terms of reference to implement ISO at Environmental Administration (Dirección Nacional del Medio Ambiente) / Ministry of Fishing. ✍ 51 assistant professorships granted to train government employees in ISO. ✍ First publication of NTP ISO 14001: ISO 14001 environmental administration system. ✍ Adoption of 9 out of the 10 ISO 14000 internationally approved norms. **Bolivia** ✍ Implementation of ISO 9000 norms and ISO 14000 norms in the hydrocarbon sector.
Technical Assistance	See Cleaner Production, Appendix 2, Section A.2.3.
Information Dissemination	See green market and biotrade programs, Appendix 2, Section A.2.3.
Tax Incentives	**Colombia** Tax incentives for cleaner production include from special tariffs to tax exemptions, specifically on value-added taxes and the income taxes.

Source: The authors.

III. SHORT, MEDIUM AND LONG TERM CHALLENGES

The main challenges for the region in the following years are creating of new incentives to promote investment for resource sustainable management and the strengthening of existent mechanisms; consolidating certification systems as mechanisms to boost national production effectiveness and competitiveness; developing national and international environmental services and green product markets; effecting adequate assessments of resources and the benefits of their conservation; consolidating self-management mechanisms; internalizing environmental costs generated in productive processes; and institutionalizing information, consulting and citizen participation mechanisms.

Progress on information generation must be consolidated in the short term, ensuring the existence of integration, interrelation and exchange models that provide adequate and timely information for regional and national decision-making. The strengthening of national information systems is equally necessary, in terms of technical capacity and provision of diagnostic, collection and processing equipment. Although some progress has been achieved, problems due to lack of financial and human recourses persist. Problems of integration persist among various entities in the system[42]. Physical coverage by surveillance stations on soils, forests, and biological resources is still insufficient.

In relation with the Environmental Impact Evaluation (Evaluación de Impacto Ambiental – EIS) systems, it is necessary to consolidate a specific focus for the project, to be able to consider main aspects with the necessary depth for decision-making. Similarly, the region must introduce efficiency elements in the development of the procedures of various stages — especially those related with revision — and revise the time limits set to make these programs effective[43]. In some countries the EIS have been designed in an isolated way and there is no real homogeneity in the processes or criteria. In relation with compliance, it will be necessary to strengthen aspects related with the availability of human resources and control equipment[44]. Furthermore, institutional infrastructure must be strengthened and technical capacity must be fortified at municipal and departmental levels in order to be able to implement EIS systems adequately.

The introduction of economic and market instruments of the tax incentive type to promote environmental investment and contamination reduction, and of public utility tariff systems that reflect the resources' real cost, comprises part of the pending agenda for some countries that, up to now, have only carried out design and implementation

[42] Colombia has not been able to realize its National Environmental Information System. Although the various institutions have made separate efforts to improve their own information systems and data bases, they have not been able to design and implement an interinstitutional coordination model to integrate these efforts. Information is still disperse and heterogeneous among regions and laboratory certification processes have not been effected despite six years of efforts.

[43] Colombia pursues the reduction of environmental impact in development projects, by intensifying the processes of monitoring and environmental evaluation qualification. Similarly, they set a goal of a 45% reduction in the time required to issue licenses, and the elimination of the legal obligation to obtain licenses in up to 55% of the projects that currently require them in the hydrocarbon sector.

[44] In 1996 the office in charge of the EIA in Bolivia reported that 700 projects had entered the system between June 1994 and April 1996, and only 100 had been visited after their permit had been issued.

feasibility studies. An equally important challenge is introducing other novel mechanisms such as establishing markets to assign exploitation licenses and negotiable exploitation rights, which promote investment in conservation and in resource protection.

One of the chief challenges shall be strengthening international cooperation programs in order to fortify investigation, and institute activities, programs and projects formulated for environmental institutions. Equally important shall be the integrating the private sector, universities and NGOs to develop some of the governmental agencies' functions such as supervision, monitoring, auditing, protected area management, and EIS revisions, among others. On the long term, they shall develop strategic alliances with academic institutions, NGOs, environmentalists and specialists in rural development, to ensure the continuity of the processes and the sustainability of its administration.

Similarly, the improvement of the administrative capacity of environmental units is an additional challenge that the region must assume in the future, by implementing ISO quality environmental administration systems and by promoting institutional agreements at local levels, in order to boost knowledge on resource administration[45].

1. Natural Resources

The region must execute territorial ordering processes to rationalize the colonization process and activities related with the definition of property rights. The lack of definition in rights generates distortions and reduces stimulus for investment in conservation. To date, the countries have undergone efforts to develop regulations and incentives to stimulate sustainable exploitation. The current challenge lies in promoting local government and NGO participation in order to enforce regulations and formulate legislation on topics that do not yet have an appropriate definition on rights.

Moreover, they must establish regulatory principles to adjust conservation and production processes to the different areas, and ensure community participation on the adequate management and use of natural resources. At the same time, they must provide technology and incentives to adopt alternative crops that deteriorate the environment less.

Forest Resources

As to forests, the region has defined the introduction and strengthening of measures to increase their forest cover as one of their major short and medium-term challenges.

In this sense, they must settle limitations related with land property; availability of human resources in terms of quantity and training; lack of capacity and practical knowledge on project management, planning and execution; lack of incentives for investigation;

[45] A few years ago Colombia began to implement a horizontal cooperation model in order to use the knowledge and authority of the more developed environmental authorities so as to strengthen weaker ones through training and advice. In this sense, programs for specific financing are created, and sometimes incentives for environmental authorities, so that some of their professional teams may provide counsel to other regions of the country.

insufficient teaching staff; shortage of financial resources for investments in the subsector; and lack of knowledge on the forestry industry.

In some particular cases, it will be necessary to develop stable long term regulation frameworks with clear conditions on property rights, and where private investment is given the appropriate stimulus to establish appropriate extraction technologies and forest conservation methods. It is necessary to strengthen systems for concessions and other incentives and to consolidate a system of rationalization and economic resources to grant titles deeds on land within permanent production zones.

Equally important shall be investments on investigation in species, products and markets. Consequently, studies and investigations on forests and its diverse components will be favored so as to increase the aggregate value of the timber industry. They will also endeavor to provide incentives to bring about forest assessment processes, especially in national and state forests, which are usually considered waste grounds and of free access, being thus subject to constant depredation. Assessments must not concentrate exclusively on timber products, but also on other forest products and functions. These assessments must be accompanied by activities of promotion of products other than timber and forest environmental services, and by opening markets to alternative non-traditional wood.

Sustainable forest administration must be integrated to an efficient, clean and low impact timber industry that can be competitive internationally. Therefore, efforts must focus on strengthening international forest certification processes by developing national criteria, and on international negotiation with associations such as the International Tropical Timber Organization, so that the international market may acknowledge the aggregate value of certification and the additional economic investment it entails.

Biodiversity

With respect to biodiversity, efforts must focus on overcoming limitations related with deficiencies in equipment, financing, personnel, trained personnel at local levels, and information on the condition of the resources.

In this sense, it is necessary to implement existent regulation and promote economic instruments that encourage sustainable use of the resources, as well as investment in investigation, information and technology. A top priority shall be obtaining financial resources to carry out basic investigation projects on biological diversity and on potentially commercial products. Also necessary will be investments to increase the capacity of available human resources, and the incorporation in the educational system of aspects related with biodiversity conservation and sustainable exploitation.

Moreover, legal frameworks must be consolidated to guarantee protection of intellectual property rights and biosecurity systems that regulate biotechnology utilization and ensure a more appropriate management of risks related to its use. For this, it is necessary to get specialized legal counsel and support of specialized groups in this matter. At a regional

level, it is essential to attempt integration of departmental and municipal institutions, strengthening their institutional capacity, mainly on aspects on control of resources.

In relation with systems of natural protected areas and their administration, different instruments must come into effect, such as concessions to render services and administration. Likewise, they must proceed with processes to articulate social actors and regional institutions with the sustainable administration of parks, striving to improve mechanisms to incorporate local population and endeavoring to implement a regulation framework that is clear, consistent and complete, which permits and stimulates the development of activities in buffer zones. In this sense, they must end the lack of correspondence existent between the formulation of basic and complementary legislation. This situation limits the creation of specific projects and hampers the systems' development and sustainable management. The region must endeavor to create special management systems to solve conflicts on the use of soil and to support the generation of cultural, ecological and economic answers for the question of human settlements.

Water Resources

The chief limitations on water resources for environmental administrations are lack of financing, want of information and deficient use of existent information, scant political willingness to face this challenge, meager public participation, absence of economic incentives to control water quality and scant supervision and control in most cases.

During the following years, the region's efforts will center on counteracting deforestation and promoting afforestation with concrete actions converging around basin integral management and in updating and implementing existent legislation in order to incorporate modern elements in its administration. The region shall continue efforts aimed at formulating necessary regulations on water resources management and exploitation, delineating development phases of studies and projects, developing infrastructure, operating and maintaining said infrastructure, and completing studies on hydrographic basins to promote their integrated management.

On the other hand, given the many uses this resource has, and consequently, the multiple agents involved in its administration, the region shall promote the introduction of economic instruments for the reduction of water contamination and the integral management of the resource. For this, it shall promote economic activities such as hydrobiological farms to achieve economic profitability objectives and preserve the resource at the same time.

Equally important shall be those efforts to obtain funds, to establish supervision and control systems and to ensure compliance with regulations.

At an institutional level, it is imperative to harmonize the competencies, functions and interests of the different actors, which are superimposed in many cases, thus hampering integrated administration of the resource. In some countries, efforts based on a new law have not succeeded due to lack of political goodwill. In this scheme of things, it is

necessary to direct efforts at strengthening — and in some cases consolidating — a national authority and its respective institutional structures at local and departmental levels, to integrate and coordinate efforts carried out by different sectors and achieve an integral administration of the resource.

Marine and Coastal Resources

Currently, there are financial and human resources limitations, mainly to maintain activities related with generating and handling information necessary for integral ordering of coastal zones (oceanographic data networks, satellite coastal cartography and biological information systems). It shall be necessary to strengthen international cooperation programs to promote the establishment of laboratories and equipment for surveillance and follow ups on the resource, on contamination coming from mainland sources and on the integrated ordering of water basins.

Activities shall also be carried out to identify the type, source and quality of information related with the conditions and uses of ecosystems and marine and coastal resources in the region, so as to delineate regional characteristics and identify existent and projected uses. Information generation shall also be necessary as to define problems and allot them their specific priority, and to evaluate the existent institutional administration structure. The establishment of strategic interdisciplinary investigation programs shall be of top priority to generate knowledge and information for decision-making aimed at integrated management of marine and coastal areas, which should be clearly demarcated and which, due to their relevance, require special handling.

Likewise, it is very important to design and implement programs for the prevention, reduction, control and evaluation of ocean contamination sources, that may guarantee in the short, medium and long-term, a healthy marine and coastal environment and healthy sanitary conditions of coastal inhabitants. It is important to design, establish and standardize environmental indicators on the state of health of ecosystems and marine and coastal resources to evaluate periodically environmental quality of the oceanic and coastal natural base, the quality of life of its inhabitants and the repercussions of the factors and phenomena that affect them.

Efforts shall be carried out to improve departmental and municipal capacity so that they may become the chief responsible entities for the promotion, planning and compliance with norms on integrated administration of coastal zones, strengthening participation and community education activities.

The establishment of fishing ordering plans shall continue as a regulation mechanism that incorporates diverse instruments such as fishing rights and individual quotas put out to tender, licenses, and controls on consumables among others. Of special relevance shall be the design and implementation of mechanisms for the reduction of fishing efforts and the establishment of instruments such as individual quotas and a market where transference may be subject to the fleet's modernization.

Efforts shall be made to change fishing objectives, shifting the focus of the industry towards a production for direct human consumption by developing markets, products, technology, fleets and reinvestment incentives. Therefore, it is important to develop investigation on products and markets, as well as a legislation that permits effective promotion. It will be necessary to count with the joint efforts of institutions related with the sector in order to develop strategies and international marketing channels.

In relation with contamination of the marine coastal zone generated by fish flour and oil processing, limitations must be conquered on existent technological technologies and the financial-economic conditions[46] of the companies. It will also be necessary to put into effect other instruments contemplated by the law in order to provide incentives to companies and incorporate environmental control systems. In this sense, it is necessary to develop financing plans that allow the fishing sector to get out of the crisis it is in, in such a way that it may implement environmental innovations and changes. There will be a promotion of specific certification processes in the sector and other incentives to prevent contamination and encourage modernization of the productive systems.

Soils

The main limitations for management and administration of soils are related with the absence of public participation and the difficulties these countries have enforcing existent laws. There are also obstacles for funding availability and the number and qualifications of human resources, mainly in spheres of early alert for drought events, project planning and execution, investigation, and information dissemination at a rural level.

Additionally, there is a knowledge void on desert zones related with the insufficient coverage of meteorological and hydrologic stations, and an absence of evaluation studies on its soils and its impoverishment.

In regard to legal aspects, in some countries agrarian reform laws do not take into account the negative consequences of small-scale agrarian methods nor allow the adoption of legal measures in case of soil impoverishment due to user negligence or incompetence.

During the next years, the region shall focus on the search for international cooperation on technology transference, training and human resources. It will also strive to introduce incentives to adopt alternative crops so as to promote adequate use of the soils.

Similarly, emphasis shall be made on territorial ordering to rationalize the colonization process. This implicates the generation and adoption of legal frameworks to balance conservation and production in the various regions. For this, it is essential to count with expert advice to strengthen legislative activities on land use and resource planning.

The region shall also carry out activities aimed at attaining participation of other institutions. Among the pending agendas of some countries is the design of plans to raise

[46] It is estimated that Peru's fishing sector has a debt with the financial sector of about 2,000 million dollars.

public awareness at all levels in order to achieve attitude changes in favor of prevention and control of desertification processes, facilitate interinstitutional coordination designing and implementing programs and projects, and encourage community participation.

Within the framework of the, Convention to Combat Desertification, some countries must complete and implement their National Action Plans (Planes de Acción Nacional - PAN). For this, they shall need the support of national and international entities. In many cases, they shall have to create a national authority, a National Coordination Council (Órgano de Coordinación Nacional), with political authority as well as technical, financial and logistic support, that conducts PAN and other CCD dictates. Furthermore, they must continue desertification studies at a national level that provides information on spatial characteristics of previously defined zones. They must also reach a national understanding at conceptual and methodological levels to carry out investigations and supervisions on natural resources and ecosystems and their impoverishment, that permit the implementation of follow ups on erosion and the changes that generate it. Likewise, the region will endeavor to fortify cooperation ties with the Convention to Combat Desertification and the Biodiversity, Climate Change and Wetlands Convention, and to expand the applicability of this undertaking to all impoverished soils.

2. Urban and Industrial Environment

The main limitations to apply strategies and programs related with urban and industrial environment are political. Governments are incapable of controlling spontaneous urban development that induce changes in soil use, that follow private and particular interests, and that generates some institutional regulation difficulties[47].

The pressure generated by the population imposes a challenge for population control and the management of urban centers, through educational activities, efficient administration of the land, and planning of public services and investments. Among the great challenges are obtaining funds to develop master plans and pre-investment studies to improve drinkable water and sanitation systems, integrating management of solid wastes and developing an infrastructure that facilitates the rationalization of transportation. Another great challenge is attaining interinstitutional coordination to advance an organized, efficient and environmentally sound service. Furthermore, on environmental education aspects, the region must promote initiatives that encourage citizen participation to ensure compliance with policies, laws and norms.

The region will emphasize planning of soil use and urban center development. This not only entails institutional strengthening at the level of urban authorities, but also the introduction of criteria related with urban density, compatibility of uses, viability of rendering public utility services, transportation needs, mobilization times and multiple

[47] In Colombia, the implementation of a system of laws for urban environment has suffered some difficulties since the new environmental regulation has a very limited number of norms on urban environment. Furthermore, among regional environmental authorities and the authorities from great urban centers, there is no clarity on distribution or assignments of urban environment competencies.

uses of the soil, in order to define areas of expansion. In relation with urban settlements that are already developed, the region will attempt to reorient urban expansion.

In relation with basic services, obtaining financial resources to increase their coverage shall be a top priority for governments, as well as improving tariff systems so that these reflect their real value.

In relation with norms on quality and permissible emission limits, the region needs to strengthen its technical capacity, chiefly on monitoring systems and equipment at private and governmental levels. Some of the legally established instruments such as those for control of hazardous materials and control of atmospheric contamination by fixed sources are very complex as compared to the existent institutional capacity. Therefore, it is crucial to improve knowledge of the authorities in charge of law enforcement.

Equally important — at an entrepreneurial level — is to continue strengthening contamination prevention mechanisms and competitiveness. The region shall pursue the work begun when it set up Clean Production Centers (Centros de Producción Limpia), improving its institutional capacity and its field of action by establishing regional centers.

The region will promote efforts to identify urban environmental administration models in pilot cities on priority areas such as protection of basins supplying water to aqueducts, wastewater treatment, integrated waste management and contamination control.

It is pertinent to continue expanding the coverage of monitoring systems to quantify environmental effects on health, productivity and ecological capital, and to establish mechanisms to evaluate improvements on urban environment and its administration. Institutional strengthening, and strengthening national information systems, is essential.

Medium and short-term efforts shall be carried out to obtain financing sources to strengthen medium-sized cities and initiate measures to discourage migration to big cities such as broader and better access to basic health, employment and education services.

Water and Sanitation

The main water and sanitation limitations are financial. Problems on inadequate use of information and governability persist, as well as scant public participation, lack of infrastructure and insufficient knowledge on environmental sanitation infrastructures.

One of the chief challenges faced by the region is introducing hydrographic resources in urban administration planning. To achieve this, it must transcend the traditional source-receptor perspective. This requires studies analyzing other uses directly associated with public space, collective enjoyment, and urban environmental quality, which highlight the importance of water in the urban context as a landscape element that integrates the community. At the same time, this generates a greater public acceptance of those norms designed to prevent this resource's deterioration, and therefore, it improves citizen participation in administrative processes.

On aspects concerning drinkable water consumption, the region shall endeavor to improve the quality of this service and the percentage of its cover. Improvements on access to water resources will be based on the execution of programmed projects and interinstitutional coordination efficacy, in order to capitalize available resources. Interinstitutional administration must consider the challenge of supplying water of good quality to its growing population. For this, it must develop a concordant vision on the relevance of making the administration of basins effective.

It will be necessary to obtain investment for sewage systems, and above all, for treatment systems, especially at municipal levels. Financing mechanisms such as funds must develop incentive policies in order to develop projects based on efficiency principles and in accordance with the characteristics of each territory.

It is important to continue the process of tariff systems reorganization based on economic criteria so that the tariffs reflect the resource's real value and not only its distribution and disposal costs, and therefore be able to meet financial obligations and develop investment programs with their own resources. Furthermore, the region must intensify efforts to design and implement economic instruments that encourage, among other things, contamination control and the introduction of plans for water reutilization, recycling, storage, rain water collection and consumption reduction.

On industrial aspects, the region must develop programs to improve information on consumption patterns so as to incorporate it in decision-making processes. Knowledge on the participation of small and medium-sized industry in domestic consumption is extremely relevant. Correspondingly, the region shall continue to look for financing to strengthen mechanisms that stimulate the use of ecologically sustainable technologies in basic sanitation projects and facilitate access to information at the same time — all this through the clean production and environmental windows programs.

Air[48]

The chief limitations to administrate and prevent atmospheric contamination in urban centers are financial and technical. Furthermore, some of the region's countries lack specialized human resources. They are also in want of precise information on atmospheric contamination in urban and rural zones due to the lack of permanent monitoring systems that provide means for implementing air quality follow-ups. On aspects concerning public transportation, there are several limitations related with compliance with norms currently in effect.

Among the chief challenges faced by the region in the short run are improving fuel quality and its technology, and encouraging the installation of treatment systems for effluent gasses and prevention activities. Likewise, it shall design and implement

[48] See also *Climactic Change and the Ozone Layer* (*Cambio Climático y Capa de Ozono*), in Section **4: Other Emerging Topics**

incentives to replace old vehicles and modify obsolete tax systems that encourage the use of old motor vehicles, and subsidize fuels and road infrastructure maintenance.

On aspects concerning public transportation, it will be necessary to develop plans that make possible any integration of this service to urban development. It is essential to recover the unitary quality of mass transportation, putting a stop to the growing number of low quality vehicles in the public transportation fleet. One of main challenges shall be putting into effect policies that promote the rationalization of existent routes and investments on the infrastructure necessary to provide a more free-flowing transportation service, giving priority to measures that favor public transportation. The region shall strive to correct governability problems by using instruments that promote private sector participation in governmental programs aimed at improving the transportation system and the replacement of old fleets.

The region shall need the participation of the private sector and the community, and interinstitutional coordination among the various authorities involved in air quality management, to formulate coherent and integrated regulation in order to implement effectively measures that are of top priority and relevant to the state. To achieve this, it is essential to reinforce institutions with regulatory, human and technical resources, to increase their capacity to monitor and control emissions, but also their potential to investigate (monitoring networks, chemical analyses, cost-benefit studies) in order to obtain truthful and continuous diagnoses to measure the procedures in economic and social terms.

On an international level, the main challenge shall be implementing a legislative framework to control atmospheric contamination that surpasses national borders [49], so as to control atmospheric emissions derived from motor vehicles and improve environmental quality of combustion motor fuels. These measures aim, on the long run, to harmonize maximum emission permissible limits for mobile sources. On the long run, too, countries that are members of CAN face the challenge of producing or importing only unleaded motor fuel.

Solid and Hazardous Wastes

The appropriate administration of solid and hazardous wastes in urban centers is limited by the shortage of technical, human and financial resources to control it; by meager — almost null — citizen participation; by limited knowledge on its production, composition and medium and long-term effects; and by the presence of interinstitutional coordination problems.

In the near future, the activities of the region's countries will focus on improving knowledge on residue composition, as an element of planning. In this sense, thy must introduce considerations on raw materials and finished products flows from the various geographical areas to the municipalities, in order to prevent potential utilization loss of the materials in these residues.

[49] It is currently being defined among the governments of Colombia, Venezuela and Ecuador

Among other activities, the region will develop actions aimed at selecting, recovering and employing materials of organic origin, which represent a high percentage of total residues in the Andean region. Therefore, they must invest in the execution of market studies in order to boost recycling of materials such as glass, metals and plastics, and to develop incentives so that consumers carry out recycling activities. This task must be executed along with efficiency promotion activities within recycling markets, and along with the establishment of a legal framework that determine the operation of these activities[50].

Likewise, the region shall proceed formulating new laws and installing, improving and expanding the installations available for handling residues. For this, it is necessary to establish agreements with the academic and entrepreneurial sectors, with NGOs and local governments, so as to propose efficient and sustainable administration alternatives. It must also attract private investment by identifying the opportunities that become present on waste management and industrialization.

Top priorities shall be the strengthening of institutional capacity, sectoral investigation, promotion of education and programs to raise public awareness. In order to achieve these, the region must find adequate mechanisms that facilitate coordination and decision-making, and that involve the public and private sectors.

In regard to public services, the great challenge lies in updating service tariffs as a mechanism to improve the quality of these services.

Concerning toxic and hazardous wastes, it is of vital importance to make effective a Prior Informed Consent instrument for prohibited chemical substances; train those customs and police authorities in charge of controlling imports of chemical products and hazardous wastes into the country; and carry out activities that instill knowledge on the production and dangerousness of wastes.

3. Competitiveness

Improvements in the region's competitiveness within the international context are limited by financial factors, lack of technical resources and scant public participation.

Among the chief activities set for the following years is obtaining the necessary resources to develop technological innovation projects. This shall be carried out by designing plans to finance environmental solutions and projects, developing national capacity for environmental certification by implementing programs to make and train auditors[51], and

[50] The existence of clandestine separation and final disposal markets bears witness to the existence of market mechanisms that stimulate the development of a set of activities, currently carried out illegally and presenting a risk to the population involved. (CONAM, 2001a)

[51] One of the main challenges for Peru will be to establish environmental administration systems by making strategic alliances with large companies and their SME (small- and medium-enterprise sector) suppliers, on the basis of a nucleus of 30 large companies involving up to 60 SME suppliers (CADENA project. CONAM, 2001a)

designing and implementing other instruments such as ecolabeling. These efforts must be executed alongside with the promotion of markets and certified products as well as the improvement of mechanisms to be able to know and evaluate the agents and the convenience — in terms of efficiency and competitiveness — of incorporating the environmental dimension in the companies' operations. Government support is essential to be able to create proper conditions to develop new markets.

In the context of ecotourism, efforts shall be made to deliver quality service by establishing efficient contractual relations with the agents that participate supplying this service. Similarly, efforts shall be carried out to improve the subsector's legal framework, striving to stimulate private investment. Priorities for the region shall be the development of basic infrastructure and the formation of ecoefficient companies in the private sector that are capable of incorporating the concepts of sustainability and the development of investigation activities in order to achieve adequate performance.

In relation with institutional environmental administration, efforts shall be made to expand environmental management systems and the enforcement of ISO 14000 and ISO 9000 on governmental institutions, as the basis of state modernization and productive rationalization.

4. Other Emerging Topics

Climactic Change

Climactic change is one of the emerging topics, to which all of the region's countries will dedicate particular efforts in the following years. Although these countries are not considered large producers of GEI greenhouse gas emissions nor have contracted compromises to reduce these emissions, the magnitude of the problem obliges these countries to adopt preventive measures in industrialization processes and, in general, in everyday practices, in accordance with what is established in the United Nations Framework Convention on Climate Change.

In this sense, they shall promote the development of policies and regulations to mitigate atmospheric emission of contaminant substances and to improve energy utilization efficiency. Currently, national strategies are being created throughout the region to achieve — among other things — consolidation of GEI inventories, identification of activities to reduce it, identification of vulnerable zones and measures to adapt and strengthen investigation on this phenomenon.

The development and implementation of strategies to maximize the benefits offered by the Clean Development Mechanism – CDM established in the Kyoto Protocol, will be particularly relevant. This mechanism constitutes a source of opportunities for the region, as it makes possible project developments with clean technologies that favor gas emission reductions. This constitutes and additional source of financial resources due to the sale of emission reductions of these projects unto countries who have acquired compromises in this respect. The procurement of funding will be crucial for the

development of these projects. Although CDM represents a source of income, risk factors limit the availability of external investment capital.

In this sense, numerous studies have been made to estimate, among others, GEI emission base lines, project additionality, and portfolio production. Colombia and Bolivia have already financed their study on national strategy to implement the mechanism and Peru prepared and presented its National Communiqué on Climactic Change (Comunicación Nacional en Cambio Climático) which is an important input for the national strategy that is currently being prepared. Ecuador is in a similar situation. Its National Communiqué describes the country's situation with respect to this phenomenon, defines national strategies and a portfolio of projects for international negotiation. Through its Climactic Change Unit (Unidad de Cambio Climático), it carries out fund promotion and managerial activities to assist projects on carbon sequestration and forest conservation through CDM.

The following factors will be crucially important: development of the region's capacity to negotiate and formulate high quality projects, identification of opportunities, thorough knowledge of the market, and the institution of adequate interinstitutionality that ensures efficiency in project approval and minimizes transaction costs associated with this new market (See Box 4).

Ozone Layer

In accordance with the Montreal Protocol framework and its amendments, the region will continue implementing activities that comply with the compromises contracted for the protection of the ozone layer. The chief limitations for this endeavor are related with the insufficiency of the atmospheric quality monitoring systems. This complicates the structuring of processes designed to eliminate ozone-depleting substances – ODS due to the reduced capacity to carry out specific control. Similarly, insufficient information on ODS consumers complicates the identification of industrial rationalization projects.

The elimination of chlorofluorocarbonate consumption will be one of the main challenges for the following years. For this, the region will carry out activities to supply raw materials that do not deplete the ozone layer and will encourage industrial rationalization. These activities must come alongside with the strengthening of national networks to recover and recycle refrigeration gasses and establish management plans that encompass all the ODS consuming sectors. Obtaining funds to invest in gas recovery teams, polyurethane injection and monitoring systems will be very important.

Within both frameworks — climactic change and ozone layer protection — activities must be carried out to achieve institutional strengthening, by means of training, investigation and information diffusion programs and workshops. Likewise, the region must make efforts to design and implement environmental indicators to carry out environmental performance follow-ups and evaluations on sectors whose actions have an effect on the atmosphere.

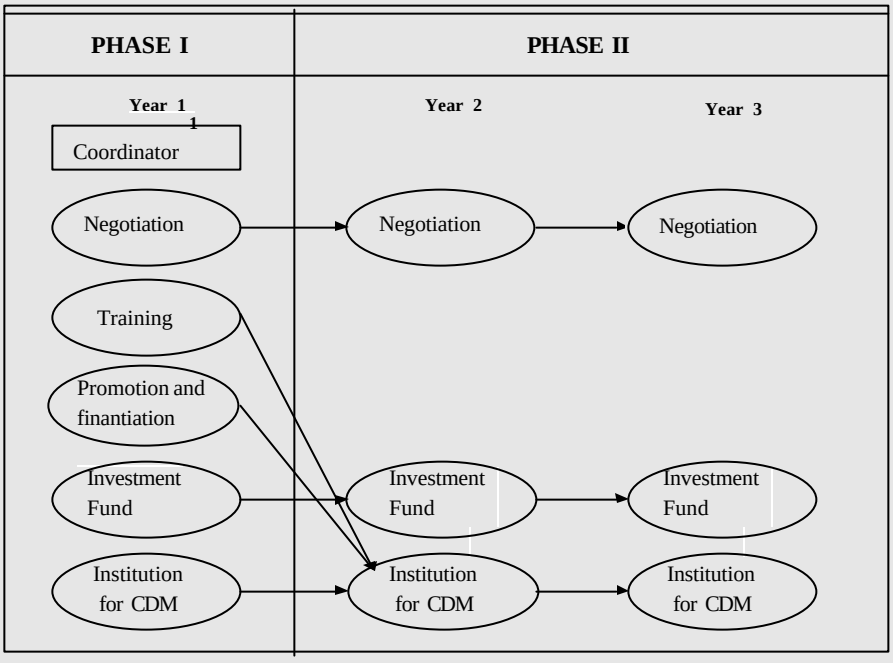
4. ACTION PLAN TO IMPLEMENT CDM IN COLOMBIA

The results obtained in the National Strategy Study for CDM Implementation in Colombia (Estudio de Estrategia Nacional para la Implementación del MDL en Colombia - NSS), identified the need to formulate an Action Plan so as to provide continuity to the CDM implementation process in the country. Stated below are the strategies that shall be followed, based on the conclusions of this study. All the activities considered in the Implementation Program (Programa de Implementación) are additions and complements of the NSS Study.

The objective of the Plan is to implement the strategy to achieve the Clean Development Mechanism –CDM, maximizing benefits and opportunities for the country that applies this mechanism.

The program is designed for a duration of three years and is divided in the components stated below. Each of these endeavors to implement the strategies defined by this study, in order to overcome identified barriers and limitations that restrict the country's potential accomplishment of CDM.

1. Strengthening of national negotiating capacity in the different aspects of the Convention on Climate Change.
2. Strengthening of national capacity to develop CDM projects and achieving adequate exploitation of the benefits this mechanism offers the country.
3. Lending support to the CDM Project Portfolio in Colombia by backing negotiation, marketing and funding processes of the Colombian CDM project portfolio.
4. Creation and launching of a Risk Capital Fund to count with a financial instrument operating in Colombia to finance its dynamic portfolio on projects.
5. Creation and consolidation of the institutional capacity to manage CDM in Colombia, with the objective of constituting and launching CDM in the country, as well as consolidating and ensuring the continuity of this institution.



Source: Ministry of the Environment, 2000a.

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V. APPENDIXES

Appendix 1. Statistical summary of Situation - Andean Region

POPULATION[52]						
		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Population (thousands) 1950		31,395	2,714	12,568	3,387	7,632	5,094
Population (thousands) 2000		113,128	8,329	42,321	12,646	25,662	24,170
Population (thousands) 2050		160,978	13,131	59,758	17,796	35,518	34,775
Average Annual Population Change 1975 – 1980		13.6	2.4	2.3	2.8	2.7	3.4
Average Annual Population Change 1995 - 2000		9.9	2.3	1.9	2.0	1.7	2.0
Urban population 1980 (thousands)[53]		46,302	2,434	16,957	3,739	11,187	11,985
Urban Population 2000 (thousands)		82,233	5,400	29,154	7,892	18,674	21,113
Urban Population 2020 (thousands)		119,050	9,204	40,867	12,269	26,778	29,932
Percentage urban 1980		60	45	64	47	65	79
Percentage urban 2000		72	65	75	62	73	87
Percentage urban 2020		80	75	81	73	79	91
Urban Population growth rate (percent)							
	1980 – 1985	3.5	4.0	3.0	4.4	3.1	3.2
	2000 – 2005	2.4	3.2	2.0	2.7	2.1	2.1
	2020 - 2025	1.4	1.9	1.2	1.5	1.4	1.2
Urban Population growth rate (percent)							
	1980 – 1985	0.4	-0.0	0.3	1.0	1.0	-0.1
	2000 – 2005	-0.1	-0.0	-0.2	0.0	0.2	-0.2
	2020 - 2025	-0.3	0.1	-0.4	-0.4	-0.3	-0.2
Population in Urban Agglomerations, >750.000. 1995 (percent)		X	28	37	27	28	36
Population in Urban Agglomerations, >750.000. 2015 (percent)		X	35	39	32	29	37

[52] http://earthtrends.wri.org/datatables/index.cfm?theme=4&CFID=1622&CFTOKEN=63727534
[53] http://www.wri.org/wr-98-99/pdf/wr98_ud1.pdf

		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Percentage of Population in Specific Age Groups. Year 2000							
	Under 15	X	40	33	34	33	34
	Between 15–65	X	56	63	61	62	62
	+ 65	X	4	5	5	5	4
Infant mortality rate (per 1000 live births) 1995 – 2000		X	66	30	46	45	21
Under – 5 Mortality Rate (per 1000 live births) 1997		X	96	30	39	56	25
FOREST RESOURCES							
		REGION	**BOLIVIA**	**COLOMBIA**	**ECUADOR**	**PERU**	**VENEZUELA**
Total forest							
	Extent 1990 (1000 Ha)	232,756	51,217	54,299	12,082	68,646	46,512
	Extent 1995 (1000 Ha)	223,992	48,310	52,988	11,137	67,562	43,995
	Average Annual Change (%) 1990 – 1995	-0.75	-1.17	-0.49	-1.63	-0.32	-1.11
Percentage of total Forest of the Andean Region with respect to South America		25.73					
Natural forest							
	Extent 1990 (1000 Ha)	232,120	51,189	54,173	12,037	68,462	46,259
	Extent 1995 (1000 Ha)	223,356	48,282	52,862	11,092	67,378	43,742
	Average Annual Change (%) 1990 – 1995	-0.76	-1.17	-0.49	-1.64	-0.32	-1.12
Plantations							
	Extent 1990 (1000 Ha)	636	28	126	45	184	253
	Extent 1995 (1000 Ha)	1,378	20	300	120	349	589
	Average Annual Change (%) 1990 – 1995	23.33	-6.73	17.35	19.62	12.80	16.90
Land Area (1000 ha)		456,197	108,438	103,870	27,684	128,000	88,205
Original forest as a percent of land area		74.8	53.9	92.2	78.8	74.4	74.7
Forest as a percent of original forest							

		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
	Current forests 1996	73.5	77.2	53.5	66.4	86.6	83.6
	Frontier forests 1996	46.6	43.6	36.4	36.9	56.7	59.3
Percent forest frontier threatened 1996		70.4	96.9	18.7	99.5	99.6	37.3
Tropical forests							
	Area (1000 Ha)	266,583	68,638	53,186	13,508	75,636	55,615
	Percent protected	22.2	12.1	10.8	23.9	5.1	59.0
Sparse trees and parkland							
	Area (1000 Ha)	7,412	0	0	755	2,660	3,997
	Percent protected	13.7	0	0	46.9	3.0	18.6
Number of tree species threatened 1990's		X	79	227	175	281	70
Average Annual Roundwood Production. Cubic meters (1000) 1996 – 1998		42,466	2,129	18,622	11,081	8,494	2,140
Average Annual Roundwood Production (percent) of the Andean Region with respect to South America Roundwod Production 1996 - 1998		14.31					
WATER AND SANITATION							
		REGION	**BOLIVIA**	**COLOMBIA**	**ECUADOR**	**PERU**	**VENEZUELA**
Population with access to drinkable water (percent)							
	Rural 1990 – 1997	49	32	56	49	33	75
	Urban 1990 - 1997	85	86	97	80	84	80
	Total 1990 - 1997	72	63	85	68	67	79
Population with access to sanitation							
	Rural 1990 – 1997	42	37	56	49	37	30
	Urban 1990 - 1997	84	74	97	95	89	64

	REGION	BOLIVIA		COLOMBIA	ECUADOR		PERU	VENEZUELA
Total 1990 - 1997	70	58		85	76		72	58
	REGION	El Alto	La Paz	Bogotá	Guayaquil	Quito	Lima	Valencia
Percentage of Urban households connected to water	X	33	55	99	80	94	70	90
Percentage of Urban households connected to sewage system	X	20	58	99	55	93	69	86
Percentage of Urban households with access to electricity	X	83	94	99	95	100	76	90
Per capita water use (liters/ day)	X	43	73	176	261	-	211	-
Waste water treated (percent)	X	0	0	-	10	-	5	-
Per capita solid waste generation (kg. Per day)	X	0.4	0.5	0.6	0.6	0.8	0.5	-
Households with garbage collection (percentage)	X	95	92	94	70	89	57	-
Urban population with acces to drinkable water[54] (thousands of people)	66,982	4,441		25,619	6,220		14,729	15,973
Percentage of urban population with acces to drinkable water	87.1%	93.1%		89.2%	81.5%		86.8%	84.6%
Rural population with acces to drinkable water (thousands of people)	14,279	1,399		5,024	2,335		3,962	1,559
Percentage of rural population with acces to drinkable water	51.6%	44.0%		41.7%	51.4%		50.6%	70.4%
Urban population with sewerage (thousands of people)	60,466	3,925		22,547	5,381		15,187	13,426
Percentage of urban household connected to sewerage	78.4%	82.3%		78.6%	70.5%		89.5%	71.1%

[54] http://www.cep is.ops-oms.org - 1998 - 2000

		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Rural population with sewerage. (thousands of people)		8,948	1,122	2,000	1,681	3,093	1,052
Percentage of rural population with sewerage		35.2%	35.3%	16.6%	37.1%	39.5%	47.5%
Volume of waste water treated from the sewerage (Percent)		13.9%	30.0%	10.8%	5.0%	14.0%	10.0%
Percentage of Population that receives water in agreement with the guides of the OMS[55]							
	Urban	X	65	-	82	-	100
	Rural	X	40	-	38	-	83
Percentage of urban waste water treated before its unloading		X	30	5	--	--	--
Percentage of waste treated by level							
	Primary Treatment	X	33	--	--	--	--
	Second Treatment	X	67	100	--	--	--
	Others	X	--	--	--	--	--
Percentage of waste unloaded into rivers, lakes and sea							
	River	X	80	--	80	--	66
	Lake	X	20	--	1	--	24
	Sea	X	--	--	19	--	10
Water consumption of urban population (per capita) l/c/d		214	120	150	145	300	356
Water consumption of rural population (per capita) l/c/d		X	60	150	50	50	N/A

MARINE AND COASTAL RESOURCES[56]						
	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Coastal Length (Km.)	20,595	0	5,874	4,597	3,362	6,762

[55] http://www.cepis.ops-oms.org/bvsacg/e/evalua.html
[56] http://earthtrends.wri.org/datatables/index.cfm?theme=1&CFID=1622&CFTOKEN= 63727534

	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Area of continental shelf (1000 Km^2) (for 200 m depth)	256.1	0.0	16.2	31.5	84.8	123.6
Territorial sea (up to 12nm) (1000 Km^2)	X	X	44.0	107.3	59.6	136
Claimed exclusive economic zone (1000 Km^2)	X	X	706.1	X	X	385.7
Exclusive fishing zone (1000 Km^2)	X	X	X	957	746	X
Population within 100 Km. from the coast (percent)	220.7	0	29.9	60.5	57.2	73.1
Mangroves area (Km^2)	X	X	3,659	2,469	51	2,400
Mangroves protected area (Km^2)	X	X	817	337	0	4,041
Number of mangrove species	X	X	11	7	5	7
Number of seagrass species	X	X	X	X	X	4
International Legal Net Trade in Live Coral. 1997 (number of pieces)	X	X	8	-3,700	X	X
Total average annual internal renewable water resources (Km^3)	5,483	316	2,133	442	1,746	846
Average annual internal renewable water resources per capita (m^3) 2000	226,334	37,941	50,400	34,952	68,039	35,002
Annual river flows from other countries (Km^3)	X	7.2	0.0	0.0	144.0	X
Total annual withdrawals (Km^3) different years	1,304	130	510	134	303	227
Annual withdrawal per capita (m^3) year 2000	59,455	15,609	12,051	10,596	11,807	9,392

BIODIVERSITY							
		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Total number of mammal known species[57]							
	All species	X	316	359	302	460	323
	Endemic species	X	16	34	25	49	19
	Threatened species	X	24	35	28	46	24
Percentage with respect to the number of mammal's species in the world.		X	6.8	7.7	6.5	9.9	6.9
Number of mammal species per 10.000 Km^2		82	67	75	100	93	73
Total number of bird known species							
	Breeding species	X	1,300[58]	1,700	1,388	1,541	1,340
	Endemic species	X	18	67	37	112	40
	Threatened species	X	27	64	53	64	22
Percentage with respect to the number of bird's species in the world.		X	13.4	17.5	14.3	15.9	13.8
Number of bird species per 10.000 Km^2		341	277	356	460	310	302
Total number of reptile known species							
	All species	X	211	593	380	360	283
	Endemic species	X	20	115	120	96	66
	Threatened species	X	3	15	12	9	14
Percentage with respect to the number of reptile's species in the world.		X	3.1	8.6	5.5	5.2	4.1
Number of reptile species per 10.000 Km^2		86	45	124	126	73	64

[57] http://earthtrends.wri.org/datatables/index.cfm?theme=7&CFID=1622&CFTOKEN=63727534
[58] http://www.bolivia-internet.com/tamandua/biodiversidad.php

		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Total number of amphibians known species							
	All species	X	122	684	426	376	245
	Endemic species	X	28	230	162	152	122
	Threatened species	X	0	0	0	1	0
Percentage with respect to the number of amphibian's species in the world.		X	2.7	15.1	9.4	8.3	5.4
Number of amphibian species per 10.000 Km^2		88	26	143	141	76	55
Total number of freshwater fish known species							
	All species	X	389	1,500	706	855	1,270
	Threatened species	X	0	5	1	0	5
Percentage with respect to the number of amphibian's species in the world.		X	1.5	6.0	2.8	3.4	5.1
Total number of plant known species							
	Higher plants	X	18,316	51,220	19,362	18,245	21,073
	Flowering plants	X	17,000	50,000	18,250	17,121	20,000
	Ferns	X	1,300	1,200	1,100	1,100	1,059
Endemic species of higher plants		X	4,000	1,500	4,000	5,356	8,000
Threatened species of higher plants		X	107	429	642	653	252
Percentage with respect to the number of flora species in the world.		X	6.8	18.9	7.2	6.7	7.8
Number of plant species per 10000 Km^2		5,893	3,885	10,735	6,421	3,674	4,752
Biotic zones		X	-	22[59]		84	
Number of climate types		X	-	-		28	27

[59] http://www.ecologia.edu.mx/pubs/biodiv/bdcolest.htm

LAND USE[60]							
		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Cropland							
	Total hectares (millions)						
	1987	18.05	2.20	5.37	2.83	3.79	3.86
	1997	17.22	2.10	4.43	3.00	4.20	3.49
	Change rate	-0.46	-0.45	-1.75	0.60	1.08	-0.95
	Hectares per 1000 people						
	1987	1,219	359	163	297	186	214
	1997	957	270	111	251	172	153
Hectares of continental surface (millions)[61]		456.7	108.4	103.9	27.7[62]	128.5	88.2
Hectares of agricultural area (millions)		142.5	36.0	45.7	8.1	31.3	21.4
Percentage of agricultural area with respect to the continental surface		30.91%	32.77%	43.96%	29,24%	24,36%	24,23%
Hectares of permanent pasture of agricultural area (millions)		125.5	33.8	41.3	5.1	27.1	18.2
Hectares of temporal crops of agricultural area (millions)		11.9	1.9	2.1	1.6	3.7	2.6
Hectares of permanent crops of agricultural area (millions)		5.3	0.3	2.3	1.4	0.5	0.8
Hectares of non arable and non permanent crops (millions)		438.9	106.2	99.5	24.7	123.8	84.7

OIL PRODUCTION[63]						
	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Oil production (thousands of barrel per day) 1998	4, 614	43	743	380	119	3,329
Oil importation (thousands of barrel per day) 1998	94	0	1	0	93	0

[60] http://earthtrends.wri.org/datatables/index.cfm?theme=8&CFID=1622&CFTOKEN=63727534
[61] www.fao.org/WAICENT/FAOINFO/AGRICULT/AGP/AGPC/doc/riceinfo/America
[62] República del Ecuador, Diagnóstico Ambiental
[63] http://www.developmentgateway.org/country-overviews

	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Total import of oil refined products (thousands of barrel per day) 1998	105	3	29	34	27	12
Oil Exportation (thousands of barrels per day) 1998	X	-	431	247	43	2,144
Refined oil total product export (thousands of barrels per day) 1998	882	4	54	35	30	759
Apparent consumption (thousands of barrels per day) 1998	1,097	40	295	137	168	457
Residual oil (thousands of barrels per day) 1998	X	0	-	7	-	8
Reserves (thousands of barrels)	X	396	2,600	2,100	-	77,000
Production (2000) thousands of barrels per day	3,969	265	125	379	100	3,100
Consumption in thousands of barrels per day	1,168	40	300	152	200	476
Energy consumption per capita (equivalent to Kg. of oil) 1997[64]	X	547	761	713	621	2,526
Energy consumption from non renewable energy sources 1997						
Solid fuels (1000 metric TOE[65])	4,123	856	2,704	0	305	258
Liquid fuels (1000 metric TOE)	54,648	2,095	14,332	6,794	8,572	22,855
Gaseous fuels (1000 metric TOE))	36,154	1,085	5,339	0	768	28,962

[64] http://www.wri.org/wr-00-01/pdf/erc2n_2000.pdf
[65] TOE = Tons of oil equivalent

	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Nuclear fuels (1000 metric TOE)	0	0	0	0	0	0
Final consumption of electricity (1000 metric TOE)	10,080	261	3,047	627	1,272	4,873
Passengers cars (per 1000 people) 1990	X	25	-	31	-	-
Passengers cars (per 1000 people) 1996	215	29	19	40	59	68
Annual motor gasoline consumption (liters per person) 1987	1,040	82	168	137	86	567
Annual motor gasoline consumption (liters per person) 1997	1,014	78	191	146	60	539

MINING[66]

	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Bauxite (1000 metric tons)	1,296	x	x	X	x	1,296
Iron ore (Fe content) (1000 metric tons)	92,643	x	75,000	X	4,900	12,743
Copper ore (Cu content) (1000 metric tons)	383,627	127	2,800	X	380,700	x
Silver ore (Ag content) (1000 metric tons)	2,324	410	6	x	1,908	x
Gold (Au content) (kilograms)	114,824	14,405	21,160	15,500	56,500	7,259
Salt (1000 metric tons)	4,293	5	550	x	238	3,500
Sand and gravel (1000 metric tons)	6,558	x	859	170	900	4,629

HEALTH[67 68]

	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Deaths by cholera 1995	6,947	749	521	1,016	4,581	80
Cases of cholera 1996	14,461	2,632	4,428	1,060	4,369	1,972
Cases of cholera 1999[69]	X	-	42	90	1,546	376

[66] http://www.wri.org/wr-98-99/pdf/wr98_em4.pdf
[67] http://www.uniceflac.org/espanol/sri_2000/indicadores
[68] http://www.paho.org/spanish/sha
[69] http://www.who.int/wer/pdf/2000/wer7531.pdf 1993

	REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Incidence of dengue by 100000 people. 2000	X	0.88	25.84	166.31	4.30	48.82
Cases of typhoid fever	X	11,901		7,856	5,155[70]	20[71]
Cases of viral Hepatitis	X	4,774		5,304	3,350	3,546[72]
Incidence of diarrheic diseases in children under 5 years (2000) cases/child/year[73]	X	5	27	12,076	6	688.239
Rate of mortality by diarrheic diseases (deaths per 1000)	X	7.90	N/D	3,044.00	0.11	16.18
Cases of Dengue (2000)	63,345	173	24,290	3,871	1,357	33,654
Cases of Cholera (2000)	8,977	1,632	1,508	65	3,483	2,289

AIR POLLUTION							
		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
Carbon dioxide emissions (1000 metric tons) 1990							
	Fossil fuels	X	6,247	-	18,878	19,599	107,334
	Land use change	X	50,007	-	13,736	83135	80,612
	Industrial processes	X	260	-	1,150	1,089	2,867
	Net CO2 emissions	X	56,514	-	33,764	103,824	190,813
Methane emissions from anthropogenic sources (1000 metric tons)							
	Fossil fuel extraction	X	14	-	21	22	1,827
	Fuel combustion	X	115	-	20	158	12
	Livestock	X	429	-	281	383	853
	Agriculture	X	29	-	108	298	98
	Waste	X	-	-	64	130	221
	Total methane	X	597	-	555	1,433	3,170
Carbon dioxide emissions (CO2) (1000 metric tons)							

[70] http://www.inei.gob.pe/cpi/bancopub/libsusc/LIB329/N197/CAPDD013.htm
[71] http://www.cideiber.com/infopaises/venezuela/Venezuela-02-03.html. 1995
[72] www.p os-oms.org.ve/desastres/vigilancia/gra-Se52/entericas/hepatitis
[73] http://www.cepis.ops-oms.org

		REGION	BOLIVIA	COLOMBIA	ECUADOR	PERU	VENEZUELA
	Solid Fuels 1996	14,410	0	11,871	0	1,447	1,092
	Liquid fuels 1996	154,929	4,639	38,901	20,918	22,416	68,055
	Gaseous fuels 1996	74,654	3,239	9,658	1,271	352	60,134
	Gas flaring 1996	15,065	1,759	719	960	43	11,584
	Cement manufacturing 1996	11,513	465	4,159	1,334	1,917	3,638
	Total 1990	213,663	5,500	55,850	16,569	22,175	113,569
	Total 1996	270,573	10,102	65,307	24,487	26,176	144,501
	Total contribution since 1950	6'840,029	159,637	1'589,993	421,888	771,034	3'897,477
Per capita CO2 emissions (Kg.) 1996		2,531	1,330	1,662	2,093	1,093	6,477
Nitrous oxide (1000 metric tons)		X	1	-	1	7	454
Sulfur dioxide [74], Annual average (ppm)		X	123 ?g/m^3 [75]	70 ppb (24 hours)	15.6 ?g/m^3 (Limit 80)	153 ?g/m^3 [76] (limit 80)	-
Nitrogen dioxide Annual average (?g /m^3)		X	-	200 ppb (1 hour)	51 (Limit 100)	162 (limit 100)	-
Carbon Monoxide		X	-	17 ppm (1 hour)	18 ppm (8 hours) [77]	-	-
Ozone		X	-	170 ppb (1 hour)	-	120 ?g/m^3	-
Volatile organic compounds, Annual average (?g/m^3)		X	282.889 [78] (Limit 260)	-	105 [79] (Limit 80)	225 (limit 75)	-
Lead, Annual average (?g /m^3)		X	0.2205 (Limit 1.5)	-	0.5 (limit 0.5)	0.29 (limit 0.5)	-

[74] http://www.cepis.ops-oms.org
[75] http://www.ems-sema.org/castellano/proyectos/solidaria/cochabamba/cap1-2.html
[76] http://www.cepis.ops-oms.org/bvsci/E/fulltext/2encuent/peru1.pdf 2000
[77] http://www.cepis.ops-oms.org/bvsci/E/fulltext/1encuent/ecupre2.pdf
[78] http://www.cepis.ops-oms.org/bvsci/E/fulltext/1encuent/bolivia.pdf
[79] http://www.cepis.ops-oms.org/bvsci/E/fulltext/cuenca/diagnost.pdf

SOLID WASTES							
		REGION	**BOLIVIA**	**COLOMBIA**	**ECUADOR**	**PERU**	**VENEZUELA**
Production of hazardous wastes in health establishments [80] (ton/year)		32,580	1,916	10,022	3,597	6,708	10,337
Treatment methods for hospital wastes		LN: Landfill; IN: Incineration; ND: Not available data; OT: Other; ----: It does not exist					
	Public Hospital	X	La Paz: LN Cochabamba: LN Santa Cruz: IN, LN	Bogotá: IN, LN	ND	IN (3%), LN	IN (40%), LN
	Private Hospital	X	La Paz: LN Cochabamba: LN Santa Cruz: LN	Bogotá: IN, LN	ND	IN (3%), LN	IN (31%), LN
	Other services	X	La Paz: LN Cochabamba: LN Santa Cruz: ND	Bogotá: ----	ND	LN, OT	----

[80] http://www.cepis.org.pe/bvsars/e/fulltext/informe/informe.pdf, 1995

Appendix 2: Progress on Environmental Policy*

Table A.2.0. General Plans, Programs and Strategies

General		
Instrument	**Objective**	**Commentaries**
Peru: Structural Framework for Environmental Management - MEGA	National structural implementation of management to harmonize sectoral policies and transform management into a more flexible and dynamic enterprise. Establishes clear coordination, decision-making and participatory mechanisms.	Regulation on environmental quality standards (ECA), maximum permissible limits (LMP), environmental impact evaluation, and environmental regulation framework for the manufacturing industry, legislation on solid wastes, exploitation of natural resources and territorial ordering.
Colombia: Collective Environmental Program (Proyecto Colectivo Ambiental - PCA) 1999 – 2002 Program of national and regional strategic ecoregions. Emphasis on environmental administration of uplands, sub-uplands (subpáramos), basins, wetlands and continental and marine water systems.	Establish environmental policy guidelines for the National Environmental System. Determination of conservation and sustainable development areas, which due to their physical and biological characteristics, are permanent water producers, therefore representing a guarantee for long term sustainable exploitation.	Its general objective is restoring and conserving priority areas in strategic ecoregions, promoting and encouraging sustainable regional and sectoral development, taking water as its articulating axis. National PCA guidelines are structured based on seven main programs: water, biodiversity, forests, sustainability of endogenous productive processes, quality of urban life, cleaner production, green markets. The interdependence among these programs defines the general orientation of the policy. Definition, delimitation and general characterization of the seven national strategic ecoregions. Basic characterization: localization and national, regional and local plans, characterization of municipalities and follow-up charts on their process in the formulation of their territorial ordering plan. Identification of 90 continental strategic regional ecoregions and 8 marine and coastal ecoregions.
Venezuela: Project for the National Plan for the Conservation, Defense and Improvement of the Environment (Proyecto del Plan Nacional de Conservación, Defensa y Mejoramiento del Ambiente)	Inserts the environmental dimension in decision taking.	
Ecuador: Environmental strategy for sustainable development in Ecuador and Strategy for the decentralization of environmental administration		Creation of nine programs: ✍ Exploitation of Natural Resources ✍ Forests and forestry support ✍ Integrated management of water resources ✍ Energetic efficiency promotion ✍ Galapagos Islands administration and conservation ✍ Environment contamination prevention and control ✍ Protected areas system of consolidation ✍ Environmental management institutional developing ✍ Improving citizen education and public awareness

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

A.2.1.1. Forests

General

Formulation of forest development laws to halt deforestation, make intellectual property rights on traditional knowledge effective, develop mechanisms to ensure conservation, protection of water basins and forestry and reforestation activities.

Promulgation of new regulation for tropical forest and forest plantations sustainable exploitation.

Ecuador

- Strategy of sustainable forest development
- Forestation and sustainable management Master Plan
- National Plan for the Promotion of Forest Plantations (Plan Nacional de Fomento de Plantaciones Forestales)

(Intervention guide to promote and control forest activities, adequate assessment of forest environmental goods and services)

- Institution of forest governor system
- Establishment of sustainable management pilot projects
- Training
- Allocation of more than 15,000 hectares of forest resources to ancestral communities

(Other resources involved: biodiversity, soils, water)
(Other mechanisms involved: property rights)

- Agreements with Siona and Secoya indigenous communities located in the Cuyabeno Reserve, to determine their territories' frontiers.

(Other resources involved: biodiversity, soils, water)
(*Other mechanisms involved: property rights*)

- 15 Chachi, Shuar and Black communities administrating 20,000 hectares of native forest in a sustainable way

(Other resources involved: property rights)

- Concession of use and custody of 12,000 hectares of mangrove swamps to ancestral users (6 to communities of the Esmeraldas Province and 2 in Guayas)

(Other resources involved: biodiversity and marine resources)

- Identification of 45 ancestral communities for the following concessions
- Development of agroforest systems with 1000 families in the Ecuadorian mountain range.

(Other resources involved: soils)

- Creation of multidisciplinary and intersectoral work group to define national standards on forest certification, within the framework of the FSC initiative.
- Study: Accounts on Forest Resources (Contabilidad de Recursos Forestales) Ecuador

Colombia

- National Plan on forest development and related plans

(Presented in coordination with the Ministries of Agriculture, Economic Development and International Trade, and in the National Planning Department (Departamento Nacional de Planeación). Establish strategic framework that actively incorporates the national development sector, optimizing comparative advantages and promoting competitiveness of timber-yielding forest products in national and international markets, starting from sustainable management.

- Establishment of new forest plantations and maintenance of protection areas

(Other resources involved: water and biodiversity)

(1998)

- Maintenance of 20,379 reforested hectares contracted in the country's main hydrographic basins
- Establishment of 11,675 new hectares for reforestation, in micro-basins that supply municipal aqueducts.
- Generation of 2,482 permanent jobs

(1999)

- 15,988 hectares of protection and protection-production plantations were contracted
- Support to urban environmental authorities for sustainable development and administration of 40,000 hectares established during the last years
- Agreements that establish 4,192 new hectares of protection and protection-production plantations

Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

belonging to 180 micro-basins
(2000)
- 9,057 new hectares contracted, of which 5,601 corresponded to protection-production and 1,068 to protection plantations

✍ Title deeds on 167,561 hectares to Black communities in three departments (Nariño, Valle del Cauca and Choco) that benefit 2,825 families
(Other resources involved: biodiversity)
✍ Determination of frontiers and constitution of 69,727 hectares for indigenous reserves
(Other resources involved: biodiversity)
✍ 10 socioeconomic studies to constitute indigenous reserves, 20 processes of reserve frontier determinations, 15 procedures to constitute or extend indigenous reserves in an estimated area of 68,400 hectares, benefiting 2,900 persons
(Other resources involved: biodiversity)
✍ Up to July 2000, there were 32 constituted reserves in relation with a total of 40 planned
(Other resources involved: biodiversity)
✍ 16 investigation and characterization studies on forest reserves sustainable management
(Other resources involved: biodiversity)
✍ 108 hectares of investigative-demonstrative plantations of promising tropical species
✍ Study of national and international market for timber-yielding and non timber-yielding forest products, so as to know their current and potential demand and envisage the necessary strategies to guarantee preservation and conservation
(Other resources involved: biodiversity)
✍ Constitution of 18 centers to combat forest fires

Bolivia
✍ 6.1 million hectares under forest concession
✍ Up to 1998, 96 general plans on forest management approved, corresponding to 73 forest concessions, 21 private property plans, and 2 communal land plans.
✍ One million hectares of natural forests distributed in 9 timber companies are managed in a sustainable way, as certified by the Forest Stewardship Council FSC
✍ Declaration of 41.2 million hectares as a Permanent Production Zone, as an administrative measure of forest regulation for the conservation and sustainable management of tropical forests
✍ Development of 8 technical interrelated norms regulating in detail those activities for developing forest administration plans, forest inventories and extraction activities of timber-yielding and non timber-yielding products; raw materials processing and transportation, control and supervision of burnings and fires.

Peru
✍ Execution of project in the private sector: of the Amazonian Entrepreneurial Group (Grupo Empresarial Amazónico - GEA) for the afforestation of Bolaina and Copaiba in Ucayali, in deforested zones, with intensive labor and associations with landowners
✍ 605,825 reforested hectares, ciphers accumulated up to 1998
✍ 67,625 reforested hectares during 1998
✍ National Work Group on mountains

Venezuela
✍ Document on National Forest Policy
✍ Forest organization and management plans in forest reserves and wooded lots
✍ Integral Forest Management Plan (Plan Manejo Forestal Integral)
(Establish basis to formulate laws to orient management and development process on forest resources
✍ Terms of reference and draft of document for Integral Forest Management Plan
✍ MARNR BID Program for upper basins of the following rivers: Bocono (Trujillo State), Tocuyo (Lara

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

State), and sectors of the upper and middle basin of Yaracuy River (Yaracuy State)
- ✍ Agreement with National Petroleum Industry (Industria Petrolera Nacional) to reforest the states of Portuguesa and Anzoategui.
- ✍ Reforestation projects by the National Reforestation Company – CONARE
- ✍ Chuquisaca within the framework of the plan on ecological progress: 500 hectares in each one of the 15 basins that were selected

A.2.1.2. Biodiversity

General

Development of regulation

Colombia

- ✍ National Biodiversity Policy (Política Nacional de Biodiversidad)
- ✍ National Biodiversity Strategy (Estrategia Regional de Biodiversidad) within the framework of the Community of Andean Nations (Comunidad Andina de Naciones)
- ✍ Program of productive endogenous methods to promote cultural heritage and sustainable use of biodiversity in conservation processes, and economic and social benefit of the regions through the generation of employment and regional added value. Within this framework, they have developed:
- Production systems and technological packages with emphasis in promissory native species
- Flora inventory in strategic areas of the Amazonian region; processing, determination and inclusion of data on 5,000 botanical specimens
- Investigations on management of transformations on fruit trees, agroforestry and pastoral-forestry systems in the Amazonian region
- ✍ Proposal to protect traditional knowledge within the context of access to genetic resources
- ✍ Support to projects on conservation and recovery of biological and cultural conditions of the Siona and Kofan communities
- ✍ Progress on identification of productive sectors' negative effects on biodiversity
- ✍ Accomplishment of national inventory on flora and fauna
- ✍ Formulation of technical foundations to delineate wetlands policy
- ✍ Updating regulation on topics related with sustainable use and exploitation of aquatic and wild fauna, records on wild flora nurseries and farms.
- ✍ Codification of fauna statute
- ✍ Development of criteria on categorization, prioritization and monitoring of endangered wild species
- ✍ Agreement with animal farms on fauna use and exploitation procedures
- ✍ Colombian Caribbean macrofauna characterization: records on 700 species, 350 new records, and 15 new species for science
- ✍ Implementation of species conservation programs: Andean condor, uplands tapir, Andean bear, marine turtles
- ✍ Investigation on composition, distribution, structure and processes of the ecosystems and the marine and coastal fauna and flora to ensure its conservation and sustainable exploitation: inventory, base line, monitoring and conservation biology, ecosystems biology and marine environmental quality program
- ✍ Regulation on scientific investigation on biological diversity *(See Appendix 3)*
- ✍ Support agricultural sector, foreign trade, foreign relations, industrial association and development to include the country in the Convention for the Establishment of an Inter-American Tropical Tuna Commission and in La Joya's Agreement of the International Program for Dolphin and Tuna Fish Protection
- ✍ Structuring of Protected Areas National System.
- 45 investment projects in areas
- 8 pilot projects on participatory augmentation to create protected areas regional systems
- Diagnostic base to formulate strategic plan for the recovery of endangered fauna species
- ✍ Assigning titles deeds on land. See Table 4.1 in this Appendix.

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Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

- Constitution of indigenous reserves
- Granting of five collective title deeds on 230,000 hectares benefiting Black communities settled in three departments
- 1.38 million hectares (accumulated cipher) granted in collective land title deeds
- 31 processes of collective title deed granting on land property to different communal councils in the Pacific region

(Other resources involved: forests)
(Other mechanisms involved: property rights)

Bolivia

✍ National Strategy for the Conservation of Biodiversity (Estrategia Nacional de Conservación de la Biodiversidad) and Action Plan.

(Reorientation of conservation policies. Proposes biodiversity sustainable use and groups least integrated to society as chief beneficiaries)

✍ Action plan in five areas:
- Strengthening national capacity to administrate biodiversity
- Conservation of ecosystems, species and genetic resources of ecological importance, economic and cultural
- Strengthening of local administration in biodiversity conservation and sustainable use
- Attracting investments in biodiversity environmental products and services
- Development of public awareness

✍ Protected Areas National System:
- Management plans of areas assigned as top priority
- Training human resources (national park ranger corps)
- Establishment of Administration committees

✍ National System of Genetic Resources
✍ Several projects on current state of species given priority, in compliance with CITES
✍ Program of Conservation and Management of the Vicuna:
- Population recovery in 15,356 individuals since 1996
- Activities of diffusion, training and raising public awareness, to animal wardens, animal shearers, communal leaders and guardians on: legal framework, control, protection, capture and shearing
- Declaring 250 areas for communal administration in the provinces of Ingavi, Pacajes and Jose Manuel Pando in La Paz and 50 communities in the Sud Lipez Province in Potosi
- Conforming five boards for vicuna handlers regional associations
- Administration unto the CITES secretariat of the vicuna passage from Appendix I to Appendix II in the pilot centers of Mauri/Desaguadero, Ulla Ulla in the department of La Paz, and Sud Lipez in the Potosi Department. Lifting of zero quota in the year for the export of vicuna fabrics

(Other mechanisms involved: international agreements)

- Production initiation of vicuna fiber during the year 2000, with a result of 80 kg stockpiled for posterior transformation and marketing

✍ National Lizard Program:
- Ministerial resolution and decree authorizing regulation of lizard exploitation and conservation
- 30,000 skins in 1999 to the amount of US $1.2 million, in the Beni Department, exporting through certification and sealing
- 46,500 skins in 2001
- Authorized CITES quota: 50,000 skins
- From 1999 onwards, significant progress on: habitat zoning, inventories, population estimations per ecoregion and establishment base line to monitor population centers, georeferenced information

✍ Technical consultancy body on access to genetic resources, with approved internal regulation
✍ Case study on process of creating the genetic resources component of the national strategy. Cooperation agreement between the Vice-Ministry of the Environment, Natural Resources and Forest

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

Development (Viceministerio del Medio Ambiente, Recursos Naturales y Desarrollo Forestal - VMARNDF) and the Royal Botanic Gardens of Kew (Jardín Botánico Royal de Kew)

✍ Interinstitutional cooperation agreement to create the National Study to Create Legal Instruments for the Protection of the Cultural Heritage of Indigenous and Native Communities

Ecuador

✍ Strategy for biodiversity conservation and sustainable exploitation
(Provide policy guidelines for the exploitation of resources)

✍ Expansion of protected areas by creating the National Parks National System (Sistema Nacional de Parques Nacionales)

✍ Agreement with the Cuenca municipality for the administration of Cajas National Park

✍ Founding the Ecuadorian Institute of Forestry, Natural Areas and Wildlife (Instituto Ecuatoriano Forestal y de Areas Naturales y Vida Silvestre – INEFAN)

✍ Creation of National Administration of Phytogenetic Resources (Dirección Nacional de Recursos Fitogenéticos)

✍ Augmented activities at the Ecuadorian Museum of Natural Sciences (Museo Ecuatoriano de Ciencias Naturales)

✍ Augmented activities at the Herbarium of the Catholic University of Ecuador (Herbario de la Universidad Católica del Ecuador)

✍ Assignment of lands to indigenous communities and concessions of use and custody of mangrove swamp lands. Development of agroforest systems. See Table 4.1 of this appendix

(Other resources involved: forests, soils)
(Other mechanisms involved: property rights)

✍ Galapagos Islands Programs

- BID Loan Agreement entered upon to execute Environmental Management Program (Programa de Manejo Ambiental) for the Galapagos Islands (US $10.4 million), which comprises administration of marine reserve, environmental recovery, support to quarantine and inspection system, strengthening and development. Furthermore, with nonrefundable BID resources, exploitation of programs to support tourism administrated by the local community.
- Administration unto UNESCO to incorporate resources among the World Heritage List.
- Completion of preparation phase of project "Control of Species Introduced in Galapagos" (Control de Especies Introducidas en Galapagos)
- Execution of ARAUCARIA project with a donation from the Spanish government, to improve control and surveillance of resources, strengthen cooperatives, and technical and operational improvements at the municipalities of San Cristobal and Isabela
- Drafts on specific regulations on fishing, tourism, agriculture and livestock, and environmental administration.

(Other resources involved: Marine resources, soils)
(Other priorities involved: environmental recovery)

Peru

✍ National Biodiversity Strategy

✍ Technical groups operating on:

- Biodiversity – national level
- Biodiversity of Cotahuasi sub-basin in Arequipa
- Network of protected natural areas in the Central Andean region.
- Biodiversity preservation and management of Piura region.

✍ National Ecosystems Program for Elaborado Mountain

✍ Projects:

- Supporting UICN strategies
- Amazonian Biodiversity – Biodamaz

✍ National report on CDB implementation state

✍ Traditional knowledge subcommittee in the National Commission on Biological Diversity (Comisión

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

Nacional sobre Diversidad Biológica)
- ✍ Clearinghouse on biological diversity
- ✍ Facilitation mechanism for updated information exchange
- ✍ Publication of priorities on use and conservation of biological diversity
- ✍ Creating 21 departmental strategies for biodiversity conservation and sustainable use
- ✍ Inventory on biosecurity technical norms
- ✍ Web page of national strategy
- ✍ Intellectual Property:
- Proposed publication of Protection Regime on the Collective Knowledge of Indigenous Communities
- Proposed presentation on protection of intellectual property rights on local and indigenous community traditional knowledge, currently being prepared for the WTO World Conference in Seattle.

Venezuela
- ✍ Evaluation and inventory of phytogenetic resources.

A.2.1.3. Water Resources

Colombia
- ✍ Conservation Strategy, recovery and sustainable management of national strategic ecoregions. Emphasis in environmental administration of uplands (páramos) and sub-uplands (subpáramos), basins, wetlands and continental and marine hydrological systems
- ✍ Organization and environmental administration plans for Colombian Massif and Perija Mountain Range (Serranía de Perijá)
- ✍ Sustainable development plan for Sierra Nevada of Santa Marta
- ✍ Strategic proposal for Colombian Northeastern region strategic ecosystems organization and planning (GENOR)
- ✍ Contracts entered into on installation and maintenance of protector forest plantations on chief hydrographic basins and microbasins. See Table A.2.1.1 of this appendix.

(Other resources involved: forests, biodiversity)
(Other mechanisms involved: property rights)
- ✍ Implementation of system for imposing charges on water contamination in 22 corporations

(Other priorities involved: water and sanitation)
(Other mechanisms involved: economic instruments)
- ✍ National network on water quality: national reference laboratory already established, and progress in intercalibration and standardization of information for regional reference laboratories, with the participation universities and investigation centers.
- ✍ Within the framework of the Ramsar Convention:
- Continuation of process of recovery and monitoring of Cienaga Grande of Santa Marta. Restoration of Aguas Negras, Renegado and other rivers. Consolidation of US $800 thousand for sustainability.
- Project evaluation of new Ramsar sites

(Other mechanisms involved: International agreements)
Agreement on National Program for Sustainable Management and Recovery of High Altitude Mountain Ecosystems (Programa Nacional para Manejo Sostenible y Restauración de Ecosistemas de Alta Montaña)

Ecuador
- ✍ National Strategy of Water Resources (Estrategia Nacional de los Recursos Hídricos)
- ✍ Project of Integrated Management of Water Resources:
- Joint work with Ministry of Agriculture for the development of payment for environmental services
- Cooperation agreement with ECOCIENCIA to develop payment for environmental services in the uplands (páramo)

(Other mechanisms involved: economic instruments)
- ✍ Within the framework of the International Convention to Combat Desertification: formulation of National Action Plan.

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Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

(Other resources involved: soils)

Bolivia

- The National Planning System has defined three great Macroregions starting from the Macrobasins: Articulate in coherent way the natural physical areas with administrative and political boundaries, promoting an integral use of the resources.
- Main activities carried out for the implementation of "basin" as basic planning unit.
- Creation of Strategy on Water Resources National Plan (Estrategia del Plan Nacional del Recurso Hídrico). Basin component of BID project.
- Agreement signed with Ministry of Agriculture to execute organization of Water Resources.
- Adjustment and updating of National Strategy for the Administration of Hydrographic Basins - National Plan of Hydrographic Basins (Plan Nacional de Cuencas Hidrográficas)
- Elaboration of project for the execution of "Water Balance at Basin Level" to provide basic information for regional level water resources planning, by determining the offer of water per basin
- Production of studies on mountain ranges:
- Irrigation plan in La Huarina area.
- Mountain torrents plan in the Cochabamba region.

Peru

- Technical work groups in:
- Management of Osmore and Moquegua Basins.
- Integral Project on Recovery and Conservation of Chinchaycocha Lake.
- Decontamination and preservation of river water in the Piura region
- Control and recovery of Santa River's water quality

Venezuela

- Proposals on management and conservation plans for the upper basins of the following rivers: Hueque (Falcon State), Uribante, (Tachira State), and Manzanares – Carinicuao (Sucre State)

A.2.1.4. Maritime Resources

Colombia

- Approval of the National Environmental Policy for the Sustainable Development of Oceanic Areas and Coastal and Insular Zones (Política Nacional Ambiental para el Desarrollo Sostenible de los Espacios Oceánicos y Zonas Costeras e Insulares)
- Establishment of integrated management plans for coastal zones, and regional coordination to establish Integrated Administration Units in coastal springs – pilot cases: Sierra Nevada of Santa Marta, Morrosquillo Gulf, San Andres and Providencia, Malaga Cove, Guapi River mouth
- Formulation of binational project Colombia – Ecuador for joint management of mangrove swamps and related resources in border zones
- Execution of Project on Diagnosis and Evaluation of Marine Environmental Quality in the Colombian Caribbean and Pacific Areas (Proyecto Diagnóstico y Evaluación de la Calidad Ambiental Marina en el Caribe y Pacífico Colombiano). Environmental Investment Fund, BID credit.
- Surveillance network for the conservation and protection of marine and coastal water quality in order to contribute scientific referents on environmental quality

(Other mechanisms involved: diffusion of information)

- Studies and actions related with coral reef recovery and/or natural regeneration
- Production of strategic guidelines for mangrove swamp conservation, zoning and sustainable management based in Mangrove Swamp National Program (Programa Nacional de Manglares)
- National program for the prevention, reduction, control and evaluation of terrestrial and marine contamination sources
- Macrofauna characterization of Colombian Caribbean. See Table A.2.1.2 in this appendix.

(Other resources involved: biodiversity)

(Other mechanisms involved: diffusion of information)

- Support for the country's inclusion in the Inter-American Tropical Tuna Commission and in La Joya's

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Appendix 2: Progress on Environmental Policy*

Table A.2.1. Natural Resources: Plans, Programs and Strategies

Agreement.

(Other resources involved: biodiversity)

- Activities to generate knowledge on ecosystems and marine and coastal fauna and flora. See Table A.2.1.2 in this appendix.

(Other resources involved: biodiversity)

- Regional project for the Pacific's marine and coastal areas within the framework of the Pacific Southeastern Permanent Commission (Comisión Permanente del Pacífico Sudeste – CPPS)

Ecuador

- Programs developed in Galapagos. See Table A.2.1.2 in this appendix.
- Coastal Resources Management Program
- Study on Mangrove Swamp Protection in Ecuador
- Constitution of Committee for the interinstitutional coordination of mangrove swamp ecosystem protection and conservation actions

Peru

- Multisectoral program (IMARPE, MIPE / DINAMA, FONDEPES, ITP, PROMPEX) of diffusion and promotion of direct sales of consumer products in main ports.
- Laws and Regulation on aquaculture prepublished by the Ministry of Fishing
- Technical Group for:

- Decontamination and preservation of bay waters of Sechura, Paita and Talara.

A.2.1.5. Soils

Bolivia

- Activities contemplated within the framework of the International Agreements. See *Appendix 4*
- National Action Plan to Combat Desertification and Special Project for the Rehabilitation of Impoverished Soil in the Valle Central of Tarija. For the execution of the plan, the country has already obtained promise of external funding for US $ 4.0 from the German government.
- Rural Development of Dry Zones Program (Programa de Desarrollo Rural de Zonas Secas). Executed with GTZ international technical cooperation, US $2.0 million
- Consolidation of two subregional action programs: American Puna (Argentina, Bolivia, Chile, Ecuador and Peru) and American Chaco (Argentina, Bolivia and Paraguay)

Peru

- Technical Group in:

- Preventing deterioration of agricultural soils due to management of irrigation water
- Production of Plan to Combat Desertification in Arequipa

Ecuador

- Development of agroforest systems with one thousand families from the Ecuadorian mountain range
- Other resources involved: Forests.

Venezuela

Agreement with National Petroleum Industry for soil conservation practices in Barinas and Tachira

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Appendix 2: Progress on Environmental Policy*

Table A.2.2. Urban Environment: Plans, Programs and Strategies

A.2.2.1. Air

Peru

- National Program for Monitoring Air Quality. Its objective is to determine the relation between diseases and air quality in the country's main cities, and to evaluate impact on air quality from regulations dictated on technical measures to reduce contamination.
- Base line studies have been carried out in Lima and Callao, Arequipa, Trujillo, Cusco, Iquitos, La Oroya, Ilo, Chimbote, Tacna, Huaraz and Cerro de Pasco
- Establishment of 5 permanent monitoring stations in Lima and Callao, 2 in Arequipa and 6 in Ilo, as part of the objective to establish the quality monitoring networks of the second stage of the National Program for Monitoring Air Quality. The third stage, the epidemiologic monitoring of diseases caused by atmospheric contamination, is being designed.
- Administration Committee of Clean Air Initiative: Organization that coordinates public and private organisms to arrange actions for an integrated development administration of air quality. Main undertakings: The Integral Plan for the Atmospheric Cleansing of Lima-Callao, includes measures that shall be implemented in the region to prevent contamination (implementation of technical inspections, establishment of monitoring network, improvement of fuel quality, establishment of maximum permissible limits), urban air quality diagnosis and supporting the creation of regulation for the prevention of contamination.
- The district municipalities of Lima (Rimac, San Miguel and Jesus Maria) have established their own maximum permissible limits and currently oversees its jurisdiction
- Metropolitan municipality of Lima: inspections for determine motor vehicle emission levels in the city: 300 vehicles controlled
- Municipality of Cusco prohibited circulation of vehicles that surpass the maximum permissible limits established: the number of vehicles requesting reworking services has increased from 16 to 44 vehicles per day.
- Cost study on compressed natural gas buses, within the framework of the Clean Development Mechanism
- Diffusion of projects on compressed natural gas buses
- Program on atmospheric quality and withdrawal of lead from gasoline:
  - Monitoring air quality done for clean air committee coordination
  - Prepublication of regulation on technical inspections, vehicle imports
  - Proposal to change lead in 84% gasoline to ethanol
- Prepublication of maximum permissible limits (mpl) for transportation sector
- Maximum permissible limits on three sectors have been published: mining, fishing, industry
- Environmental quality standards: Approval of national regulation on standards of environmental atmospheric quality for 8 contaminant criteria (values and application in 13 zones within the country)
- Regional air and water decontamination plans in Arequipa, Lima, Chimbote and La Oroya. Creation of technical groups in Arequipa, Chimbote and La Oroya, in charge of developing air decontamination strategy. Technical group for the recovery of air quality in the Ancash coastal zone.
- Approval of protocols on atmospheric emission monitoring.

Appendix 2: Progress on Environmental Policy*

Table A.2.2. Urban Environment: Plans, Programs and Strategies

Colombia

- Actions related with cleaner production programs. *See Section A.2.3.2.*
- Atmospheric Contamination control programs in Bogota.
- New regulation on air. Regulation on quality standards and maximum permissible limits of total suspended particles, SOx, NOx, CO, HC.
- Execution of program on atmospheric contamination:
  - Technological improvement of new motor vehicles (contaminant emission reduction by 80% ? 290,000 tons)
- Establishment of 7 air quality monitoring networks in the main cities
- Program to control mobile sources:
  - Design of motor vehicle inspection and maintenance programs
- Program to control fixed sources:
  - Doing follow-ups on cleaner production agreements
  - Evaluation of problems mining environmental in areas of urban influence

Venezuela

- Publication of norms
- Air quality and atmospheric contamination control: air quality standards are established, as well as standards on fixed sources emission limits. CO_2, suspended particles, CO, nitrogen dioxide, ozone, hydrogen sulfur, lead in suspended particles, hydrogen fluoride, fluorides, hydrogen chloride, chlorides.
- Emissions of mobile sources: establishes norms for the control of exhaust and evaporative emissions coming from mobile sources, gasoline or diesel
- Certification of emission coming from mobile sources: procedures that must be followed by gasoline or diesel motor vehicle manufacturers, assemblers or importers in order to obtain a mobile source emission certificate.
- The MARN Atmospheric Quality Management carries out the following programs:
- National Evaluation of Air Quality through national network of air quality evaluation
- Control of atmospheric contamination caused by fixed and mobile sources
- National Evaluation and Supervision of environmental laboratories specialized in evaluating atmospheric contaminants

A.2.2.2. Solid and Hazardous Wastes

Peru

- Program to monitor administration of domestic solid wastes. Districts of Ate, El Agustino, Santa Anita, La Molina, Lurigancho, Ricardo Palma, Santa Eulalia and Chaclacayo. Results January - September 2000: Reduction in sanitary risk, as a result of improvement in collection of solid wastes with respect to 1999.
- Completion of Integral and Sustainable Administration Program for urban residues: Agreements signed with municipalities of Cusco, Calca, Huancayo and Tarma, to execute the program. Technical Group working in integral administration of urban residues in the region Piura, to propose criteria and strategies.
- Agreement on technical assistance with the Institute of Social Economy (Instituto de Economía Social) to promote recycling of solid wastes, mostly paper, in schools, with national coverage
- Project Bag of Residues (Proyecto Bolsa de Residuos), information center with no profit motive, to promote the transaction and provide the means to assess industrial, commercial and domestic residues, used by companies that need them as commodities or consumables

Colombia

- Pre-feasibility study for construction of first hazardous wastes treatment plant in the country
- Training workshops on treatment of hazardous wastes
- Completion of decree on hospital waste integral management, in agreement with the Ministry of

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 2: Progress on Environmental Policy*

Table A.2.2. Urban Environment: Plans, Programs and Strategies

Health

- ✍ Completion of regulation project on integral administration of ordinary residues: Joint effort with the Ministry of Development
- ✍ Program o urban life quality: financial support for projects on adequate disposal of solid wastes: US $2.7 million
- ✍ Program to support intermediate cities and municipalities. Pilot project for the integral administration of solid wastes, hospital residues and municipal slaughterhouses

Bolivia

- ✍ Regulation on Management of Hazardous Substances.

A.2.2.3. Water and Sanitation

Peru

- ✍ Regional plans on air and water decontamination in Arequipa, Lima, Chimbote and La Oroya
- ✍ Technical group for the treatment of waste waters in Moquegua
- ✍ Approval of protocols for monitoring effluents

Bolivia

- ✍ Technical and financial cooperation agreement for the sector's structuring with UNESCO's (PHI/UNESCO) International Hydrological Programme. Provides for the structuring and operation of the National Water Authority and the design of the institutional structure at departmental levels. US$ 4.0 million. Provides the means to create the institutional structure to carry out an efficient and integral administration of water, based in generation and systematization of thematic information and in the planning on the use of water resources.

(Other aspects involved: water resources)

- ✍ Adjustment and updating of National Strategy for the Administration of Hydrographic Basins (National Plan of Hydrographic Basins)
- ✍ Production of project to execute the "Water Balance at Basin Level" to provide basic information for regional level planning of water resources by determining the offer of water per basin.

Colombia

- ✍ Completion of National Plan for the treatment and final disposal of municipal wastewater, as a technical instrument to facilitate the process of decision taking on investments
- ✍ Reorganization of technical regulation of the drinkable water and sanitation sector, on aspects concerning aqueduct, sewage and treatment of wastewater.
- ✍ Production of environmental guides for procedures and requisites to gain access to the National Fund of Royalties to finance projects on wastewater, technical assistance, management, treatment and final disposal of municipal wastewater.
- ✍ Systems of imposing charges water contamination:
  - Implemented in 23 of the 37 environmental authorities of the country
  - Program of horizontal cooperation to implement the rate
  - Creation of regional funds for water decontamination to maximize efficiency on utilization of takings
- ✍ Program on urban life quality: financial support for projects on adequate disposal of municipal wastewater: US $1.4 million
- ✍ Establishment of water quality networks at national level. *See Section A.2.1.3*

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Appendix 2: Progress on Environmental Policy*

Table A.2.3. Competitiveness: Plans, Programs and Strategies

Instrument	Comment
Green Market Programs	Establishment of green market programs to encourage the production of goods and services that are friendly to the environment, and to increase offer on competitive ecological services in national and international markets, with great emphasis on investigation of markets, marketing channels, identification of the country's comparative advantages with respect to commercial and environmental agreements, production of information and incentives. *Colombia* ✍ Identification of criteria to identify green products and services derived from the sustainable exploitation of natural resources and biodiversity: timber-yielding and non timber-yielding products of the forest, agricultural products, mining extractions and tourism services. ✍ Development of criteria for evaluation and characterization of green markets projects. ✍ Feasibility study to establish a risk capital fund to finance green market projects. Right now, it is not feasible to establish these in Colombia, but the study provides the basis to establish contacts with other regional capital funds that may grant this type of support to the projects identified by this program. ✍ Production of five handbooks that support the creation of goods and services producing projects or companies. ✍ Cooperation agreements between the Ministry of the Environment and three environmental regional authorities to work creating environmental windows as means to encourage, support and spread information on green market projects. ✍ Development of strategy to implement the Clean Development Mechanism. *Peru* ✍ Conformation of Quality Club in Sustainable Ecotourism. ✍ Conformation of Technical Group: Sustainable Tourism. ✍ Production of document: Contributions for a National Tourism Strategy (Emphasis on sustainable development). ✍ Publication: Basis for the Development of Sustainable Ecotourism in Peru (Bases para el Desarrollo del Ecoturismo Sostenible en el Peru) ✍ Club ISO 14000. Agreement with the intent of initiating certification process on environmental administration systems in accordance with ISO 14001. ✍ Adoption of 9 of the 10 internationally approved ISO 14000 norms *Ecuador* ✍ Training of Cofanes community (from Dureno) in the production of fiberglass canoes ecocanoes). Constitution of a marketing company. ✍ Creation of a multidisciplinary and intersectoral work group to define national standards on forest certification within the framework of the FSC initiative.
Cleaner Production Programs	✍ Improvement of environmental administration in general, from the planning of productive projects up to their final stages. ✍ Establishment of Cleaner Production National Centers, and creation of regional nodes. ✍ Establishment cleaner production pilot projects on rational use of energy, disposal of used oils, disposal of PCBS, management of pesticide containers and pilot examination on final disposal, restoration of areas intervened by

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 2: Progress on Environmental Policy*

Table A.2.3. Competitiveness: Plans, Programs and Strategies

Instrument	Comment
	potters, small gold mining, mining sites. ✍ Development of joint undertakings with environmental authorities and productive sectors. *Colombia* ✍ At least 15 agreements on cleaner production signed, obtaining concrete results in reduction of contamination generated in the following industrial corridors: Mamonal – Cartagena, Eastern Antioquia and sugarcane producing sector in Valle del Cauca. ✍ Production of 19 environmental guides for the following sectors: hydrocarbons, energy and mining, construction materials, transportation. ✍ Understanding achieved on terms of reference with the following sectors: mining, hydrocarbons, electric, infrastructure and transportation, for the production of Environmental Impact Studies (EIS) as parts of the environmental licensing process. ✍ Establishment of joint agenda with the Trade Union National Council (Consejo Nacional Gremial) related with the introduction of environmental elements and criteria in planes and programs of the various ministries. ✍ Creation of urban environmental windows, to provide technical environmental assistance for small and medium enterprise sectors (SMEs), with emphasis on projects to minimize and recycle residues, reduce emission and/or save consumables, energy or substances, in their productive cycles: more on SMEs in the program. *Peru* ✍ Stimulates fish flour processing plants that demand raw materials in good condition. Illustrative Project (Proyecto Demostrativo) executed. ✍ Publication of guide on better practices for various sectors (tanneries, paper and foundries). ✍ 7 outlines of projects in the energy sector and 5 in transportation for CDM. *Ecuador* ✍ Constitution of the corporation for clean development promotion with public and private participation, as a means to promote and administrate funds for businesses and environmental services. ✍ Joint undertaking with entrepreneurial sectors (National Federation of Chambers, Industrial Chambers of Pichincha, of Guayas, of Azuay and of Manta) to boost their competitiveness in international markets by incorporating clean technologies, handling and use of products that are less toxic, and incorporation of EISs
Programs on Biotrade	Helps entrepreneurs carry out sustainable biobusiness such as non timber-yielding products, genetics and products their derivatives, certified timber-yielding products and ecotourism. *Colombia* ✍ With the support of the Netherlands, it has developed activities aimed at improving information on markets, products, contacts and institutional support: - Design of web page - Productive projects: medicinal plants and ecotourism - Creation of four modules: information, network of entrepreneurs who carry

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 2: Progress on Environmental Policy*

Table A.2.3. Competitiveness: Plans, Programs and Strategies

Instrument	Comment
	out biobusiness, market investigations and financial incentives *Peru* ✍ Technical Group established ✍ Creation of Coordinating Committee to apply the UNCTAD Biotrade initiative ✍ Diagnosis on biotrade potentials and possibilities in Peru: biological, legal, commercial, agro-industrial. ✍ Execution of 10 illustrative projects *Ecuador* ✍ Collaboration understanding with CORPEI to formulate biotrade initiative
Ecolabeling Programs	✍ Currently starting. Provides certification and recognition guidelines on green products, which guarantee real environmental benefits unto national and international consumers.

*Includes not only the plans, programs and strategies developed during the last years, but also the results on the application of said policy instruments.

Appendix 3: Progress in Environmental Legislation and Regulation

Country	Norm	Objective
Bolivia	New Forest Law and its Regulation Related technical norms	✍ Regulate sustainable use and protection of forests and forestlands, harmonizing social, economic and ecological interests. Regulates replacement and expansion. ✍ The technical norms regulate in detail those activities to develop of forest management plans, forest inventories and timber-yielding and non timber-yielding product extraction activities, processing and transportation of raw materials, control and supervision of burnings and fires.
	Law on National Service of Agrarian Reform (Ley del Servicio Nacional de Reforma Agraria)	Correct the concentration of land, developed after the agrarian reform, regulating administration of land effectively and efficiently. Create legal conditions that warrant stability of land ownership, in order to boost agricultural and livestock production
	Regulation on access to genetic resources	Rules governing access to genetic resources, internal regulation of the Technical Advice Body (Cuerpo de Asesoramiento Técnico) on access to genetic resources
	Regulations of Law on the Environment on environmental administration, prevention and control of environmental quality, contamination of water resources, atmospheric contamination, handling of hazardous substances.	Regulates the prevention and control of environmental problems derived from natural disasters and human activities. Execute actions to prevent, control and evaluate of environment deterioration that jeopardizes human, animal or plant health directly or indirectly. Regulate and control the discharge of liquid, solid or gas substances or residues that cause water contamination, and the discharge into the atmosphere of any substance in the form of gas, vapor, smoke or dust that may cause detrimental effects on health, the environment, or that may produce harmful effects on public or private property. Ban on the introduction, deposit or transit in national territory of toxic, hazardous, radioactive or other wastes of internal and/or external origin, which, due to their characteristics, constitute a hazard for the health of the population or the environment.
	Environmental National Law (Ley Nacional Ambiental) on aspects concerning environmental impact studies	Regulate aspects related to the System of Environmental Impact Studies, applicable to public and private projects at the onset of the investment phase. Categorizes type of study, presentation, administrative processes, creation of an environmental permit, public participation mechanisms
	Environmental National Law on aspects concerning environmental quality control	Regulate aspects related with the System of Environmental Quality Control, to control all activities and projects that exist, that are in the process of being implemented or that are being brought to a close

Country	Norm	Objective
	National Environmental Fund (Fondo Nacional Ambiental) Regulations	Obtain and handle funds for the protection of biodiversity.
	Sectoral regulations	The law on hydrocarbons determines that hydrocarbon deposits are of direct, inalienable and imprescriptible State dominion. No concession or agreement may confer property hydrocarbon deposits. Rights to explore, exploit, market and distribute hydrocarbon fields or their products are exercised by the State. The Mining Code (Código de Minería) stipulates that the State is the original owner of all mineral substances that are in their natural state, whether these are below or above the surface of the earth, and that the State, through its Executive Power, shall grant mining concessions to individual, collective, national or foreign parties.
Ecuador	Bill on sustainable forest development	Endeavor to develop national strategies aimed at halting the deforestation process, establishing intellectual property rights on the traditional forest knowledge, developing mechanisms to warrant land ownership, encouraging afforestation, applying innovative financing mechanisms for forest development and conservation
	Proposal for special law on biodiversity conservation sustainable exploitation	
	Law on Environmental Administration and its respective regulations	Establish, among other things, environmental policy principles and guidelines and the functions of the Ministry of the Environment, and determine obligations, responsibilities, and public and private sector participation levels in environmental administration. This law also indicates permissible limits, controls and sanctions.
	Environmental Impact Evaluation Special Regulations and Project on Ministerial Agreement to grant environmental licenses	Creation of Sole System of Environmental Impact, which requires the application of this tool to execute projects that may cause environmental impact in ecosystems.
	Agrarian development law	Favor creation of a rural land market to assign resources to the most appropriate uses
	Several regulations on prevention and control of contamination and quality of air, solid wastes, noise and soils.	Establish permissible emission limits, norms and standards of quality and emission, measurement methods
	National Environmental Fund (Fondo Ambiental Nacional) Regulation	Support biodiversity by providing stable and long term financing of projects on conservation and sustainable development of natural resources
Venezuela	Program Law to establish forest plantations in national territory	Solve environmental, social and economic problems and requirements
	Bill on Municipal Environmental Administration	To strengthen municipal administration

Country	Norm	Objective
	Organic Law on the Environment (Ley Orgánica del Ambiente)	Its purpose is to establish, within the policy the State's integral development, the governing principles on conservation, defense and improvement of the environment to benefit the quality of life.
	Forest Law on Soils and Water (Ley Forestal de Suelos y Aguas)	Will govern conservation, promotion and exploitation of the natural resources stipulated therein and the products derived from these. The following assignment are declared to be of public utility: 1. Protection of hydrographic basins. 2. Water torrents and slopes that may produce hydraulic energy. 3. National Parks, natural monuments, protector zones, reserves of virgin regions and forest reserves.
	Law on the Protection of Wild Fauna (Ley de Protección a la Fauna Silvestre)	Will govern protection and rational exploitation of wild fauna and of its products, and hunting practices. The Ministry of Agriculture and Breeding (Ministerio de Agricultura y Cría) will safeguard the conservation, protection, promotion and rational exploitation of wild fauna.
	Organic law for the organization of the territory	Its purpose is to establish the regulations that will govern the process of organizing the territory in accordance with the Nation's long term strategy of Economic and Social Development.
	Penal Statute on the Environment	Categorize as crimes those acts that violate regulations on conservation, defense and improvement of the environment, and establish the corresponding penal sanctions. It also determines any pertinent precautionary, restitution and reparation measures.
	Law on Biodiversity (Ley de Biodiversidad)	Its purpose is to establish the governing principles on the conservation of biological diversity. It declares public utility all aspects concerning the conservation, recovery and sustainable use of biological diversity, as well as the maintenance of essential processes and the environmental services these render.
	Law on Mines (Ley de Minas)	Its object is to regulate aspects related with existent mines and minerals within the national territory, from any origin or in any presentation, including exploration and exploitation, as well as the profits, or storage, possession, circulation, transportation and marketing, internal or external, of the substances extracted

Country	Norm	Objective
Peru	New General Law on Solid Wastes (Nueva Ley General de Residuos Sólidos)	Establishes rights, obligations, powers and responsibilities to ensure sanitary and environmentally adequate administration and management of solid wastes. Applicable to solid waste administration and management activities, processes and operations, from their generation up to their final disposal, including the different sources and sectors involved. Allow development of new enterprises related with the industrialization of residues
	Laws on Forest and Wild Fauna	Govern, regulate and supervise sustainable use and conservation of forest and wild fauna resources. Establishes a more appropriate focus on forest sustainable exploitation and on sustainable management and rational exploitation of the species, harmonizing these with the progressive assessment of environmental services.
	Law on System for Environmental Impact Studies and its regulations	Define a system that requires companies to carry out environmental impact studies as a preceding requisite to obtain an exploitation permit. Los terms of reference for the production of EIS controlled by sector.
	Law on biodiversity and regulations and law on biosecurity, regulations on access to genetic resources Laws and regulations on protected natural areas	✍ Conserve diversity of ecosystems, species and genes and maintain ecological processes essential for species survival. Promote fair and equitable participation in profits derived from biodiversity utilization, encourage scientific investigation and technological transfer, and encourage economic development based in sustainable use. ✍ Promote security in investigation and in the development of biotechnology in their applications on production and service rendering ✍ Regulate procedure on access to genetic resources or their derived products. ✍ Creation of natural protected areas regime and of the National System of Protected Natural Areas.
	Regulation related with standards of environmental quality and maximum permissible limits	Establishes regulations on national standards of atmospheric quality concerning 8 contaminants. Formulation of maximum permissible limits for Mining, Fishing, Industry and Tourism sectors. Also on transportation sector (prepublished)
	Territorial Organization	Creation of National Commission for the environmental territorial ordering
	Laws, regulations and statutes on the National Environmental Fund	Establishes the fund as a financing mechanism and its guidelines. Intangible trust fund that finances plans, programs, projects and activities aimed at the protection of the environment, environmental administration strengthening, sustainable use of natural resources and environmental heritage

Country	Norm	Objective
Colombia	Regulatory Decrees of Law 99 on the Environment, on the operation of the National Environmental System	Regulates the Technical Advisory Council (Consejo Técnico Asesor), the National Environmental Council (Consejo Nacional Ambiental), the Advisory Council on Forest Policy (Consejo Asesor de Política Forestal), structuring and organization of Investigation Institutes that constitute the System such as INVEMAR, IDEAM, SINCHI, VON NEUMANN, VON HUMBOLDT, and establishment, organization or reform of environmental regional authorities
	Decrees and regulations for self-maintenance of SINA	Establishes regulations on resources for regional environmental authorities and municipalities through transfers from the electrical sector and property taxes.
	Regulations having the force of law and ministerial regulations to grant environmental licenses and formulate environmental impact studies	Establishes regulations for the process of license granting (requisites and conditions), defines the institutional competencies and the activities subject to licensing, licensing modalities, environmental management plans and environmental impact studies EIS, terms of reference for the production of EIS, and environmental certificates.
	Decree on National Environmental Fund	Support the execution of environmental policies and of management of renewable natural resources; stimulate decentralization, private sector participation and the strengthening of territorial institutions. Finance projects that strengthen environmental administration, preservation, conservation, protection, environmental improvement and recovery, and adequate resource management.
	Regulations on citizen participation	Establishes election methods and participation of Black and indigenous communities in managerial councils of environmental authorities and establishes the participation and recognition of the NGOs within the environmental administration
	Decree on Forest Exploitation Regime	Defines: types and classes of forest exploitation; organization, establishment, management and exploitation plans; procedures to carry out exploitation; types of forest plantations
	Regulations on air quality and maximum permissible limits	Establishes, among other general norms on atmospheric quality, contamination levels, noise and contaminant emissions, emission permits, and functions of environmental authorities in relation with atmospheric contamination quality and control. Establishes permissible emission levels
	Regulations on wastes	Regulate aspects related with the management and disposal of solid wastes and hospital wastes
	Decree on income-producing charges	Regulate the establishment and operation of a system to impose charges on water contamination as an economic incentive to control contamination and use clean technologies.

Country	Norm	Objective
	Certificate of forest incentives	Remunerate part of the direct and indirect costs incurred by the producer to conserve natural wooded ecosystems in his/her land that have not been, or have hardly been intervened
	Regulations on charges for institutional services	Establish a sum for evaluation services, and follow-ups on licenses, permits, concessions and other management and environmental control instruments, to ensure the self-supporting administration of the environmental authorities.
	Environmental compensation fund	Ensure a more equitative distribution of resources among environmental authorities to strengthen smaller institutions
	Statute of scientific investigations	Strengthen regulation framework for scientific investigation. Establishes procedures to grant study permits.

Appendix 4: Achievements on Environmental Administration: International Agreements

Agreement	Important Achievements
Framework of Convention on Climate Change and Kyoto Protocol <u>Resources and aspects involved</u>: forests, biodiversity competitiveness, urban environment	✍ Ratification of the Protocol in four countries of the region: Colombia, Peru, Bolivia, and Ecuador ✍ Establishment of National Commission on Climate Change (Comisión Nacional de Cambio Climático) in Peru ✍ National Program on Climate Change (Programa Nacional de Cambio Climático) in Bolivia. ✍ National communications on climate change ✍ Studies carried out on - Vulnerability to climate change - Adaptation in vulnerable zones - Inventories on GEI emissions - Evaluation on coastal vulnerability with respect to climate change - Study on reduction of greenhouse effect gas emissions - Study on South American tropic tendencies and climactic variations: Peru and Brazil - Studies on additional demand for gas and conversion to gas in industries, taxis and buses in Peru ✍ Workshops and seminars aimed at public opinion and decision-makers ✍ Production of National Strategy Studies (Estudios de Estrategia Nacional) in Colombia and Bolivia. ✍ Launching of Study on Strategy (Estudio de Estrategia) in Peru ✍ Identification of portfolio on potential projects to be developed with the Clean Development Mechanism in energy sectors, energy efficiency in transportation and LULUCF *Bolivia*: Program of Cooperation US$ 350 thousand with US EPA.
Montreal Protocol and London and Copenhagen Amendments	*Bolivia* National Program for Gradual Consumption Reduction of Ozone Layer Depleting Substances (Programa Nacional para la Reducción Gradual del Consumo de Sustancias Agotadoras de la Capa de Ozono) Creation of Ozone Governmental Commission (Comisión Gubernamental del Ozono) responsible for implementing actions established in the Montreal Protocol Creation of National Strategy for the Implementation of International Agreements Two projects: Institutional strengthening for the implementation of the Montreal Protocol in Bolivia. Includes generating policies, investment projects, human resources training, information on ozone layer depleting substances, encouragement for scientific investigations Implementation of National Program for the Recovery and Recycling of Refigerating Substances (Programa Nacional para la Recuperación y Reciclaje de Refrigerantes). Creation of national network for the recovery and recycling of CFC-12 refrigerating substances. Distribution of equipment to recover and recycle United Nations Environment Programme - UNEP Financial Assistance (Multilateral Fund): US$ 250 thousand *Colombia* Agreement Colombia – World Bank: US$ 8.5 million, to develop projects on industrial rationalization within the framework of the Montreal Protocol *Venezuela* Publication of norms to reduce consumption of ozone layer depleting

Agreement	Important Achievements
	substances
Convention on Wetlands of International Importance, especially as habi tats of aquatic birds ***Ramsar*** Resources involved: Water Resources, Biodiversity, Forests	✍ Establishment of Ramsar sites in the region: - Mejia Lakes National Sanctuary - Paracas National Reserve - Pacaya – Samiria National Reserve - Tumbes Mangrove Swamps National Sanctuary - Titicaca National Reserve - Junin National Reserve - Villa Swamps Reserved Zone - Cienaga Grande of Santa Marta - Cocha Lake - Colorada Lake - Machalilla National Park - Manglares – Churute Ecological Reserve - Cuare Wild Fauna Refuge - Restinga Lake - Tacarigua Lake - Los Roques Archipelago - Cienaga of Los Olivitos Wild Fauna Refuge and Fishing Reserve ✍ National strategies for wetlands conservation ✍ National policies for wetlands recovery and conservation ✍ Programs on Wetlands Conservation and Sustained Development (Conservación y Desarrollo Sostenido de los Humedales) in Peru ✍ Feasibility study on establishment of new Ramsar sites in Colombia and study on Introduction of Species in Colombia, the latter financed by the Convention ✍ Continuation of monitoring and process of recovery at Cienaga Grande of Santa Marta in Colombia with restoration of rivers that water it, and with financing of projects such as: - Institutional training on wetlands management - Management Plan for the Ramsar site, delta estuary system Magdalena River in Cienaga Grande (Great Mangrove Swamps) ✍ Efforts carried out to have wetlands taken into account in natural areas planning and management processes in Ecuador: - National workshops - Program on marine coastal education - Inventory of wetlands in the Esmeraldas and Manabi provinces with support of the Ramsar Fund - Inventory of wetlands of the Guayas and Oro provinces ✍ Plans on management of Ramsar – Ecuador sites ✍ Interregional Ramsar Funds reunion, with the participation of Chile, Argentina, Peru and Bolivia

Agreement	Important Achievements
Convention on International Trade in Endangered Species of Wild Fauna and Flora *CITES* Resources involved: Biodiversity, forests	✍ Activities related with control of flora and fauna species that come in and out of the country (Venezuela): ✍ Making inventories on wild aquatic fauna in Venezuela: Preliminary inventory on fauna from the Turimiquire Mountain Range and from the Buja-Marichal River. Evaluation of the program "Rancho Grande Biological Station Museum National Inventory of Wild and Aquatic Fauna" ✍ Making national inventories on endangered fauna and flora ✍ Updating regulations of topics related with sustainable exploitation and use of wild and aquatic animal species, registration of wild flora nurseries and farms. Modification of statute on fauna ✍ Cooperation agreement signed with the Department of the Interior of the Unites States, to apply to CITES (Colombia) ✍ Bolivian endeavor unto CITES in relation with its Program of Conservation and Management of the Vicuna (See Table A.2.1.2 Appendix 2)
Convention on Biological Diversity – CBD **Biosecurity Protocol** Resources involved: Biodiversity, forests	National Biodiversity Strategy within the framework of the Community of Andean Nations Constitution of National Biodiversity Commissions (Comisiones Nacionales de Biodiversidad) Establishment of technical work groups in Peru Biosecurity protocol signed Within the framework of the Convention's Article 6, the following achievements have been effected: Promulgation of laws on Conservation and Exploitation of Biological Diversity National strategy on Conservation of Biological Diversity Implementation of participatory planning workshops to formulate the National Strategy in Peru National Report unto the Conference of the Parties (Conferencia de las Partes) on the state of implementation of the Agreement Publication in Peru of Proposal on Protection of the Collective Knowledge of Indigenous People and Access to Genetic Resources
International Tropical Timber Agreement Resources involved: Forests	Ratified throughout the region

Agreement	Important Achievements
Nations Convention to Combat Desertification Resources involved: forests, water and soils	✍ Ratified throughout the region ✍ National Action Plans and programs to combat desertification in Peru, Ecuador, Bolivia, Colombia, Venezuela ✍ National reports on the implementation of the Convention ✍ National projects to improve the implementation of the National Action Program in Peru: ✍ Implementation of information network of to combat desertification in Peru ✍ Institutional strengthening of the main strategy and the regional sites in Peru ✍ Conservation of special arid coast and semiarid mountain ecosystems in Peru ✍ Recovery and assessment of traditional knowledge, technology and practices to combat desertification ✍ Recovery and support of women's participation to combat desertification ✍ Optimization and development of early alert systems to combat desertification ✍ Desertification atlas of Peru Formulation of strategies to combat desertification through reforestation, application of soils conservation techniques and dune fixation in Peru. Regionally, topics such as the following have been discussed: administration of natural resources beyond the borders, programs for develop alternative energy sources, early alert systems and joint planning to mitigate effects of drought. Subregional American Puna Project (Argentina, Bolivia, Chile, Ecuador and Peru). Subregional American Chaco Project: Argentina, Bolivia and Paraguay

Appendix 5: Interviews with Participating Members of Regional Talks

5.1 BOLIVIA

REGIONAL TALKS ON POLICIES
EXECUTIVE ENVIRONMENTAL LINEAMENTS

INTERVIEW GUIDE

BOLIVIA
Hernan Cabrera
Vice-Minister of the Environment

I. PRIORITIES ON ENVIRONMENTAL PROBLEMS

1. Which are the short-term environmental priorities (1-5 years) of the following environmental policy areas?

   a. Management of Natural Resources:
      1. Biodiversity
      2. Forests
      3. Desertification - Soils
      4. Fresh Water Resources

   b. Urban, Industrial and Agricultural Management:
      1. Toxic Chemicals
      2. Wastes and Hazardous Materials
      3. Atmospheric Contamination
      4. Drinkable Water

   c. Competitiveness:
      1. Sustainable Production
      2. Development of New Markets
      3. Cleaner Production

2. For each of these priorities, define the criteria that best explains their level of priority according to the criteria indicated:

   a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES			
	1. Biodiversity	2. Forests	3. Soils	4. Fresh Water Resources
Seriousness of the Problem	X	X	X	X
Condition of Emergency			X	X
Social Pressure	X	X		X
Financing Availability				X
Impact on Economic Activities	X	X	X	X
Impact on Health				X

   b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Toxic Chemicals	2. Wastes	3. Atmospheric Contamination	4. Drinkable Water
Seriousness of the Problem	X	X	X	X
Condition of Emergency	X		X	X
Social Pressure		X		X
Financing Availability		X	X	X
Impact on Economic Activities	X	X	X	X
Impact on Health	X	X	X	X

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c. Competitiveness:

	COMPETITIVENESS		
	1. Sustainable Production	2. Development of New Markets	3. Cleaner Production
Seriousness of the Problem			
Condition of Emergency			
Social Pressure	X	X	X
Financing Availability	X	X	X
Impact on Economic Activities	X	X	X
Impact on Health			

3. Which are the long-term priorities in each of these environmental policy areas?

a. Management of Natural Resources:
   1. Biodiversity
   2. Forests
   3. Soils
   4. Fresh Water Resources

b. Urban, Industrial and Agricultural Management:
   1. Toxic Chemicals
   2. Wastes
   3. Atmospheric Contamination
   4. Drinkable Water

c. Competitiveness:
   1. Sustainable Production
   2. Development of New Markets
   3. Cleaner Production

II. ACHIEVEMENTS IN ENVIRONMENTAL ADMINISTRATION

1. From an institutional/legal point of view, which have been the greatest achievements in environmental administration during the last 5 years?

✍ Legislation, Regulation and Standards at a National Level:
The implementation of Forest Law 1700 (Ley Forestal 1700), as a model of low impact sustainable forest management.
Comprehensive regulations for the Forest Law stipulating in detail activities of low impact forest exploitation and organization.
Eight technical norms stipulating in detail activities for development of forest management plans, forest inventories and extraction activities of timber-yielding and non timber-yielding products; processing and transportation of raw materials, control and supervision of burnings and fires.
Projects of the Law on Biodiversity
Application of Law on the Environment and its regulations
Application of sectoral regulations (environmental regulations for mining activities, regulations for activities of the hydrocarbons sector, regulations on protected areas, etc.)
Strengthening of environmental authorities (ministerial, departmental and municipal)
On October 18, 1996, Law 1715 on the National Service of Agrarian Reform was enacted, stipulating the policy on lands aimed at administering it with an integral technical-legal treatment and promoting efficient and sustainable use of natural resources.

✍ Formulation of Environmental Plans and Execution of Environmental Programs:
Program on Integral Development of Seeds; Genetic Improvement of Bovine Meat; Development of Fishing; Special Program of Food Production and Support of Security in Foodstuffs; Investigation programs on potatoes, quinoa, corn, wheat, cereals, vegetables, leguminous plants, livestock and fodder by the Bolivian

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Institute of Agricultural and Livestock Technology (Instituto Boliviano de Tecnología Agropecuaria - IBTA). The following new projects have been created: National Agro-Industrial Plan; Decentralized System of Agricultural and Livestock Health; Development of Integrated Management of Plagues; Strengthening the SNAG's institutional administration; National Investigation System, Transfer of Technology and Agricultural and Livestock Technical Assistance.
In 1995, and within the framework of a new concept on sustainable development, Bolivia, created the National Program for the gradual reduction in consumption of ozone layer depleting substances and the National Program of Climactic Changes.
The Wildlife Unit develops projects to evaluate the current state of priority species in compliance with the compromises undertaken within the framework of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

✍ Ratification of International Agreements:
International Tropical Timber Agreement ratified by Law 867 of May 27, 1986.
Agreement 169 of the International Labor Organization, ratified by Law 1580 of June 5, 1994
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) ratified by Law 1255 of July 5, 1991
Framework Convention on Climate Change ratified by Law 1576 of July 25, 1994
United Nations Convention to Combat Desertification and Drought ratified by Law 1688 of March 27, 1996.
Basel Convention (Transportation across borders of hazardous wastes)
Rotterdam Convention (International trade of certain pesticides and chemical products)
Stockholm Convention (Agreement on Persistent Organic Contaminants)
Protocol on Biosafety (Convenio de Biotecnología - transportation across borders of live modified organisms resulting from biotechnology)
Kyoto Protocol (anthropogenic emissions of CO2 and other greenhouse effect gasses)
Agreement on Collaboration Framework (Convenio de Marco de Colaboración) between the Ministry of Science, Technology and Environment – CITMA of the Republic of Cuba and the Ministry of Sustainable Development and Planning
MERCOSUR Convention

✍ Strengthening Capacity of Local Administration (provinces, states, municipalities):
The Bolivian State is divided into departments, provinces, municipalities and cantons; the President designates the departmental authorities and the municipal authorities are elected by popular vote.
The Bolivian forest model makes special emphasis in strengthening the economic and administrative power of departments and municipalities, with specialized forest units and the economic distribution of taxes generated in each region by imposing a rate on forest exploitation, according to the productivity of each municipality and department.

✍ Financing Mechanisms through National Programs:
The departments that have forest resources are under the obligation of reinvesting at least 50% of the total amount received in forest programs.

2. What non-coactive mechanisms have been put into effect?

✍ Economic Incentives:
Maintenance of a minimum forest rate of 1 US$/hectare/year (Patente Forestal), without modifications for 2001
Differential forest exploitation rates (Patente Forestal) for indigenous groups (TCOs) and local social groups (agrupaciones sociales del lugar - ASLs)
Considering that the economic instruments represent an alternative to implement prevention and environmental control processes, these are considered in the amendment of Law 1333 and its regulations.

✍ Information Dissemination:
Dissemination through various mechanisms of forest administration currently in effect, and the ecological and economic advantages that the model of sustainable forest management offers.
Through a web page, the Ministry of Sustainable Development and Planning shows relevant information on the activities developed by this environmental authority. However, this is not enough. Therefore, efforts are being made so that the departmental environmental authorities in coordination with the respective municipal authorities may generate information dissemination.

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5.1 BOLIVIA

✍ Environmental Education:
More than 400 training courses during the last three years in techniques for low impact forest management at various levels: municipal, communal and indigenous.
Different efforts with bilateral and multilateral cooperation, to promote sustainable forest management and voluntary forest certification.
The Master Training Plan (Plan Maestro de Capacitación) has been established for agricultural and livestock technology. It provides different types of training: formal courses to obtain postgraduate university training, short internal training courses, short courses abroad, cooperative regional programs and symposiums. On the other hand, there is a Consultancy and Technical Assistance Plan (Plan de Consultorias y Asistencia Técnica), where they plan to have International consultancies on: Technology Transfer Strategies, Conservation and Management of Soils, Integrated Management on Plagues.

✍ Technical Assistance (subsidies, grants, etc.):
Investment of $US 15,000000 in sustainable forest management training, both in private companies and in indigenous groups, by the Bolivian State through the project Forest Bolivia (Bolivia Forestal - BOLFOR)

3. Define the main achievements in each of the environmental policy areas, specifying the main reasons for said achievements:

a. Management of Natural Resources (for example, promotion of organic crops, etc.):
Within the framework of the PROGRAM OF CONSERVATION AND MANAGEMENT OF THE VICUNA the administration has carried out unto animal wardens, animal shearers, communal leaders and guardians activities of diffusion, training and raising of public awareness on the legal framework as well as on vicuna control, protection, capture and shearing, beginning this with the declaration of 250 Areas of Communal Management registered in the provinces of Ingavi, Pacajes and Jose Manuel Pando in La Paz, and 50 Communities in the province of Sud Lipez in Potosi. Likewise, five Directorates of Regional Associations of Vicuna Handlers (Directorios de Asociaciones Regionales de Manejadores de Vicuña) have been created.

NATIONAL LIZARD PROGRAM: Authorized the reaping of 30,000 skins during the year 1999 in the department of Beni permitting the export of all the produce through certification and sealing required by the international market, generating the equivalent of US $ 1.2 million. In the current year 2001, the national quota will be 46,500, distributed between Beni (40,000), Santa Cruz (5,000) and Pando (1,500). The bestowal of this quota is based on scientific studies, population estimates and the national quota of 50,000 yearly skins granted by CITES.

GENETIC RESOURCES: In compliance of Article 12a) of the Regulation of Decision 391, the creation of internal regulation has been effected for the Technical Advice Body (CAT) for the Access to Genetic Resources. It has been revised in three reunions with CAT members and approved by Ministerial Resolution Number 110/2000 of May 2000.

NATIONAL STRATEGY FOR THE CONSERVATION OF BIODIVERSITY: Proposes that (i) the sustainable use of biodiversity is one of the necessary conditions to break away from total dependence on external financing of biodiversity conservation and protection policies of the Bolivian State; (ii) the human groups that are least integrated to our society and the State, as are the indigenous communities and the peasants, will be the chief beneficiaries of this process; (iii) the State will fulfill its role of promoter and facilitator of this process due to the producers' low degree of involvement with modern market economies and the enormous deficiencies that still predominate within the institutional and legal frameworks and within the infrastructure and the public services, in areas that have great potential in biodiversity; and (iv) the sustainable exploitation of biological diversity must become one of the mainstays of our national economy in the XXI Century.
With this purpose, an action plan has been formulated in five areas of intervention:

- ✍ Strengthening of national capacity to administrate biodiversity
- ✍ Conservation of ecosystems, species and genetic resources of ecological, economic and cultural importance.
- ✍ Strengthening of local administration in the conservation and sustainable uses of biodiversity
- ✍ Attracting investments on environmental products and biodiversity services
- ✍ Development of public awareness on the importance of biodiversity for the socioeconomic and cultural development of the country.

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5.1 BOLIVIA

FORESTS: Maintenance of a Legal Regime on Sustainable Forest Exploitation (Régimen Legal de Aprovechamiento Forestal Sostenible)
Legal guarantees on exploitation rights in forest concessions
Official proclamation of a forest area for permanent production.

b. Urban, Industrial and Agricultural Management (for example, contamination reduction, etc.):
The next implementation of Environmental Regulation is on the Manufacturing Industrial Sector. This Regulation will govern all production or services activities, basically with a focus on prevention, within the framework of a multisectoral concept.
Likewise, actions are being coordinated in the Ministry of Agriculture to carry out the Regulation of the Agricultural and Livestock Sector.

c. Competitiveness:
Based in globalization and competitiveness concepts, the hydrocarbons sector has implemented a series of norms, with the objective of achieving market competitiveness, as for example quality norms (ISO 9000), environmental administration norms (ISO 14000), security and hygiene norms (OSHAs), etc.

The Bolivian government has proposed putting into effect a national program of Cleaner Production that would be intimately related to the implementation of a National Plan of competitiveness. The starting point of this program would be the establishment of a Cleaner Production Center that stabilizes institutional relations between National Centers of investigation and promotion and the organisms and international institutions that are dedicated to this topic. To date, there is a Program in the National Chamber of Industries that supports technological reconversion in manufacture, supported by USAID and the Swedish Cooperation. It is hoped that this Program may implement, in combination with state efforts, a clearinghouse on cleaner technologies and ecoefficient methods. Government hopes to reproduce this framework with the main entrepreneurial associations in the mining, energy (including the oil industry), transportation and communications sectors. The incorporation of agriculture and livestock seems to be a longer-term endeavor. Current programs place more emphasis on environmental and economic variables of consumption and sustainable production. The inclusion of social and cultural variables is proposed for a latter phase. However social and cultural implications of environmental administration are always kept in mind. The State has not begun a specific program on sustainable production and consumption that comprises the participation of the main Bolivian groups.

III. SHORT TERM (1-5 years) CHALLENGES AND GOALS

1. Which are the limitations that hamper effective attention of the priorities cited in each of the policy areas? For each priority indicate the lack and the specific reason:

   a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES			
	1. Biodiversity	2. Forests	3. Soils	4. Fresh Water Resources
Financial Limitations	X	X	X	X
Lack of Human Resources	X	X	X	X
Lack of Technical Resources	X	X		X
Lack of Information and Systems of Communication	X	X		X
Deficient Use of Information	X			
Land Related Issues		X	X	
Governability	X	X	X	X
Public Participation	X			X

Appendix 5: Interviews with Participating Members of Regional Talks

5.1 BOLIVIA

b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Toxic Chemicals	2. Wastes	3. Atmospheric Contamination	4. Drinkable Water
Financial Limitations	X	X	X	X
Lack of Human Resources	X	X	X	X
Lack of Technical Resources	X	X	X	X
Lack of Information and Systems of Communication			X	X
Deficient Use of Information				
Land Related Issues				
Governability		X	X	X
Public Participation			X	

c. Competitiveness:

	COMPETITIVENESS		
	1. Sustainable Production	2. Development of New Markets	3. Cleaner Production
Financial Limitations	X	X	X
Lack of Human Resources	X	X	X
Lack of Technical Resources	X	X	X
Lack of Information and Systems of Communication			
Deficient Use of Information			
Land Related Issues			
Governability			
Public Participation	X	X	X

2. Which are the opportunities that respond best to the priorities cited above? Choose of following list and specify the reason or type of lack or deficiency:

a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES			
	1. Biodiversity	2. Forests	3. Soils	4. Fresh Water Resources
Innovative Institutional Reforms				
Technological Innovations	X	X		
Economic and Regulatory Mechanisms	X			
Promoting Market Mechanisms				
Developing Capacities for Environmental Certification				

b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Toxic Chemicals	2. Wastes	3. Atmospheric Contamination	4. Drinkable Water
Innovative Institutional Reforms	X	X		X
Technological Innovations	X	X	X	X
Economic and Regulatory Mechanisms	X	X	X	X
Promoting Market Mechanisms				
Developing Capacities for Environmental Certification				

Appendix 5: Interviews with Participating Members of Regional Talks

5.1 BOLIVIA

c. Competitiveness:

	COMPETITIVENESS		
	1. Sustainable Production	2. Development of New Markets	3. Cleaner Production
Innovative Institutional Reforms	X	X	X
Technological Innovations	X	X	X
Economic and Regulatory Mechanisms	X	X	X
Promoting Market Mechanisms	X	X	X
Developing Capacities for Environmental Certification	X	X	X

IV. MAIN LONG TERM CHALLENGES

1. Which are the main long-term (5-15 years) challenges?

✍ It is essential to incorporate the participation of actors, in all the processes of the administration, particularly in basic organizations and local communities.

✍ It is necessary to develop strategic alliances with academic institutions, rural development and environmental NGOs to guarantee the continuity of the processes and administration sustainability.

✍ It is necessary to reinforce the national technical scientific machine.

✍ It is necessary to make a rapprochement both from the state machinery as well as from society.

✍ Biodiversity conservation and sustainable use must be a task of society as a whole, not only of a sector.

✍ Biodiversity conservation will not be achieved if it is not compatible with efforts to satisfy local population needs.

✍ Accomplishing 10,000,000 hectares under sustainable forest management, both in timber-yielding and non timber-yielding resources.

✍ Accomplishing a clean low impact forest industry internationally certified with green seal standards, in both timber-yielding and non timber-yielding forest products.

✍ Accomplishing security in foodstuffs and rural development through sustainable forest management in national, regional and municipal spheres, with openness and a wide participatory base on forest conservation through the sustainable forest management.

✍ Safeguarding the capacity of the natural resources to guarantee their long term sustainability.

✍ Since 1996 the Strategy of Productive Transformation (Estrategia de Transformación Productiva) is being implemented on Agriculture. It is a long term national strategy aimed at boosting economic growth and combating poverty in the country's rural sector. Its other objective is reducing the lack of security in foodstuffs and promoting a sustainable agriculture that makes possible a use more efficient use of resources (human, natural, technical and financial) so as to achieve the technological leap that is necessary to energize and modernize the agricultural sector in Bolivia, making possible bigger levels of competitiveness and adequate use of natural resources. Promoting sustainable agriculture as the sector's strategic vision, to boost rural potentials (product of the diversity of ecosystems and ecological layers that Bolivia has) and taking this factor as basis to achieve the country's integral development. The adoption of appropriate technologies that permit rural environment preservation is a fundamental factor of the strategy, as well as training on all those actions aimed at improving the quality of life of the rural population, so this group is not forced to migrate to cities and abandon the countryside due to situations of extreme poverty associated with lack of incentives or resources. Attention is centered on small-scale farmers and on those who are in a state of extreme poverty, focusing the problem on rural poverty through programs on education, health, basic infrastructure and productive improvements. Attention is centered on familiar groups, since virtually all members of family groups participate in rural and peasant activities.

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5.2 COLOMBIA

REGIONAL TALKS ON POLICIES
EXECUTIVE ENVIRONMENTAL LINEAMENTS

INTERVIEW GUIDE

COLOMBIA
Mery Gomez
Director of Planning
Ministry of the Environment

I. PRIORITIES ON ENVIRONMENTAL PROBLEMS

1. Which are the short term environmental priorities (1-5 years) of the following environmental policy areas?

   a. Management of Natural Resources:
      1. Water, Water Resources
      2. Forest
      3. Biodiversity
      4. Soils

   b. Urban, Industrial and Agricultural Management:
      1. Water Supply and Contamination
      2. Solid Wastes
      3. Management of Pesticides
      4. Transportation and Management of Public Space

   c. Competitiveness:
      1. Development of New Markets
      2. Flowers
      3. Bananas
      4. Livestock

2. For each of these priorities, define the criteria that best explains their level of priority according to the criteria indicated:

   a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES			
	1. Water	2. Forest	3. Biodiversity	4. Soils
Seriousness of the Problem	X (1)	X	X (1)	
Condition of Emergency				X
Social Pressure	X	X		
Financing Availability		X		
Impact on Economic Activities			X (2)	X
Impact on Health	X			
Other				

   b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Water Contamination	2. Residues	3. Pesticides	4. Transportation
Seriousness of the Problem	X (1)	X (1)	X (2)	
Condition of Emergency	X (3)			
Social Pressure	X (6)	X (2)		X (1)
Financing Availability	X (2)	X (3)		X (2)
Impact on Economic Activities	X (5)			X (3)
Impact on Health	X (4)	X (4)	X (1)	
Other				

5.2 COLOMBIA

c. Competitiveness:

	COMPETITIVENESS	
	1. Development of Markets	2. Flowers, Bananas, Livestock
Seriousness of the Problem		X (1)
Condition of Emergency		
Social Pressure		
Financing Availability	X (1)	
Impact on Economic Activities	X (2)	X (2)
Impact on Health		
Other		

3. Which are the long term priorities in each of these environmental policy areas?

a. Management of Natural Resources:
   1. Water, Water Resources
   2. Forest
   3. Biodiversity
   4. Soils

b. Urban, Industrial and Agricultural Management:
   1. Water Supply and Contamination
   2. Solid Wastes
   3. Management of Pesticides
   4. Transportation and Management of Public Space

c. Competitiveness:
   1. Development of New Markets
   2. Flowers
   3. Bananas
   4. Livestock

II. ACHIEVEMENTS IN ENVIRONMENTAL ADMINISTRATION

1. From an institutional/legal point of view, which have been the greatest achievements in environmental administration during the last 5 years?

✍ Legislation, Regulation and Standards at a National Level:
Decree on air
Environmental Licenses
Environmental guides for each sector
Forest statute is being formulated.
Regulations have been established for scientific investigation on biological diversity.

✍ Formulation of Environmental Plans and Execution of Environmental Programs:
Green Plan (To define reafforestation areas of the protector – producer type –and ecosystem recovery strategies)
A Ten Year Plan on wastewater is being formulated (To define investment priorities on municipal wastewater).
Decree 048 (Decreto 048) of the year 2000
Three Year Administration Plans
Ten Year Regional Plans
Annual Operating Plans
Forest Development Plan

✍ Ratification of International Agreements:
Biosecurity
Kyoto
Montreal

Appendix 5: Interviews with Participating Members of Regional Talks

5.2 COLOMBIA

✍ Strengthening Capacity of Local Administration (provinces, states, municipalities):
The SINA was created (National Environmental System). This is an environmental administration system based in autonomous corporations, where these, at the same time, generate regional SINAs.
Technical and financial support was given to the CARs (Autonomous Regional Corporations) to formulate and arrange Integrated Management Plans to perform the Coastal Organization within their jurisdictions (Integrated Administration Units), as pilot projects that give the Policy feedback from local spheres.

✍ Financing Mechanisms through National Programs:
Strategy of International Cooperation.
Large quantity of projects that are being carried out among corporations.
Autonomy of corporations to finance themselves.
Strategy to create Compes, sectoral Economic Policy Councils (Concejo de Política Económica).

✍ Other
Exert more impact on those sectors that cause most of the contamination.

2. What non-coactive mechanisms have been put into effect?

✍ Economic Incentives:
Competitiveness Agreements
Cleaner Production Agreements
The issue of ecolabeling is being formulated
Income-producing charges for several authorities
Tax Incentives: discounts in VAT (IVA) taxes to be invested for the environment.
Regional Decontamination Funds (Fondos Regionales de Descontaminación)
Royalties Fund (Fondo de Regalías)
Environmental Action Fund (Fondo para la Acción Ambiental): its objective is to provide environmental financing to NGOs and civil society in general, for projects on ecosystems recovery and wastes management.
Environmental Compensation Fund (Fondo de Compensación Ambiental): its objective is to distribute money within the SINA more efficiently.

✍ Information Dissemination:
This year, the country's environmental sustainability indicators are going to be published. It will be an official dissemination from Ministry of the Environment on the country's environmental state.
The following document was completed: "Strategic Guidelines for the Conservation and Sustainable Management of Mangrove Swamps in Colombia" ("Lineamientos Estratégicos para la Conservación y Manejo Sostenible de los Manglares en Colombia"). Based on this document, the National Program for the Conservation and sustainable use of the mangrove swamps in Colombia will be developed during the second semester of the year 2001, in agreement those entities that are related with this type of ecosystem and that are members of the SINA.

✍ Environmental Education:
All the corporations have environmental education programs of in schools.

✍ Technical Assistance (subsidies, grants, etc.):
The corporations have environmental windows that assist small and medium industry.
The Ministry of the Environment and the Dutch Cooperation, giving companies assistance on cleaner production, technical assistance and obtaining financing, make possible the Cleaner Production nodes.
Both programs receive money from the income-producing charges.

✍ Public - Private Cooperation:
The National Environmental Council and the Technical Advisory Council exist for this exchange.

3. Define the main achievements in each of the environmental policy areas, specifying the main reasons for said achievements:

a. Management of Natural Resources (for example, promotion of organic crops, etc.):
Success achieved in Cienaga (Great Mangrove Swamps)

5.2 COLOMBIA

Title deeds to Black communities in biogeographical Choco

b. Urban, Industrial and Agricultural Management (for example, contamination reduction, etc.):
Income-producing charges
Reduction of atmospheric contamination in Bogota
Reduction in atmospheric contamination in Valle de Aburra
Management of Doña Juana sanitary landfill in Bogota
Management of solid wastes in Huila, with the creation of scale economies in 4 regions

c. Competitiveness:
Biotrade (among other things, organic coffee, resins)

III. SHORT TERM (1-5 years) CHALLENGES AND GOALS

1. Which are the limitations that hamper effective attention of the priorities cited in each of the policy areas? For each priority indicate the lack and the specific reason:

a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES			
	1. Water	2. Forests	3. Biodiversity	4. Soils
Financial Limitations	X	X		
Lack of Human Resources			X	
Lack of Technical Resources				
Lack of Information and Systems of Communication		X	X	
Deficient Use of Information	X	X		
Land Related Issues		X		
Governability	X			X
Public Participation	X			X

b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Water	2. Solid Wastes	3. Pesticides	4. Transportation
Financial Limitations	X	X		X
Lack of Human Resources				
Lack of Technical Resources				X
Lack of Information and Systems of Communication				
Deficient Use of Information	X			
Land Related Issues				
Governability	X		X	
Public Participation	X	X		

c. Competitiveness:

	COMPETITIVENESS
	1. Competitiveness
Financial Limitations	X
Lack of Human Resources	
Lack of Technical Resources	X
Lack of Information and Systems of Communication	
Deficient Use of Information	
Land Related Issues	
Governability	
Public Participation	X

5.2 COLOMBIA

2. Which are the opportunities that respond best to the priorities cited above? Choose of following list and specify the reason or type of lack or deficiency:

a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES			
	1. Water	2. Forests	3. Biodiversity	4. Soils
Innovative Institutional Reforms	X		X	
Technological Innovations				X
Economic and Regulatory Mechanisms	X	X		
Promoting Market Mechanisms	X		X	X
Developing Capacities for Environmental Certification		X	X	

b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Water	2. Solid Wastes	3. Pesticides	4. Transportation
Innovative Institutional Reforms	X	X		
Technological Innovations				X
Economic and Regulatory Mechanisms	X	X		X
Promoting Market Mechanisms	X	X		
Developing Capacities for Environmental Certification				

c. Competitiveness:

	COMPETITIVENESS
Innovative Institutional Reforms	
Technological Innovations	X
Economic and Regulatory Mechanisms	
Promoting Market Mechanisms	
Developing Capacities for Environmental Certification	X

IV. MAIN LONG TERM CHALLENGES

1. Which are the main long term (5-15 years) challenges?

Water and air contamination
Recovery of ecosystems

Appendix 5: Interviews with Participating Members of Regional Talks

5.3 ECUADOR

REGIONAL TALKS ON POLICIES
EXECUTIVE ENVIRONMENTAL LINEAMENTS

INTERVIEW GUIDE

Ecuador
Alfredo Barriga
Vice-Minister
Ministry of the Environment

I. PRIORITIES ON ENVIRONMENTAL PROBLEMS

1. Which are the short term environmental priorities (1-5 years) of the following environmental policy areas?

   a. Management of Natural Resources:
      1. Water
      2. Soil
      3. Biodiversity
      4. Forest
      5. Bioaquatic Resources
      6. Beaches and Bays
      7. Energy

   b. Urban, Industrial and Agricultural Management:
      1. Quality of Drinkable Water
      2. Atmospheric Contaminants
      3. Wastes and Contaminant Agents (Sanitary Landfills)
      4. Noise

   c. Competitiveness:
      1. Development of New Markets
      2. Environmental Regulation

2. For each of these priorities, define the criteria that best explains their level of priority according to the criteria indicated:

   a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES				
	1. Water	2. Soil	3. Biodiversity	4. Forest	5. Bioaquatic Resources
Seriousness of the Problem	X	X	X	X	X
Condition of Emergency	X				
Social Pressure			X		
Financing Availability				X	X
Impact on Economic Activities		X	X	X	X
Impact on Health	X				
Other					

   b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Water Quality	2. Atmospheric Contaminants	3. Wastes and Agents	4. Noise
Seriousness of the Problem	X	X	X	X
Condition of Emergency	X			
Social Pressure	X	X	X	
Financing Availability				X
Impact on Economic Activities				
Impact on Health	X	X	X	X
Other				

5.3 ECUADOR

c. Competitiveness:

	COMPETITIVENESS	
	1. Development of New Markets	2. Environmental Regulation
Seriousness of the Problem		X
Condition of Emergency		
Social Pressure	X	X
Financing Availability		X
Impact on Economic Activities	X	X
Impact on Health		
Other		

3. Which are the long-term priorities in each of these environmental policy areas?

a. Management of Natural Resources:
   1. Water
   2. Soil
   3. Biodiversity
   4. Forest
   5. Bioaquatic Resources
   6. Beaches and Bays
   7. Energy

b. Urban, Industrial and Agricultural Management:
   1. Quality of Drinkable Water
   2. Atmospheric Contaminants
   3. Wastes and Contaminant Agents
   4. Noise

c. Competitiveness:
   1. Development of New Markets
   2. Environmental Regulation

II. ACHIEVEMENTS IN ENVIRONMENTAL ADMINISTRATION

1. From an institutional / legal point of view, which have been the greatest achievements in environmental administration during the last 5 years?

✍ Legislation, Regulation and Standards at a National Level:
Special law special for the province of Galapagos.
Law of Prevention and Control of Environmental Contamination; 1976
Regulation for the Prevention and Control of Environmental Contamination, on aspects related with water resources. 1989.
Regulation for the Prevention and Control of Contamination originated by noise emission. 1990.
Regulation for the Prevention and Control of Air Quality and its Measurement Methods. 1991
Regulation for the Prevention and Control of Environmental Contamination, on aspects related with Soil resources. 1992.
Regulation for Management of Solid Wastes. 1992.
Regulation that establishes the General Norms on Fixed Combustion Sources Emission and its General Measurement Methods. 1993.
Law on Environmental Administration; 1999
Law on the Formulation, Manufacture, Import, Marketing and Use of Pesticides and Similar Products for Agricultural Use. 1992.
Health Code (Código de Salud). (Articles 6 to 12)
Law on Waters (Official Gazette 69 of 05-30-72) and its Regulations)
Law on Agrarian Development (Official Gazette 461 of 06-14-94) and its Regulations)
Municipal Regime Law (Ley de Régimen Municipal)
Law on Forests and on Conservation of Natural Areas and Wildlife
Decree Number 1907 on Protection, Conservation and Control of Natural Forests and Mangrove Swamps

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Law on Hydrocarbons
Law on Mining

✍ Formulation of Environmental Plans and Execution of Environmental Programs:
Ecuadorian Center for Cleaner Production (Centro Ecuatoriano de Producción más Limpia - CEPL)
Ecuadorian Environmental Plan (Plan Ambiental Ecuatoriano - PAE): will be the technical management instrument of administration that promotes environmental conservation, protection and management; and will have specific objectives, programs, actions, minimum contents and financing mechanisms, as well as inspection and supervision procedures.
Integrated Program for Species Control in the Galapagos Archipelago: promotes preservation of biodiversity in the Galapagos Islands.
Program of Small Donations, designed to confront environmental problems at a level local in Ecuador.
Ecuadorian Bamboo Program: achieving sustainable development and environmental regeneration through bamboo exploitation.

✍ Ratification of International Agreements:
Of particular importance to Ecuador are the undertakings of the Commission of Sustainable Development of the United Nations, since this entity examines compliance with Program 21. The nation has also stated special interest in applying the norms and principles of the Biodiversity Convention, and in observing and formulating regulations related with Decision 391 of the Andean Community on access to genetic resources. It supports creating strict biosecurity norms.

As it constitutes part of the State's policy, the environmental Strategy integrates compliance with compromises undertaken in international agreements related to environment, biodiversity, natural resources sustainable use and sustainable development, especially the following (besides those mentioned previously): principles on forests, Framework Convention on Climate Change, RAMSAR Convention on Wetlands, CITES Convention for the protection of species, Convention to Combat Desertification, Montreal Protocol, London Guidelines, Rotterdam Convention and Basel Convention.

✍ Strengthening Capacity of Local Administration (provinces, states, municipalities):
Regulation formulation is national, but environmental control, planning, and policy making is going to be in the hands of municipal councils. Environmental licenses are issued by the ministry, but each is subject to approval according to an environmental impact study carried out by specialists in each council, which will have an environmental management plan, a contingency plan, and requirements on the mediation, mitigation, remedies, compensations and guarantees concerning damages to third parties.
System to Decentralize Environmental Administration (Sistema de Descentralización de Gestión Ambiental): this is a transsectoral coordination mechanism to achieve integration and cooperation among the different spheres of environmental administration and natural resources management; subject to technical precepts from environmental authorities.

✍ Financing Mechanisms through National Programs:
To execute environmental control and preservation programs, the Ministry will obtain resources from budgetary allocations established for this purpose, originated by international cooperation programs, contributions and donations, and coming from imposed charges and fines that the Ministry shall collect through summary jurisdiction. Each municipality shall administer the imposition of charges for residual water discharges and other charges set by them for environmental protection and conservation.
Environmental Fund for the protection of biodiversity and forest protected areas. This fund is a private organization established to support Ecuadorian biodiversity and environment.

2. What non-coactive mechanisms have been put into effect?

✍ Information Dissemination:
The Decentralized Environmental Administration System, through State owned means of diffusion, will provide society with the lineaments and instructions on management and protection of the environment and its natural resources. Furthermore, in coordination with State institutions that are competent in this matter, it shall publish on major newspapers with a big circulation, the lists of products, services and technologies whose manufacture, import, marketing, transportation or utilization is prohibited for being potentially hazardous for health or the environment.

Appendix 5: Interviews with Participating Members of Regional Talks

5.3 ECUADOR

✍ Environmental Education:

There is the Program on Environmental Marine - Coastal Education (Programa de Educación Ambiental Marino - Costera - PEAMCO) from the National Army General Management on Maritime Interests (Dirección General de Intereses Marítimos de la Armada Nacional).
About 80 different activities have been carried out to encourage public awareness on the need to improve agricultural productivity and reduce risks on ecosystems. More than 2.800 farmers have participated in training courses that encourage self-sufficiency. Training and scholarships are offered in 12 fields of activities.

✍ Technical Assistance (subsidies, grants, etc.):

In Ecuador, the UNDP acts as an agency to execute the World Global Environmental Fund (GEF), a global environmental program of the UNDP. This fund grants subsidies to confront global environmental problems through the formulation of solutions parting from national initiatives.

✍ Public - Private Cooperation

Measures to promote active and informed participation of local communities have been isolated efforts, but the following actions have been taken: the cases of Segua Cienaga and Northern Ecuador's mangrove swamps, and the participation process of Machalilla National Park communities during the formulation of this area's new Management Plan.

3. Define the main achievements in each of the environmental policy areas, specifying the main reasons for said achievements:

a. Management of Natural Resources (for example, promotion of organic crops, etc.):

Jatun Sacha, as part of the SUBIR project, has worked for the last three years with seven communities: three Black and four Chachis. The goal, to achieve participation of communities that own the resources in their own management plans. The activities accomplished in each community are the following: Creation of a Forest Committee; Completion of a Forest Inventory; Creation of the Management Plan; Production of an Environmental Evaluation; Execution of the Management Plan and Training.

Each forest exploitation project that is processed by the Ministry of Environment must have the signature of its corresponding Forest Director, who after a thorough study of the project, will back it.

In relation with efforts undertaken to have the wetlands taken into account in natural areas management and planning processes, including those in coastal zones, the following activities have been executed: on a nationwide level, a National Workshop was carried out with experts on wetlands on December 1997; at a provincial level the inventory of lentic wetlands of the Esmeraldas and Manabi provinces was carried out; at local levels, policies were generated with local communities during the participatory planning process on the management of the Segua Wetland in Manabi Province; community administration of Northern Ecuador's mangrove swamps; administration for the conservation of Cube Lake in Esmeraldas Province.

Up to June 1999, 26 natural areas have been established. They comprehend approximately 4,669,871 hectares of earth surface[81] equivalent to 18% of the national territory, and 14,110,000 hectares of marine surface in the Marine Resources Biological Reserve of Galapagos.

b. Urban, Industrial and Agricultural Management (for example, contamination reduction, etc.):

Through regulations and their implementation, Quito has centered on industrial and motor vehicle contamination through campaigns and controls to reduce emissions. Guayaquil has worked in the reduction of industrial wastes.

Sucumbios Province inaugurated the treatment system for wastewater through artificial swamps, which is the result of achieving real decentralization through coordinated efforts and the signature of an agreement with the authorities of the canton.

III. SHORT TERM (1-5 years) CHALLENGES AND GOALS

1. Which are the limitations that hamper effective attention of the priorities cited in each of the policy areas? For each priority indicate the lack and the specific reason:

[81] www.ambiente.gov.ec/ambiente.asp?subsec=24

Appendix 5: Interviews with Participating Members of Regional Talks

5.3 ECUADOR

a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES				
	1. Water	2. Soil	3. Biodiversity	4. Forest	5. Bioaquatic Resources
Financial Limitations	X	X	X	X	X
Lack of Human Resources	X		X		X
Lack of Technical Resources	X	X			X
Lack of Information and Systems of Communication			X	X	X
Deficient Use of Information			X		
Land Related Issues		X		X	
Governability	X	X	X	X	X
Public Participation			X	X	

b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Water Quality	2. Atmospheric Contaminants	3. Wastes and Agents	4. Noise
Financial Limitations	X	X	X	X
Lack of Human Resources		X		
Lack of Technical Resources	X	X	X	X
Lack of Information and Systems of Communication		X		X
Deficient Use of Information				
Land Related Issues				
Governability			X	
Public Participation		X		X

c. Competitiveness:

	COMPETITIVENESS	
	1. Development of New Markets	2. Environmental Regulation
Financial Limitations		
Lack of Human Resources	X	X
Lack of Technical Resources		
Lack of Information and Systems of Communication	X	
Deficient Use of Information		
Land Related Issues		
Governability		X
Public Participation	X	

2. Which are the opportunities that respond best to the priorities cited above? Choose of following list and specify the reason or type of lack or deficiency:

a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES				
	1. Water	2. Soil	3. Biodiversity	4. Forest	5. Bioaquatic Resources
Innovative Institutional Reforms	X				
Technological Innovations	X	X		X	X
Economic and Regulatory Mechanisms	X	X	X	X	X
Promoting Market Mechanisms					
Developing Capacities for Environmental Certification					

5.3 ECUADOR

b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT			
	1. Water Quality	2. Atmospheric Contaminants	3. Wastes and Agents	4. Noise
Innovative Institutional Reforms			X	
Technological Innovations	X	X	X	X
Economic and Regulatory Mechanisms	X	X	X	X
Promoting Market Mechanisms	X			
Developing Capacities for Environmental Certification				

c. Competitiveness:

	COMPETITIVENESS	
	1. Development of New Markets	2. Environmental Regulation
Innovative Institutional Reforms	X	X
Technological Innovations	X	X
Economic and Regulatory Mechanisms	X	X
Promoting Market Mechanisms	X	X
Developing Capacities for Environmental Certification	X	X

IV. MAIN LONG TERM CHALLENGES

1. Which are the main long term (5-15 years) challenges?

Both public and private sectors have access to computer networks and may access international information services in any measure. However, participation in electronic networks is limited due to the lack of adequate computer equipment, telecommunications infrastructure deficiencies, high telecommunications costs, the lack of trained personnel and the insufficient information on existent networks. Competent institutions cannot gain access to data obtained through tele-observation.

To make viable the new development model that the Strategy is set on advancing, the productive processes must internalize the costs of environmental deterioration and prevention, tax incentives for investment in resources sustainable management must be created, certification systems must be consolidated and expanded as a mechanism for improve national production effectiveness and competitiveness, internal and external environmental services markets must be developed, a system of guarantees and securities must be established for potentially contaminant and environmentally degrading activities, and self administration of conservation areas by means of promoting ecotourism and marketing environmental services must be promoted.

The Strategy proposes an accurate assessment of renewable and non renewable natural resources that are currently undervalued or that as of now have not been assigned any price (water, scenic resources).

The priority assigned by the Ecuadorian State to natural resources conservation and sustainable management must be reflected in the way it determines its national budget and organizes property and cadastral tax systems so that these contemplate income alternatives for national and local environmental management.

The creation of interlocution mechanisms between the various social and political sectors of Ecuador is essential to attain the alliances and agreements that are necessary to accomplish the policies and guidelines of the Strategy. The Ministry of the Environment promotes and advocates several mechanisms aimed at developing awareness on urgent sustainable development problems, policies and actions, such as forums on clean industry, fishing and the Amazon region. From the knowledge, discussion and will to reach the common goals set in these interlocutions, a firm and flexible network of alliances and compromises will come forth. This will permit embracing the Strategy as the common instrument of the Ecuadorians to advance sustainable development.

Appendix 5: Interviews with Participating Members of Regional Talks

5.4 PERÚ

REGIONAL TALKS ON POLICIES
EXECUTIVE ENVIRONMENTAL LINEAMENTS

INTERVIEW GUIDE

Peru
Paul Remy
Director CONAM

I. PRIORITIES ON ENVIRONMENTAL PROBLEMS

1. Which are the short term environmental priorities (1-5 years) of the following environmental policy areas?

   a. Management of Natural Resources:
      1. Biodiversity
      2. Forest
      3. Fishing
      4. Certification, Drought, Soil Erosion
      5. Exploitation of the Ecosystem

   b. Urban, Industrial and Agricultural Management:
      1. Residual Waters
      2. Solid Wastes
      3. Mining Residues
      4. Pesticides
      5. Industrial Waste
      6. Waste Generated by Fishing Activities
      7. Air Quality (transportation and wastes burnings)

   c. Competitiveness (sectors that improve processes as a form of competitiveness):
      1. Beer
      2. Cement
      3. Textiles
      4. Mining
      5. Gas
      6. Energy

2. For each of these priorities, define the criteria that best explains their level of priority according to the criteria indicated.
   Scores are shown in sets, where 5 is the most serious and 1 is the least serious:

   a. Management of Natural Resources:

	MANAGEMENT OF NATURAL RESOURCES				
	1	2	3	4	5
Seriousness of the Problem					X
Condition of Emergency					X
Social Pressure			X		
Financing Availability			X		
Impact on Economic Activities				X	
Impact on Health			X		
Other					

Appendix 5: Interviews with Participating Members of Regional Talks

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b. Urban, Industrial and Agricultural Management:

	URBAN, INDUSTRIAL AND AGRICULTURAL MANAGEMENT				
	1	2	3	4	5
Seriousness of the Problem					X
Condition of Emergency					X
Social Pressure					X
Financing Availability			X		
Impact on Economic Activities				X	
Impact on Health					X
Other					

c. Competitiveness:

	COMPETITIVENESS				
	1	2	3	4	5
Seriousness of the Problem					X
Condition of Emergency					X
Social Pressure			X		
Financing Availability			X		
Impact on Economic Activities					X
Impact on Health				X	
Other					

3. Which are the long-term priorities in each of these environmental policy areas?

a. Management of Natural Resources:
   1. Biodiversity
   2. Forest
   3. Fishing
   4. Certification, Drought, Soil Erosion
   5. Exploitation of the Ecosystem

b. Urban, Industrial and Agricultural Management:
   1. Residual Waters
   2. Solid Wastes
   3. Mining Residues
   4. Pesticides
   5. Wastes industrial
   6. Waste Generated by Fishing Activities
   7. Air Quality (transportation and waste burnings)

c. Competitiveness (sectors that improve processes as a form of competitiveness):
   1. Beer
   2. Cement
   3. Textiles
   4. Mining
   5. Gas
   6. Energy

II. ACHIEVEMENTS IN ENVIRONMENTAL ADMINISTRATION

See Report of Achievements edited by CONAM. (CONAM. 2001c)

III. SHORT TERM (1-5 years) CHALLENGES AND GOALS

1. Which are the limitations that hamper the attention effective of the priorities cited in each of the policy areas? For each priority indicate the deficiency and specific reason.

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Invest in formulating laws, strategies and in consolidating the model.
Induce goals on the public.
Recently we finished formulating an upgrade law to consolidate the model.
Attack the origins of environmental problems and no their symptoms.
The main environmental administration problem is the strong mentality that conceives environmental criteria as an additional cost. For this, we shall use emerging human groups with a different conviction and setting a different example.
Generate prevention programs, not laws that sanction.
Use human resources with skill to direct, lead, negotiate, generate consensus, and manage stress and time.
Generate common agendas, without individual interests that outweigh considerations.
Reduce the gap between existent and required skills.
Develop CDMs.

IV. MAIN LONG TERM CHALLENGES

1. Which are the main long term (5-15 years) challenges?

✍ Improve living conditions of the population within the framework of the concept of sustainable development. This means designing a policy on population that is centered not only in the control of population size, but also focused on improving its goodstar. For this, tight coordination is essential between the different institutions both in the public sector (for example PROMUDEH, education, and health) and in the private sector.

✍ The State is promoting the development of the economic corridors, conformed mostly of intermediate cities, articulated by transportation services and commercial transactions, in some cases historic.

✍ The education sector faces the challenge of forming future Peruvians who require abilities and skills to respond to the rapid changes of the new millenium. The private education sector is making investments to guarantee active educational processes, more focused in developing skills than in accumulating knowledge. In the Public Sector, progress is slow and methodological changes to develop skills are not yet generalized.
With respect to environmental education, there is interest to incorporate this topic actively in students' training.

✍ The pending agenda to promote resources sustainable encounters the challenge of developing and making effective instruments such as territorial ordering and economic- ecological zoning, whose relevance has been acknowledged time ago. These instruments must take into account cities' ever growing expansion, which are also consumers of the natural resources.

✍ The forests have an enormous capacity to produce goods and services in sustainable form Sustainable. Therefore, integrated forest management is required to have internationally competitive and efficient timber-yielding industries. Likewise, it is essential to promote forest development of non timber-yielding products and of environmental services.

✍ Peru began formulating strategy and action plans for the conservation and sustainable use of its biological diversity within the framework of a participatory process asking for advice, with special emphasis in the interior regions of the country.

✍ The General on Waters is effective since 1969, and needs to be updated to incorporate modern administration elements.

✍ A Fishing Sector that is responsible for the resources that are its raw materials must design mechanisms that enable it to achieve two objectives simultaneously: preserve the biomass and maximize the economic benefits of the agents. Existent regulation is in the process of formulating said instruments, through the organization plans for the different fisheries.

✍ It is essential to establish mechanisms that make possible an evaluation on urban environmental improvement and management. In some cities of the country, emissions of CO_2, noise, etc. are being recorded. However, urban environmental administration faces the challenge of quantifying the effects of the environmental problems, taking into account, among other things, effects on health, productivity, and ecological capital.

✍ With respect to efforts to develop residual water treatment systems, it is important to take into account the complete process, which means the collecting, distribution, treatment and productive use of treated waters. It is important to emphasize the last stage in such a way that it contributes to the sustainability of the system.

Appendix 5: Interviews with Participating Members of Regional Talks

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- With the purpose of taking good decisions to prevent contamination, it is indispensable to achieve institutional strengthening (regulatory, human and technical resources), not only to sanction and control emitting agents, but also in investigation so as to count with permanent and reliable diagnosis aimed at measuring the benefit of the measures in economics and social terms (monitoring networks, chemical analysis, epidemiological and cost benefit studies). On the other hand, the accelerated growth of the cities demands transportation integrated planning, so it may act as a facilitator for urban development. For this, the nation requires the establishment of policies that promote the use of transportation of low social cost (mass transportation, non motorized transportation and public transportation), the rationalization of existent routes, and investments in the infrastructure necessary for a more fluid transportation service, giving priorities to measures that favor public transportation since it carries more passengers per trip.
- An answer to an integral management of toxic and hazardous residues is still pending; although the new legal framework makes reference of these, in practice there is no experience in this respect.
- There are expectations on the generation of incentives and other instruments will finally prevent contamination, promote modernization of the productive systems in the fishing sector, and reduce the enormous loss of resources and capital.
- To understand the process of environmental adaptations in the mining sector, one must take into account two aspects. On the one hand, mega tendencies are oriented towards processes based on clean technologies and the other, the concept of social responsibility that the company has incorporated, as a dimension to capitalize and that helps to place these in a market that is each time more exacting in environmental aspects.
- The implementation of the CDM requires the formulation of a system whose formulation process must begin now. In this sense, it becomes important to strengthen two aspects in particular: the financing frameworks created and the diffusion of information. The National Environmental Fund (FONAM), created on May 1997, must be a promoter of financing of projects portfolios and of diverse environmental initiatives.
- Latin America confronts the challenge of attaining a regional understanding on the management of their natural resources and of environmental topics. Among these topics the following are worth mentioning: climate change, biological diversity and management of continental and maritime water bodies.