INTER-AMERICAN DEVELOPMENT BANK

REGIONAL POLICY DIALOGUE ON ENVIRONMENT
EXECUTIVE PROFILE OF ENVIRONMENTAL MANAGEMENT

SUBREGION SOUTH CONE

Countries

Argentina
Brazil
Chile
Paraguay
Uruguay

(*) Report prepared by:

Rafael Asenjo (Chief Project),
Guillermo Espinoza y Fernando Valenzuela (Main Investigators)
Jorge Jure (Assistant Investigator).

January 2002

INDEX

Index of Tables

Index of Boxes

EXECUTIVE SUMMARY

This report provides systematized information to guide Regional Dialogue efforts. It emphasizes efforts Southern Cone countries (Argentina, Brazil, Chile, Paraguay and Uruguay) should undertake to consolidate environmental administration and sustainable development.

The report is based on three fundamental central themes: i) identification and characterization of the countries' situation in relation with the main environmental and administration problems; ii) description of environmental administration progress that is common to all countries and particular to some; iii) identification of main challenges for environmental administration.

The identification of **environmental problems common to all Southern Cone countries**, along with the availability of a set of priorities within the framework of national environmental agendas, is summarized in the following findings:

a) In relation to natural resources administration, priority environmental problems are: i) deforestation and deterioration of native forest ecosystems; ii) loss of land and aquatic biodiversity; iii) soil impoverishment; and iv) deterioration of water resources and coastal zones. Concerning specific environmental priorities present in most of the subregion's countries, the following are prominent: i) biodiversity conservation and ii) water resources administration.

b) In relation to urban, industrial and agricultural administration, environmental priority problems are: i) atmospheric contamination in cities; ii) problems with urban solid waste administration; and iii) generation of residual waters and industrial liquid wastes. Concerning specific environmental priorities present in most of the subregion's countries, the most notable are urban environmental administration, including its management of contamination and liquid and solid residues.

c) In relation to competitiveness, it is notable that in most of the subregion's countries the relation between commerce and the environment has become important. There is growing concern on aspects such as clean production, environmental certifications, and the incorporation of environmental criteria in economic integration processes at subregional levels. However, this entails difficulties for small and middle-sized enterprises (PyMEs), which represent the largest proportion of enterprises in those countries and which must confront financial and administrative obstacles that cause delays in the incorporation of clean technologies.

d) In general, there is a close relationship between environmental problems that are common to all countries and explicit priorities in national agendas. However, there are some weaknesses associated chiefly with the lower emphasis assigned by some countries to medium-term priorities on topics such as deforestation and soil impoverishment.

e) In relation to priority problems and explicit priorities, there is a manifest tendency to assign more emphasis to urban environmental problems, chiefly on aspects concerning atmospheric contamination, solid wastes and the treatment of residual waters and industrial liquid wastes. However, limitations related to low decentralization levels in municipal environmental administration generate difficulties when handling these

problems in small and middle-sized cities, and even more so in rural areas.

f) The specialization the subregion's national economies in natural resources and the growing participation of manufactured products derived from industrial processes with a high contaminating potential in the countries' exporting dynamics coincides with top priority environmental problems. However, priorities related with competitiveness show a lesser degree of development in the administration of natural resources such as water, forest and fishing resources, among others.

The description of **progresses achieved by the countries** on environmental administration has been made with respect to the following aspects: i) generation of national environmental policies; ii) development of national environmental legislation; iii) display of environmental institutionality; iv) development and application of administrative instruments; and v) notable progress in the administration of priority environmental problems. The findings are summarized in the following results:

a) The development of national explicit environmental policies in Southern Cone countries shows partial progress. There is still an important lack of substantial efforts aimed at the environmentalization of public policies in general. Brazil and Chile have explicit environmental policies and agendas, while in Uruguay, Paraguay and Argentina the topic is handled with the general contents of national-level environmental legislation or by means of programmatic directions at Agenda 21 levels. However — for all Southern Cone countries — discerning the concrete implications of these policies is complex since there are no follow-up or evaluation mechanisms available.

b) The Southern Cone has shown important advances in environmental legislation, a factor that has enabled them to organize, rationalize and prioritize the main aspects of national environmental policies. Brazil, Chile, Uruguay and Paraguay have environmental framework legislation. Notable among these is Brazil's precedent and recent achievements by Paraguay and Uruguay. Argentina is the only country in the Southern Cone that still lacks environmental framework legislation although it has developed laws at provincial levels. The effects of national environmental legislation on the countries show the following:

- In the cases of Chile and Brazil, environmental framework legislation has made possible important progress in the implementation of national systems of environmental administration, institutional development and in the generation of environmental administration instruments that are consistent with national policies.
- In the cases of Paraguay and Uruguay, the recent promulgation of framework environmental legislation has made possible a late start — with respect to other countries — in organizing previous institutional and administrative efforts. The brief time this framework legislation has been operating does not yet provide a vision on its effects, even more so considering that even nowadays adjustments are being made on its scope and implications.
- In the case of Argentina, deep structural changes in the country do not allow prognostications on whether the National Law on Minimum Environmental Budgets (Ley Nacional de Presupuestos Mínimos Ambientales) may be promulgated in the short term, making more relevant what provinces are doing without affecting negatively other advances in sectoral environmental legislation.

c) In general, the countries' design and implementation of national environmental institutionality has undergone a development of successive changes in time. This is due chiefly to a marked tendency of defining environmentally competent institutions before defining environmental policies and environmental framework legislation. While Brazil, Argentina and Uruguay have opted for the figure of a ministry, Chile has chosen a coordinating commission and Paraguay has favored a secretariat directly dependent on the Presidency. Concerning decentralization of environmental institutionality, advances present the following general considerations:

- During the last years, countries like Paraguay, Uruguay and Chile have achieved progressive advances in the creation on environmental units at regional, departmental and municipal levels. However, the degree of incorporation of environmental institutionality tends to be greater in regions or municipalities with high concentrations of population, showing a lesser degree of institutionality in the rest of the national territories, especially in rural municipalities.
- In countries like Argentina and Brazil there is more environmental institutionality in provinces and states, respectively. This is due to the power invested in federal units to generate their own institutionality without affecting connections with federal governments.
- The countries in the subregion have made advances in making explicit environmental competencies of sectoral institutions such as public services related with water resources administration, forest and municipal resources, among others. In countries that have environmental ministries (Brazil, Uruguay and Argentina), there is a tendency to concentrate environmental functions and competencies in dependent units. In the Chilean case, sectoral environmental competencies have a broader range due to the coordination model that has been applied. Paraguay is in the process of adjusting environmental institutionality, promoting actions that endeavor to define environmental functions within the Presidential Secretariat of the Environment (Secretaría de Medio Ambiente de la Presidencia).

d) The development and implementation of environmental administration instruments in these countries is characterized by the following aspects:

- There is e tendency to implement and strengthen command and control instruments as implementation and application cores of national environmental policies and legislation. The generalized use of evaluation systems on environmental impact and environmental norms and standards in the countries show an emphasis on creating mechanisms of environmental authorization for projects and protection of environmental quality, although limitations are acknowledged on the integral development of the potentials of these instruments.
- The implementation of economic instruments is not generalized in the countries, although there are specific cases that make possible a prognostication on their future development, both at national levels as well as at state and provincial levels in federal countries. Salient among these is the implementation of the Ecological ICMS (ICMS Ecológico) in Brazil and the Clean Production Agreements (Acuerdos de Producción Limpia) in Chile.

- Progress on environmental administration instruments developed to improve competitiveness in the countries are related to the growing incorporation of environmental certification mechanisms at the level of enterprises, the promotion of clean production, and efforts to generate an environmental protocol for Mercosur.

However, it is acknowledged that all these efforts, although relevant, show scant development at the level of small and medium-sized enterprises (PyMEs).

e) In relation with management of top priority environmental problems, those related with the following aspects are notable:

- A clear tendency to consolidate the concept of integrated management of water resources at the level of hydrographic basins. Although achievements are still restricted to specific cases in some of the subregion's basins, the definition of explicit administration policies on water resources in countries like Chile, Argentina and Brazil permits foretelling that there will be a greater development of this aspect in a short and medium term. In the case of Chile, the World Bank is supporting the execution of Directorate Plans (Planes Directores) in eight basins considered priorities, where relevance is given to the implementation of strategic environmental evaluations and the incorporation of criteria on aquatic biodiversity protection.
- Increasing development of national strategies for the protection of biodiversity, including the strengthening and increase of ecosystems conservation units, the incorporation of private protected areas and the definition of ecological corridors that cross borders. However, these efforts are not yet formalized or consolidated in the countries — a factor that reflects budgetary, technical and capability limitations, chiefly at municipal levels.
- The countries are increasingly interested in undertaking sustainable use of native forest resources. Prominent among these is the progress achieved in sectoral legislation by Argentina and Paraguay, which encourage reforestation of impoverished soils, diminishing the pressure on remaining native forests.
- A marked leadership generating clean production agreements. Chile has made important progress generating a national policy that supports clean production.
- A growing use of economic instruments at state and municipal levels in Brazil, where the implementation of Ecological ICMS provides the means to compensate municipalities that stopped receiving income when they reserved productive areas for conservation and environmental protection.
- A clear tendency of increasing the coverage of wastewater and solid wastes treatment in the countries' big cities, although serious limitations are still acknowledged in middle-sized and small cities. Likewise, management of air contamination in cities such as Santiago de Chile show progress in the mitigation of contaminants generated by fixed sources, although an increase in from mobile sources is also observed.

Taking into account that the countries have specific challenges according to their own realities and advances achieved on environmental administration, a set of **challenges common to the countries of the subregion** have been identified. The challenges are summarized as follows:

a) Formulating and implementing explicit environmental policies, including: i) national environmental policies; ii) specific policies to undertake key aspects such as solid wastes, territorial ordering, clean production, chemical substances, energy and natural resources; iii) decentralization of environmental administration and generation of capacities at local, state or provincial levels to develop policies that are adequate to local realities; iv) clear policies for the implementation of environmental evaluations that are strategic for decision-making; and v) public policy and environmental performance follow-up and evaluation mechanisms.

b) Making progress in innovative institutional arrangements through the following: i) reinforcement of current institutional structures centered in integration, coordination and involvement of decision-making political segments; ii) development and strengthening of environmental information national systems; iii) development of training programs aimed at the professionalization of environmental administration; iv) improvements in capacities to perform environmental supervision and control in order to verify compliance with policies, plans, programs and norms; and v) strengthening of the intersectoral capacity of environmental administration.

c) Incorporating new technologies to manage and disseminate environmental information and to make it useful in supporting decision-making processes. In this respect, the following aspects are basic: i) massive Internet use; ii) creation of environmental information centers; iii) formulation of environmental indicators; iv) improvement of access to information at municipal levels; v) increase in quantity and diversity of resources for environmental investigation.

d) Strengthening citizen participation and environmental education, including: i) broadening of education and environmental information programs, with greater coverage of relevant actors from public, private and civil society sectors; ii) creation or reinforcement of participation channels at the level of environmental administration instruments; and iii) development of programs and strategies aiming at increasing citizen's compromise with the environment with emphasis on the generation of alliances, cooperation agreements and mechanisms of prevention and environmental conflict resolutions.

e) Developing and strengthening environmental administration instruments appropriate for the countries' realities, including: i) advancement of self-regulatory and self-management instruments, with an emphasis on environmental certification; ii) verification and adjustment of classic instruments such as EIE, norms and standards, environmental monitoring, within a perspective of implementing reengineering aimed at increasing the practical utility of instruments that prevent and control priority environmental problems; iii) development of new instruments such as, among other things, certification norms, voluntary agreements, negotiable emission permits, environmental insurance, monitoring and economic assessment of the resources, patrimonial accounts and early citizen participation; and iv) advancement of public-private alliances and cooperation mechanisms to progress in the achievement of environmental goals.

f) Consolidating environmental administration in Mercosur, in which the following aspects are important: i) strengthening SGT-6's role to articulate the countries' environmental policies; ii) managing environmental topics such as the administration of shared natural resources and ecosystems, contamination that crosses borders, shared basins, and problems associated with great infrastructure projects; iii) strengthening national institutions to achieve regional institutionality capable of facing global environmental problems; iv) improving access to the countries' information and to scientific and technological cooperation; and v) executing the Mercosur Environmental Protocol (Protocolo Ambiental del Mercosur).

CHAPTER I. INTRODUCTION

1. PRECEDENTS

The level of environmental awareness has increased noticeably in the region during the last decades. During the last 30 years, important progress on environmental administration has been recorded. Although actions are required to strengthen public institutions in charge environment, the countries have — in general — environmental authorities and general national legislation that regulate the environment. Among existent advances, the following are notable:

- Establishment of citizen rights and obligations on environmental aspects with an increase of non-governmental organizations working on the subject.
- Definition of functions of the State and those public entities responsible for environmental aspects.
- Progress formulating and implementing environmental policies, plans, programs and projects.
- Progressive incorporation of the environmental topic in private investment projects.
- Development of environmental protection instruments and strategies.

However, contamination deterioration and degradation of natural resources and the environment still persist, affecting the health and life quality of the population particularly among those who are poorer. Latin American and Caribbean countries face the following environmental challenges[1]:

- Advancing towards a development that is more sustainable, which promotes social equity, economic growth and environmental protection.
- Attaining competitiveness within the context of an increasing globalization.
- Developing policies with an intersectoral and integral approach.
- Incorporating the strategic environmental evaluation as a tool to support decision-making in policies, plans and programs.
- Strengthening citizen participation.
- Intensifying decentralization processes, focusing on local environmental administration.
- Improving available environmental administration instruments, especially preventive ones such as the Environmental Impact Evaluation System (Sistema de Evaluación de Impacto Ambiental).
- Creating conditions so that civil society and the private sector play more proactive roles in favor of the public interests.

In order to provide support to the region's governments on these challenges, the IDB established Regional Policy Talks (Diálogos Regionales de Política) in different areas, including environment. This consultancy is conceived within the framework of implementing said Talks to create and build up a network of government employees with environmental competencies.

[1] Espinoza, G. and M. Rodríguez, 2001. Informe de Consultoría sobre Tendencias de la Gestión Ambiental in América Latina y el Caribe (Report on Consultancy on Environmental Administration Tendencies in Latin America and the Caribbean). Inter-American Development Bank (IDB).

2. OBJECTIVES AND SCOPE OF THE EXECUTIVE PROFILE

The general purpose of the consultancy is to formulate the executive profile of the environmental administration for Southern Cone countries (Argentina, Brazil, Chile, Paraguay and Uruguay) as part of the work done in the Environmental Regional Talks (Diálogos Regionales de Medio Ambiente) organized by the IDB and Latin American and Caribbean countries. The consultancy endeavors the following:

a) Identifying and outlining the countries' main environmental problems considered as priorities within the context of progressive political, economic, and territorial integration.

b) Describing the main progress and achievements in the countries' environmental administration, with emphasis on institutionality, policies and legislation, administrative instruments, mechanisms and procedures, and involvement of relevant actors.

c) Identifying the main challenges and priorities to strengthen the countries' environmental administration capacities within short and medium-term perspectives.

The consultancy centers on work in the following levels: i) direct connections with environmental administration in the countries; ii) use of available information published in each country; iii) precedents expected by IDB; iv) thematic reports available in other institutions; and v) reports of work at national scale.

3. FOCUS OF THE WORK

This consultancy did not generate original information; it only uses available precedents. The bibliographical references chapter indicates general information sources as well as those for each country in the subregion. The examination of environmental administration in Southern Cone countries has been made starting from information that could be obtained, applying a practical focus based on the following:

a) General description of environment and administration problems common to the subregion's countries, including specific references to countries due to the extraordinary diversity of environments involved. Emphasis is made on the use of explicit information on environmental problems, limitations of environmental administration, and the definition of key topics in the countries' environmental agendas.

b) Examination of advances in environmental administration common to all countries taking into account, among other things, legal-institutional differences related with the existence of Unitary States (Chile, Paraguay and Uruguay) and Federative Unions (Brazil and Argentina).

c) General description of experiences, relevant cases and implementation examples of the countries' environmental administration, with emphasis on the most relevant milestones during the last decade on the creation of policies, legislation, environmental institutionality and administrative instruments. It takes into account the fact that most of the information is prior to the year 2000 and that, in cases like Argentina and Paraguay, they are in the midst adjustment processes due to structural changes they are undergoing.

d) A proposal of short and medium-term challenges that may enable the countries to achieve better responses for the environmental problems common to them, parting from the recognition of the problems, priorities and advances identified in the countries.

e) The report presents visions common to the countries on the three central work themes, but at the same time, specifies topics that are relevant to individual countries.

Within this framework, the present document delivers systematized information aimed at orienting the Regional Talks, with particular emphasis on efforts Southern Cone countries should employ to consolidate environmental administration with the endeavors to develop sustainability.

CHAPTER II. SITUATION OF SOUTHERN CONE COUNTRIES: MAIN ENVIRONMENTAL AND ADMINISTRATION PROBLEMS

1. PRIORITY ENVIRONMENTAL PROBLEMS

Starting from the bibliographic examination undertaken, the report identifies a set of priority environmental problems common to all the countries and related with the deterioration of natural resources and urban environment. The environmental problems identified are the following (See **Table II-1**):

- Deforestation and deterioration of native forest ecosystems, with a deforestation rate of 30,000 Km^2 per year, which represents more than 50% of the yearly rate of Latin America and the Caribbean.

- Loss of land and aquatic biodiversity, and deterioration of ecosystems of great environmental value at global levels such as the Amazonian jungle, the sclerophyll shrubland and the Patagonian forests, among others. Endemic or endangered species are significant in most of the subregion's countries, being Brazil salient for having the largest diversity in mammals, birds, reptiles, amphibians and plants.

- Impoverishment of soils, with a total surface area of 1,890,000 Km^2 of soils with some type of impoverishment induced by human actions, which represents 15% of the subregion's total surface area and more than twice the surface area allotted for crops.

- Deterioration of water resources and coastal zones, mainly due to contamination with agro-chemicals, domestic and industrial wastewater, and pressure from real estate and tourist sectors on coastal fringe. Most of the rivers, lakes and coasts contamination problems that are critical in some cases.

- Atmospheric contamination in cities due to sources such as thermoelectric plants, foundries, refineries, industries and motor vehicles. In general, the most significant air contamination problems due to gasses and particulate material are concentrated in cities (Sao Paulo, Rio de Janeiro, Buenos Aires, Santiago, Montevideo and Asuncion, among others).

- Problems with administration of solid urban wastes in most of the cities and municipalities. An important portion of the residues is not disposed in adequate locations. There are serious difficulties for the treatment of industrial and hospital wastes.

- Generation of wastewater and liquid industrial wastes, with an average treatment coverage of around 20% of the urban wastewater generated. Although in general average coverage of drinkable water and sewage are around 87% and 90% respectively, serious problems still persist in rural and peripheral urban areas, where residual waters are discharged directly into soils, water courses or bodies of water.

Table II-1. Main Environmental Problems in Southern Cone Countries

Environmental Problems (a)	Countries (b)				
	Argentina	Brazil	Chile	Paraguay	Uruguay
Deforestation	x	x	x	x	
Loss of biodiversity	x	x	x	x	x
Reduction in fishing resources			x		
Deterioration of soils (c)	x	x	x	x	x
Water contamination (d)	x	x	x	x	x
Atmospheric contamination	x	x	x	x	x
Liquid industrial wastes	x				
Hazardous solid wastes			x		
Solid urban wastes		x	x	x	x
Deterioration of coastal fringe (e)		x			x

Source: By authors, based on examined bibliographic precedents.

(a) Corresponds to priority environmental problems according to information examined in available documents from national governments or institutions related with the topic (IDB and World Bank).
(b) The "x" indicates that the countries consider those environmental problems critical or priorities. Hence, the fact that some problems are not determined priorities does not mean they do no exist in these countries.
(c) Includes problems of loss of soils due to urban expansion, contamination, erosion, desertification and salinization.
(d) Includes contamination and deterioration of superficial, subterranean and marine waters due to wastewater discharges, sedimentation, agro-chemical use, etc.
(e) Includes problems of coastal alterations due to real estate – tourism development and port, industrial and urban activities.

1.1. Deforestation and Deterioration Native Forest Ecosystems

This is one of the most critical topics in the subregion. It exerts influence over biodiversity deterioration and the loss of habitats. The Southern Cone forest surface area represents 63.3% of the total for Latin America and the Caribbean (See **Table II-2**) and has great quantity of vegetation types. The loss of forests in the Southern Cone represents 52% of the total loss for Latin America, being conspicuous among these the deforestation in Brazil and Paraguay. As a result of the relevance of this problem, all of the Southern Cone countries consider it a priority although they not always have national policies with concrete answers for native forest protection, incentive mechanisms to reforest and strengthen economic activities associated with forest plantations.

Table II-2. Forest Surface Area and Deforestation Rate in Southern Cone Countries (1998)		
Country	Forest Surface Area Year 1998 (Km^2) (a)	Yearly Deforestation Rate Period 1990 - 1995 (Km^2) (b)
Argentina	509,000	894
Brazil	5,576,670	25,544
Chile	165,000	292
Paraguay	128,500	3,266
Uruguay	9,300	4
Total Southern Cone	6,388,470	30,000
Total Latin America and the Caribbean	10,093,840	57,766

(a) Source: UNEP / UNDP / World Bank / World Resources 1998
(b) Source: World Bank – World Development Indicators - 2000

The deforestation rate in Brazil is equivalent to the yearly loss of 0.5% of its forest surface area, primarily due to pressure exerted to obtain lands for agriculture and livestock, within the framework governmental policies centered on agrarian reform and territorial integration of the Amazonian territory to reduce pressure over other densely populated regions of the country. The huge deforested area is manifest when considering that the annual deforestation rate in Brazil is equivalent to 2.7 times the total surface area of existent Uruguayan forests. In terms of carbon dioxide emissions (CO_2), and although it has diminished significantly since 1980, Brazil still furnishes more than 22% of the total for Latin America and the Caribbean (World Bank, 1999/2000). This problem is closely related to the deforestation processes that the country has undergone during the last decades.

In Paraguay deforestation reaches significant levels. Between 1985 and 1991, the approximate deforestation rate was of 290 thousand hectares per year, increasing to 327 thousand hectares per year during the period 1990-95. The causes, fitting out lands to establish great extensions of mechanized crops (chiefly soy), the establishment of artificial grasslands, and the pressure of rural population to obtain land. In 1990, a governmental policy encouraging development brought as consequence owners burning great extensions of forests, thus generating in that year an approximate deforestation of a million hectares.

In Argentina deforestation is chiefly due to the extraction of firewood, to forest fires and above all to agricultural expansion which is the chief economical activity. 80% of forest areas in the country are private property that — along with the absence of economic instruments to promote protection and conservation of forests — constitutes an important factor in the deterioration of the native forest resource. As consequence of this, it is estimated that some 122 forest and vegetal species are endangered.

In Chile, there is growing concern for the vulnerability of native forests and vegetational formations of global relevance such as the Patagonian forests (lenga and coihue de magallanes), the sclerophyll shrubland of Central Chile, and the Chilean pine and larch forests, among others. Of all national forests, 85.9% correspond to native forests, 13.5% to forest plantations and 0.5% to mixed forests. In this scenario, the high degree of competitiveness of the forest plantations is conspicuous. In past years they generated a strong pressure to substitute native forests, a tendency that has been reverted with time, although it still constitutes an important challenge for forest legislation and policy.

1.2. Loss of Biodiversity

Three of the 25 ecoregions of global relevance are in the Southern Cone. These are: the Atlantic jungle, the Brazilian Cerrado and Central Chile. The loss of biodiversity in these regions, are due to factors such as (Mittermeier et al., 1999): i) expansion of agriculture and livestock; ii) forest fires; iii) extraction of wood; iv) industrial growth; v) contamination of soils and waters; vi) population growth and greater pressure on natural ecosystems; vii) roads expansion; viii) introduction of exotic species; ix) non-sustainable use of native species; and x) augmentation of forest plantations (forest monocultures).

From the perspective of the limitations these countries confront to undertake protection and conservation of biodiversity, the following factors common in all the countries are notable:

- Insufficient ecosystemic number, coverage and representation in States' protected areas, which restricts effectiveness of conservation actions on critical land and aquatic species. In some cases, this factor is intensified due to the lack of policies, legislation and national regulations on biodiversity, and to the lack of operational capacity of protected areas systems (insufficient financial, human and technical resources for protection, monitoring and control activities).
- Lack of financial resources to solve conflicts on the property of land, which expresses itself in conservation units that maintain an irregular situation hampering the development of effective protection actions.
- Lack of enough human resources to administrate the conservation units. Added to this is budget scarcity, the absence of implemented management plans and the want of clear administration guidelines.
- Low degree of systematized scientific knowledge on the necessary environmental conditions for species survival in conservation categories. This implies that in many cases the creation of conservation units on particular species are not compatible with requirements on territorial extension or with the degree of intervention that would allow an adequate development of populations, mainly with respect to mammals and birds.
- Incipient or nonexistent regulation on private protected areas, which hampers the establishment of new initiatives within a framework of integrated environmental administration.
- Insufficient availability of framework agreements between the countries for the development and strengthening of initiatives on biological corridors in zones that cross borders.
- Tendency to form "islands" of natural protected areas surrounded by productive lands, restricting considerations on buffer or transition territories to safeguard these areas from human intervention. In this scenario, problems derived from the lack of compatibility between the right to use and exploit private property and the social and environmental value of the land, are also important.

The degree of species endemism is significant in the subregion, being conspicuous among these vegetal species in Brazil and to a lesser degree in Chile and Argentina (See **Table II-3**). The insufficiency of protected areas (both in number and area, as well as in ecosystemic representation) reinforces the countries' limitations for an effective conservation of biodiversity. This is significant even in countries like Chile, which stands out with 18% of its national territory destined to wild protected areas. However, in a strict sense it covers only 4% of the vegetational surface area and many ecosystems are not represented in its protected areas system, especially those that receive the greatest degree of human pressure in the central zone. In this last case, the administration is not capable of providing enough cover to the nation's ecosystems, leaving them under-represented or not representing them in the protected areas system.

Table II-3. Number of Endemic and Endangered Species in Southern Cone Countries

Country	Number of Endemic Species (a)						Number of Endangered Species (b)
	Mammals	Birds	Reptiles	Amphibians	Vascular plants	Total	
Argentina	49	19	72	46	1,100	1,286	326
Brazil	131	191	184	366	16,500-18,500	17,372-19,372	1,552
Chile	17	16	36	31	2,698	2,798	401
Paraguay	2	0	3	3	Unknown	8	168
Uruguay	1	0	1	1	40	43	31
Total	200	226	296	447	20,338-22,338	21,507-23,507	2,478

(a) Source: World Conservation Monitoring Centre WCMC (2000) / World Resources Institute, Biodiversity Resources / Mittermeier, R.A. & Mittermeier, C. G. (1997).

(b) Corresponds to the total number of endangered mammal, bird, reptile, amphibian and plant species in the countries. Source: World Resources Institute, Biodiversity Resources (www.wri.org/facts/cs-namerica.html) / World Conservation Monitoring Centre WCMC, 2000 (www.wcmc.org.uk/species.html).

In respect to the total number of endangered species in Southern Cone countries, 84% corresponds to plant species. Concerning fresh water fish endangered species, Chile and Brazil present the highest number (27 and 12 respectively), which constitute 98% of the total number of fresh water fish endangered species in the subregion.

Uruguay is one of the countries with the least quantity of endemic or endangered species, chiefly due to its small size and its low environmental variability. However, there is risk of losing biodiversity and ecological functions in the few areas that have been declared protected and which represent only 0.3% of the national territory.

In Paraguay only 3.7% of the territory is protected wild areas. In the Western Region or El Chaco, there is a high degree of biodiversity that is endangered by the accelerated loss of vegetal cover, irreversible in some cases. There is a lack of correspondence between the protected areas' categories and the definition on their levels of importance. Therefore, the functions of said areas do not achieve the objectives for which they were created. Although wildlife scientific knowledge in Paraguay is very deficient and the nation does not yet have an adequate inventory, some estimations indicate a total of 27 species of flora and fauna in danger of extinction.

In Argentina biodiversity conservation difficulties are characterized by the fact that the federal system of protected areas represents one of the smallest areas in Latin America, with only 0.92% of the total surface area of the country. The extremely small scale of protected wild areas administrated by provincial governments does not rectify the problems on lack of representation and coverage of the country's priority ecosystems units. According to this reality, it is possible to indicate that in Argentina, management of those renewable natural resources is still in precarious stages.

In Chile, biodiversity deterioration is observed in land, aquatic and marine levels. In general there is a high degree of endemism in flora and fauna species, along with a notorious lack of systematic information on these, rendering any undertaking on the problem impossible. This, associated with the fact that there are land ecosystems that are under-represented or not represented in the protected areas system, poses an important challenge on defining policies and strategies that have not yet been created on biodiversity conservation. Although the

protected surface area encompasses about 18% of the national territory, only 28.9% of native forests are among the State's protected wild areas, corresponding chiefly to adult forests. Furthermore, a total of 85 vegetal formations grouped in eight ecological regions, 21 ecological subregions, 30 of these environments (belonging to six ecological regions and twelve ecological subregions) are not represented in the National System of State Protected Wild Areas (Sistema Nacional de Areas Silvestres Protegidas del Estado - SNASPE). This corresponds to 35.3% of the total vegetal formations defined. In the case of marine species, the problems lie on the overexploitation of species with commercial value, forcing the establishment of fishing quotas, closed seasons and other mechanisms that allow a diminution of pressure on these resources.

Brazil — according to the National Program of the Environment (Programa Nacional del Medio Ambiente) 1991-1996, Ministry of the Environment (Ministerio del Medio Ambiente), 1997 — has 145 million hectares under a conservation regime at state level; at a municipal level it has 136.6 thousand hectares; and 93.1 thousand hectares correspond to private conservation units. However, protected areas are not enough in quantity, extension or spatial distribution to conserve the country's biological diversity.

1.3. Impoverishment of Soils

Historic tendencies of increasing arable lands and prairies in detriment of forests in all Southern Cone countries (where Brazil and Argentina are conspicuous due to their territorial extension), have generated serious deterioration of soils problems, mainly due to erosion, desertification and salinization processes. These problems acquire critical connotations due to the marked dependence of countries such as Argentina, Paraguay, Uruguay and Brazil on agricultural activities for their development efforts.

Table II-4 shows the situation of impoverished soils with respect to total surface area for each one of the Southern Cone countries.

Table II-4. Situation of Impoverishment of Soils in Southern Cone Countries

Country	Total Surface Area (Km^2)	Crops (Km^2)	Permanent Prairies (Km^2)	Forests and Forest Plantations (Km^2)	Other Uses (Km^2)	Impoverished Soils (Km^2) (a)
Argentina	2,736,690	272,000	1,420,000	509,000	535,690	530,000
Brazil	8,456,510	586,670	1,856,000	5,576,670	437,180	1,260,000
Chile	748,800	42,160	131,000	165,000	410,300	70,000
Paraguay	397,300	2,270	217,000	128,500	29,100	30,000
Uruguay	174,810	13,040	135,200	9,300	17,270	N.A.
Total	12,514,110	916,140	3,759,200	6,388,470	1,429,540	1,890,000

Source: UNEP, UNDP, World Bank, World Resources (1998) / www.fao.org.

(a) Corresponds to impoverishment of soils induced by human actions in relation with stable lands and poor lands that have not been used.

In respect to degradation of soils, the very limited integration of environmental considerations in its management has particular limitations in Southern Cone countries, which show the following aspects:

✍ The significant rate of deforestation and the growing incorporation of monoculture (like soy)

in great land extensions.

- The slow process of modernization of traditional agriculture and the inappropriate agricultural practices on irrigation, use of pesticides and fertilizers.
- The problems on property of land and agrarian reform conflicts, mainly in Brazil and Paraguay.
- The restrictions of the countries for the operational capacity of international agreements on desertification, characterized by assigning more roles to local governments but not creating sufficient capacities.
- The incipient development of integrated administration of basins, having still only a partial vision of water resources management without considering management of soils adequately.

In Uruguay, from a total of 17.4 million hectares that conform the rural area, 3.5 million are lands for agriculture, 13.6 million are lands for agriculture-livestock, and 0.3 million are lands for forests and for fauna and flora reserves. Impoverishment of soils is observed as a generalized phenomenon in rural areas (there are estimations of losses of 31 tons of soil per hectare caused by erosion and contamination of soils with agro-chemicals).

In Argentina deterioration of soils is chiefly associated with inadequate agricultural practices, the use of pesticides and fertilizers, chronic water and wind erosion (mainly in the pampas province, which it produces 90% of the country's grain harvests), and to desertification processes. 60% of the country's surface area is arid or semiarid and approximately 40% of irrigated soils are affected with salinization caused by poor drainage and precarious management of irrigation systems despite the low cost of water.

In Chile deterioration of soils due to erosion, contamination, desertification and salinization are caused by many factors such as inadequate agricultural practices, livestock expansion and excessive grazing, precipitation of contaminants derived from industrial processes (chiefly foundries and thermoelectric plants), urban expansion, and bad forest practices. In the case of Chile, environmental vulnerabilities as product of traditional agricultural and forestry practices have generated problems of impoverished soils, whose surface area almost doubles the area of harvests. During the last years, problems of salinization of soils have been observed due to fruit growing for exports that is developed in semiarid zones and sharp inclines (mainly in the Regions III and IV of the country).

1.4. Deterioration of Water Resources and Coastal Zones

Limitations to undertake problems related with water resources are chiefly related to difficulties for integrated administration of hydrographic basins, taking into account the increasing water shortage — both in quality and quantity — that various areas of subregion are facing. It is foreseen that this topic will become a much bigger priority in public agendas as a consequence of the social demand, and that it may require the search for more creative solutions to the problems that are being generated.

Both the availability of water as well as its quality is considered by several authors to be the biggest problem faced in the short and medium terms. Everything indicates that the subregion will have a limited volume per capita, constituting a strategic problem in the future. It is said that, due to historic reasons, policy errors and distorting subsidies, inefficient patterns of water use and consumption have predominated. Conspicuous among these factors is urban population increase, high costs of extraction and piping, as well as water tariff subsidies.

In Chile the deterioration and contamination of courses and bodies of superficial and

subterranean water is caused by wastewater discharges from urban and industrial centers, mining washings, and agricultural and aquicultural activities in lakes and coasts. **Table II-5** shows the amount of contaminants supplied to the sets of Chilean basins, where contamination of the Central Zone basins are conspicuous (concentrating more than 40% of the country's population).

Table II-5. Supply of Contaminants to Main Chilean Basins

Zones	DBO_5 (ton/month)	Suspended Solids (ton/month)	Fecal Coliforms (x 10^{17} coll/)
Rivers and coastal basins of Northern Zone (Regions I to IV)	2,617.0	1,561.9	9.32
Rivers and coastal basins of Central Zone (Regions V a VII and RM)	10,210.6	5,390.6	29.03
Rivers and coastal basins of Central Zone (Regions VIII a XII)	9,181.7	6,419.2	14.28
Total	22,009.3	13,371.7	52.63

Source: SISS, 1993. National Register of Liquid Industrial Residues (Catastro Nacional de Descargas de Residuos Industriales Líquidos). Superintendency of Sanitary Services (Superintendencia de Servicios Sanitarios) of Chile.

In Brazil, the main rivers of the country are affected by the untreated discharges of urban and industrial wastewater, and by diffuse contamination derived from agriculture. Among the most affected rivers are Tiete (Sao Paulo), Capibaribe (Pernambuco), Guaiba (Rio Grande do Sul), Doce (which crosses the States of Minas Gerais and Espirito Santo). In these last two rivers gold extraction, deforestation and bad use of agricultural soil has produced considerable damage to the quality of their water. **Table II-6** compares monitoring indexes of contaminants in some areas with environmental standards established by the National Environment Commission (Consejo Nacional del Medio Ambiente - CONAMA) in Resolution # 20.

Table II-6. Environmental Standards and Main Rivers Monitored

Environmental Standards	BDO (mg/l)	Dissolved Oxygen (mg/l)	Fecal Coliforms MPN/100 ml	Phosphorus (ug/l)
Standards (Res. #20 CONAMA)				
Water used with simple treatment (Class 1)	>3	>6	<200	25
Water used for recreation and swimming (Class 2)	<5	>5	<1000	25
Water used with conventional treatment (Class 3)	<10	>4	<4000	25
Monitored Rivers				
River Tiete (Metropolitan Area of Sao Paulo)	41.5	0.2	4070	1875
Paraiba do Sul (Sao Paulo/Rio Janeiro/Minas Gerais)	0-3	4-7	200-1500	-
Rio Cuiaba	1.0	7.0	8900	160

Source: Brazil, "Administration of Pollution Problems" ("Gestión dos Problems da Poluição"). World Bank/1998.

In Brazil, agriculture contributes 43% of the nitrogen load, 41% of the phosphorus load and almost 100% of the load of salts in bodies of water, which may cause serious ecological alterations. Agricultural activities are characterized by the indiscriminate use of fertilizers, agro-chemicals and pesticides, contributing to desertification in fragile soil areas. On the other hand, there are some critical areas in the country in terms of environmental problems such as:

- The coal-bearing region of Santa Catarina, which has serious problems related with contamination of rivers and accumulation of wastes with high concentrations of sulfur (pyrite).

- The gold “garimpos”, especially in the Amazonian region, which shows mercury contamination and deterioration of soils and waters.
- The destruction of dunes in the Northeastern region due to the extraction of sand destined for civil construction, generating scenic deterioration and wind erosion on the coastal fringe.
- Constant oil spills into the sea due to the existence of exploitation platforms, which has led the Federal Government to require with urgency the approval of the bill on contamination control of Brazilian territorial seas.
- Urbanization and irresponsible settlement processes in geological risk areas of floods, in states such as Rio de Janeiro, Salvador and Belo Horizonte. Every year there are floods in cities such as Recife, Salvador, Rio de Janeiro and Sao Paulo, among others. In rural areas rivers overflow, flood and destroy agricultural zones and grasses.

In Paraguay, contamination of water with agro-chemicals (fertilizers, herbicides, fungicides and insecticides) and with wastewater coming from industrial processes (mainly oil factories, distilleries and tanneries) has become significant. During the mid-80s, and to prevent the problem of erosion, the nation began to implement a system of direct planting that intensified the problem of water resources contamination due to the massive use of agro-chemicals. In 1991 the use of fertilizers increased almost 5 times and the use of pesticides increased 55%.

Also conspicuous in Paraguay is the accelerated process of water resources silting in agricultural and livestock areas, mainly due to deforestation and the tow of sediments caused by loss of soils (approximately 10 ton / ha / year). This is relevant considering that Paraguay has two of the rivers (Paraguay and Parana) in the Latin American region that transport more than 30% of the superficial continental water in the world.

In Uruguay, the degradation of the coastal fringe generates concern with respect to the pressure of tourism on the territory (constructions in fragile zones and at the expense of ecosystems with protection functions on coasts and adjacent systems.

1.5. Atmospheric Contamination in Cities

In relation to the degree of urbanization of Southern Cone countries, it is possible to indicate that Paraguay presents a situation of moderate urban transition (urbanization of 50 to 70%); Brazil is in full process of urbanization (urbanization of 70 to 80%); and Argentina, Uruguay and Chile present consolidated or advanced urban transition (urbanization of more than 80%). In its world report, UNEP (2000) indicated that along with the exhaustion and deterioration of natural resources, urban environment deterioration constitutes one of the main problems in the region, basically due to the lack of basic services, the pressure on the environment derived from inorganic styles of urban development, the contamination derived from an increase in consumption patterns, and the increase in motor vehicles and in contaminant modalities of industrial production (mainly of small and medium-sized enterprises).

In big cities air contamination is a relevant problem. The main sources are motor vehicles, industrial processes and activities such as thermoelectric plants and foundries (See **Table II-7**).

Table II-7. Main Sources of Atmospheric Contamination in Southern Cone Countries						
Country	Sources					
	Thermoelectric plants	Foundries	Refineries	Industries	Motor Vehicles	Deforestation
Argentina	x			x	x	
Brazil				x	x	x
Chile		x		x	x	
Paraguay				x	x	
Uruguay	x		x			

x = Indicates the main causes for each country.
Source: Authors.

The main limitations to confront contamination problems in the countries correspond fundamentally to insufficient capacities in environmental administration in most of the municipalities and cities. Although big cities like Sao Paulo, Buenos Aires and Santiago have advanced in atmospheric decontamination, the situation is not the same at the level of middle-sized and small cities, where the main obstacle is the lack of technical, human and financial resources to implement decontamination instruments and measures.

In Argentina contamination causes are associated to emissions of gasses and particulate material from industrial processes, motor vehicles and thermoelectric plants. An associated effect is the tow of contaminants with precipitation, which contaminates watercourses.

In Chile, atmospheric contamination has reached very high levels in Santiago and in zones with copper foundries. It also begins to be significant in other urban centers of the country (like Temuco, Concepcion and Copiapo, among others). Among the main causes of these problems, is urban growth, increased number of motor vehicles and the augmentation of industrial sites in cities. **Table II-8** shows the situation of contaminant emissions in the Metropolitan Region of the country, where the increase of NO_x emissions derived from mobile sources is conspicuous.

Table II-8. Sources of Total Emissions and Contributions (1997 and 2000) in the Metropolitan Region of Chile				
Emissions	Main Source	1997	2000	% Var.
PM_{10} (Ton / year)	Suspended dust	47,297	44,663	-6%
SO_2 (Ton / year)	Fixed sources	25,300	9,985	-61%
NO_x (Ton / year)	Mobile sources	51,076	56,056	10%
CO (Ton / year)	Mobile sources	202,941	185,911	-8%
COV (Ton / year)	Evaporative residential sources	83,543	79,819	-4%

Source: Fundación Terram, 2001. Contaminación Atmosférica de la Región Metropolitana Publicaciones Terram. Análisis de Políticas Públicas Nº3. (Terram Foundation, 2001. Atmospheric contamination of the Metropolitan Region.)

In Paraguay, atmospheric contamination is produced by the elimination of gases, fumes and suspended particles (fixed and mobile sources). The degree of atmospheric contamination is greater each time in the metropolitan area of Asuncion due to an increasing number of motor vehicles, which generate sulfur dioxide and lead particles, nitrogen oxides and carbon monoxide.

The country does not have the necessary equipment to control air quality parameters.

In Brazil, data presented by the Federal Government to the United Nations Commission on Sustainable Development shows the aspects that contribute most to atmospheric contamination (**Table I-9**). The regions with the most significant atmospheric contamination problems are metropolitan areas such as Sao Paulo, Rio de Janeiro, Belo Horizonte, Contagem, Betim, Porto Alegre and Volta Redonda. Additionally, they also obtain emissions and economic losses from large-scale burnings and forest fires, especially in Amazonian and Cerrado areas.

Table II-9. Sources of Total Emissions and Contributions (1980, 1990 and 1995) in Brazil

Emissions	Origin	1980	1990	Fines of 1995
CO_2 (million tons)	Deforestation	1,400	969	850
SO_2 (million tons)	Industry	1.5	2.5	3.0
NO_2 (million tons)	Motor Vehicles	5.0	6.0	6.5
CH_4 (million tons)	Organic Matter	25	26	28
Ozone (tons)	-	0.18	0.16	0.20

Source: Brazil – Country Profile, 1997.

1.6. Management of Solid Urban Wastes

There are notorious differences among the countries on their management of solid urban wastes. While Uruguay, Argentina and Chile have an appropriate coverage of solid wastes collection in Paraguay and Brazil there are still serious problems in many human settlements. In general, inadequate disposal of residues presents serious difficulties in Southern Cone countries, a situation that is critical when considering industrial and hazardous wastes.

Table II-10 shows the situation of the capitals and other big cities in Southern Cone countries with respect to production of residues and the coverage of collection and disposal.

Table II-10. Management of Solid Urban Wastes Situation in Southern Cone Countries

Cities (*)	Generation of Residues (Ton/day)	Collection Coverage (%)	Disposal Coverage (%)		
			Sanitary Landfill	Controlled Landfill	Open Dumps
Buenos Aires (Ar)	10,500	91	100	--	--
Brasilia (Br)	1,600	95	--	75	25
Santiago (Ch)	4,600	100	100	--	--
Asuncion (Py)	1,100	80	--	--	100 (**)
Montevideo (Uy)	1,260	97	--	--	100
Sao Paulo (Br)	22,100	95	100	--	--
Rio de Janeiro (Br)	9,900	95	--	100	--
Belo Horizonte (Br)	3,200	90	100	--	--
Salvador (Br)	2,800	93	--	100	--
Curitiba (Br)	1,300	100	100	--	--
Rosario (Ar)	700	100	--	100	--

Source: Based on Diagnosis on the Situation of Municipal Solid Urban Wastes Management in Latin America and the Caribbean (Diagnóstico de la Situación del Manejo de Residuos Sólidos Municipal en América Latina y el Caribe), IDB-PHO 1997. Data are updated to 1995 – 1996.

(*) Ar = Argentina; Br = Brazil; Ch = Chile; Py = Paraguay; Uy = Uruguay.
(**) It is estimated that an important part of residues are disposed in sites that have not been fitted out.

In countries like Uruguay and Paraguay management of household solid wastes shows deficiencies in the rate of coverage and in the quality of collection, transportation and final disposal, both in municipal dumps as in sites that have not been fitted out.

In the case of Paraguay, the country produces around 0.87 kg/person in household residues per day, which means around 3,113 daily tons of garbage. Of these, only 48% is collected. 46% of the population has access to some household collection service. Around 950,000 urban inhabitants do not have garbage collection services. There are no sanitary landfills in the country, only controlled, non-controlled and illegal dumps. Approximately two thousand persons are dedicated to the practice of segregating residues in garbage dumps (many of them children). Hospital and health services residues are handled in the same way as household residues, without any treatment except for the incinerator in Ñemby.

Although Chile has acceptable levels of coverage on household solid waste collection, there are problems of contamination of soils and subterranean aquifers from disposals in uncontrolled dumps. The problem is still more relevant considering that there are important volumes of industrial residues that are not registered and whose final destination is unknown. Most of the cities in the country do not yet have sanitary landfills specially fitted out for the disposal of industrial or hazardous residues.

The absence of adequate solid wastes disposal systems constitutes another serious environmental problem for Brazil. According to a report prepared by the Brazilian Association of Sanitation and Special Residues (Asociación Brasileña de Limpieza y Residuos Especiales -

ABRELPE), the increase in household solid wastes produced during the last 10 years was of 40% in Salvador, 13% in the city of Sao Paulo and 22% in Rio de Janeiro and Parana. It is estimated that the per capita production of solid wastes is of 1 kg/day. The problem is characterized by the insufficiency of the sites for secure disposal of the increasing quantities of residues, and the modification in refuse conformation (3% glass, 3% plastics, 4% metal, 25% paper, and 65% unspecified materials that include wood and organic matter). The country only recycles 3% yearly of its solid urban wastes produced in the main Brazilian cities. 40% of solid wastes generated in Brazil (around 40 thousand tons/day) are not collected and 70% of household residues are disposed in open dumps, contributing to the contamination of subterranean waters.

1.7. Generation of Wastewater and Liquid Industrial Residues

This problem is relevant in all the countries. Its causes are associated with the discharges of untreated domestic wastewater and liquid industrial residues that generate contamination with heavy metals, solvents and organic compounds. This situation is complemented in rural settlements with the use of agro-chemicals and fertilizers.

Table II-11 shows the percentage of treated urban wastewater in Southern Cone countries. The data shows that more than 80% of the wastewater is discharged to courses and bodies of water without any type of treatment.

Table II-11. Percentage of Treated Wastewater in Southern Cone Countries

Country	% Treated Wastewater	% Type of Treatment		
		Primary	Secondary	Other
Argentina (*)	10	--	100	--
Brazil (*)	20	10	68	22
Chile (**)	21	N.A.	N.A.	N.A.
Paraguay (*)	1	--	100	--
Uruguay (*)	15	50	28	22

(*) PHO, 1997. Pan American Health Organization.
(**) SISS, 2000. Superintendency of Sanitary Services (Superintendencia de Servicios Sanitarios – Chile).

In Argentina, the generation of liquid industrial residues in concentrated in the metropolitan zone of Buenos Aires and other important cities of the country, generating contamination problems in watercourses. Added to these urban planning deficiencies are the existent difficulties to prevent and control of contamination, mainly in food industries, meat-product processors, tanneries and other small and medium-sized enterprises. The main problems are in Rio de la Plata, which receives the discharges of the Provinces of Buenos Aires and La Plata.

Table II-12 shows a comparative situation between 1990 and 2000 on the coverage of drinkable water and basic sanitation in Southern Cone countries.

Table II-12. Coverage of Water Supply and Sanitation in Southern Cone Countries (a)

Country	% Water Supply Coverage (year 1990)	% Water Supply Coverage (year 2000)	% Sanitation Coverage (year 1990)	% Sanitation Coverage (year 2000)
Argentina	N.A.	79	N.A.	85
Brazil	82	87	72	77
Chile	90	94	97	97
Paraguay	63	79	89	95
Uruguay	N.A.	98	N.A.	95

(a) Corresponds to total mean coverage with respect to population total (urban + rural) of the countries.

Source: World Health Organization, 2001. Global Water Supply and Sanitation Assessment 2000 Report (www.who.int).

According to the table above, Argentina and Paraguay are the countries with least coverage of water supply services in the subregion. On sanitation, Brazil and Argentina present the least coverage.

In Argentina approximately 3,600 rural communities do not have sewage services, which implies the disposal of the wastewater in situ, causing contamination of superficial and subterranean courses and bodies of water.

In Paraguay there is still a deficit in the infrastructure of drinkable water services and of improved sanitation. The coverage of drinkable water fluctuates — from the least developed to the most developed departments — from 1.2% for Alto Parana Department to 92.1% in Asuncion. On basic sanitation, although an important increase in coverage during the last ten years is observed, there are still sanitary problems derived from the precarious management of wastewater. A similar situation occurs in Brazil, which shows a rural coverage in water supply of 54% and of 40% in sanitation (WHO, 2001).

2. GENERAL LIMITATIONS OF THE COUNTRIES' ENVIRONMENTAL ADMINISTRATION

The main limitations Southern Cone countries have to achieve adequate national environmental administration that would enable them to confront priority environmental problems more appropriately are related with budgetary restrictions, insufficient institutional capacities, reduced scope and functionality of environmental information systems, a weak citizen participation role in environmental administration, and competitiveness difficulties.

2.1. Budgetary Restrictions

Economic resources for environmental administration have always been insufficient. Recessions and the slowing down of national economies during the last years have aggravated this tendency, diminishing resources of national budgets for environmental administration. Financing mechanisms furnished apart from national budgets have been completely insufficient to correct the situation. Public services privatization processes with environmental connotations

— such as collection and disposal of wastes and drinkable water and sanitation — have progressed slowly.

A study carried out by Espinoza and Rodríguez (2001)[2] repeats this need in the final recommendations on these countries' legal and institutional frameworks of environmental administration. The analysis found severe financial limitations in all levels of environmental administration (national, regional and local).

2.2. Insufficient Institutional capacities

Institutional capacities comprise aspects on legislation, administration decentralization, human resources and technical aspects, and the operational capacity of the instruments designed to support decision-making. In general, Southern Cone countries present limitations in some of these key aspects, such as the following:

a) The regulatory frameworks present vacuums and approximations that must be corrected. Conspicuous among these is the low adaptability of regulations on resources (fishing, forest etc.) to the dynamics of the ecosystems, and the insufficient adaptation of legislation to the international agreements, especially in topics of biodiversity, desertification and climactic change.

b) The great number of environmental competencies and functions assigned to national institutions exceed their capacities in all the cases and create difficulties to set priorities and to perform follow-up and performance verification activities. It is important to consider that when mandates cannot be met, the establishment is condemning the entity — from its creation —to be classified as inefficient, and therefore, to have its validity and pertinence permanently questioned.

c) In most of the countries environmental administration is not concentrated territorially, and yet a transference of functions and capacities have not been made effective. Environmental administration of municipalities continues to be limited mostly to management and disposal of garbage, wastewater and urban ordering. The process of decentralization and municipal strengthening has had a slow rhythm. In some cases, under the hypothesis that the municipalities are not prepared to assume responsibilities of environmental administration, this process has been too rationed. In other cases in which municipalities have received competencies such as environmental authority, it is believed that they are not being capable of exerting them fully. The following are considered to be limiting factors for administration at municipal levels: legal inadequacies, budgetary restrictions, lack of administrative structures and absence of qualified personnel. Additionally, superimposition of competencies among the different levels of government, and some sectoral laws, obstruct further progress in the decentralization process.

2.3. Reduced Scope and Functionality of Environmental Information Systems

Public information on the environment has increased, not only through media formally established by national governments and international agencies but also through mass media and specialized reports from environmental national and international NGOs. Today it is

[2] Espinoza, G. and M. Rodríguez, 2001. Informe de Consultoría sobre Tendencias de la Gestión Ambiental en América Latina y el Caribe. Inter-American Development Bank (IDB), 1999 – 2001.

possible to have access in all countries to web pages specialized on the state of the environment. Notable among these are Brazil and Chile.

In contrast to the above, in general there is a lack of indicators on the state of the environment, the performance of authorities and the adaptation of environmental policies and strategies at national, regional or state, and local levels, a factor that impedes citizens and decision-makers from making informed judgments on the situation and reacting to it like they do today with economic indicators.

It must be highlighted that significant experiences and progresses have been registered on aspects related with environmental administration models for megacities, big cities and medium-sized cities. According to the information available, urban environmental administration is beginning to consolidate in the subregion, going beyond the collection and disposal of the garbage and wastewater to include in its agenda atmospheric and water contamination, clean production, conservation of the ecosystems and creation of public spaces. This new situation in contrasts sharply with the 70s and 80s when the majority of environmental administration was carried out at rural levels.

2.4. Weak Role of Citizen Participation in Environmental Administration

It is not easy for these communities to have full understanding of effective legal framework applicable to the environmental topics of their interest. On the other hand, the productive sector has to undergo notable efforts to learn and understand relevant regulations and to be capable of making adequate and efficacious use of them. The difficulties of these communities in understanding their obligations abets non compliance of the law, even by those who do not have any intention of breaching it. Frequent changes of the regulations and their inconsistencies create legal uncertainties, a fact that, like the previous one, may generate perverse practices.

In order to fortify citizen's informed participation, and especially that of non-governmental environmental organizations, it is necessary to: (i) overcome dysfunctionalities predominating in micro and small ONG structures by promoting stronger interorganizational coordination; (ii) assign larger public and private resources of domestic origin to ensure more autonomy of the region's NGOs in relation with foreign governmental and non-governmental organizations that finance them, and to promote the creation of conditions to establish more balanced alliances. Financial sources of domestic origin should encourage the emergence of Latin American style think tanks that not only generate national level policy recommendations and do follow-ups on policies, but that are also fit to participate more actively in the arena of international environmental negotiations.

However, the public awareness and perception of environmental problems does not seem to have enough force, manifesting itself in the very modest or nonexistent role it has in local and national political campaigns. In many cases there seems to exist a great distance between the levels of awareness reached and effective behavior. This is due to the dissonance existent between environmentalist discourses from many actors and social sectors and its practice, manifested in the formulation and implementation of public policies, or in everyday entrepreneurial and citizen actions. It seems urgent to generate actions aimed at a the creation of a proactive citizen culture with respect to the environment to face those topics positively and look for new opportunities and alternatives. Although the anti-establishment vision is useful in the defense of the environment, it requires complements with more propositional visions.

Today a broad number of citizens consider that environmental problems are greater than two decades ago. However, this has not generated compliance of environmental regulations equivalent with this perception. For this, it is necessary to develop educational strategies so citizens internalize the implications and mandates of environmental legislation, which means the acceptance of its legitimacy and the adoption of attitudes and behavior consistent with its compliance.

2.5. Competitiveness Difficulties

A key element of the countries' environmental policies is the endeavor to integrate environmental management and productive processes. In this scenario, there are two dimensions: the national and the international. Concerning the first, they must incorporate the right of the community of being informed about the products they consume in the process of productive development. Concerning the second, they must pay each time more attention to the requirements of markets that are each time more demanding in terms of environmental quality, particularly when a significant part exports from the countries are aimed at a exacting markets such as the European Economic Community and the United States. Efforts to certify products and processes must increase to improve the legitimacy, competitiveness and efficiency of the countries' productive sector.

In the case of Chile, studies reported in 1995[3] that environmental restrictions on exports (mainly on standards and additional taxes) had a widespread effect on the duties chapter that classifies exports. Furthermore, it was possible to determine that only around 50% of the affected enterprises could identify the impact that said restrictions had on important variables such as employment or production costs.

Exports of Southern Cone countries are strongly specialized in primary and semi-manufactured products based on natural resources (See **Table II-13**).

[3] Diagnosis of Impact of the Possible Environmental Restrictions on the Chilean Exporting Sector (Diagnóstico del Impacto de Posibles Restricciones Ambientales sobre el Sector Exportador Chileno). Study of project "Development of Institutionality of the Environment" ("Desarrollo de la Institucionalidad del Medio Ambiente") CONAMA / BIRF 1995, financed with loan 3529-CH from the World Bank.

Table II-13. Evolution of Sector Share in Total Exported by Argentina, Brazil and Chile (1980, 1985, 1990 and 1995)

Country	Year	Composition of Exports (%)			
		Primary products (a)	Semi-manufactures (b)	Manufactured goods (c)	Other
Argentina	1980	48.9	30.6	20.5	0.0
	1985	47.1	35.1	17.8	0.0
	1990	33.0	42.1	24.7	0.1
	1995	35.9	33.3	30.6	0.1
Brazil	1980	30.2	35.9	33.4	0.2
	1985	27.4	32.6	38.8	1.2
	1990	21.1	31.9	45.4	1.7
	1995	17.8	34.1	45.5	2.4
Chile	1980	20.2	74.5	5.2	0.1
	1985	31.5	62.7	2.7	3.1
	1990	27.1	63.6	5.2	4.1
	1995	30.7	58.7	6.9	3.7

(a) According to Uniform Classification for International Trade (Clasificación Uniforme para el Comercio Internacional - CUCI) includes products agricultural, forest, fishing, mining and energy products with a minimum or null degree of manufacture, and non-ferrous metals.
(b) According to CUCI, includes semi-manufactures based on agricultural resources that are labor and capital intensive, on mining resources and on energy resources.
(c) According to CUCI, includes traditional industries of basic consumables, intensive in labor and intensive in capital (low, medium and high technological content).

Source: Schaper, M., 1999. Impactos ambientales de los cambios en la estructura exportadora en nueve países de América Latina y el Caribe 1980 – 1995. Nº19 of the Series Medio Ambiente y Desarrollo de CEPAL (Environment and Development of CEPAL), Santiago de Chile. (Environmental Impacts of the Changes in the Exporting Structure in Nine Countries of Latin America and the Caribbean):

According to a publication of CEPAL[4] the transformations that occurred in the export sector of the countries during the period 1980 – 1995 show that the volume exported from sectors with acknowledged environmental impact such as primary products and products from contaminant industries, has increased notoriously in the countries. This raises questions on the burden these countries' ecosystems must bear. Some consequences of this situation are the following:

a) The increasing specialization in natural resources intensive industries and the relative loss of incidence of areas intensive in the use of technological knowledge puts the countries in a more vulnerable position in terms of environmental requirements that must be confronted in markets of developed countries.

b) The countries do not have great margins of maneuverability to adjust their productive systems to the environmental requirements of the main export markets.

c) To the extent that the countries look for a bigger and better insertion in international trade and their pattern of productive specialization follow those tendencies, they will contract greater investments and costs in environmental equipment, services and technologies, and

[4] Schaper, M., 1999. Impactos ambientales de los cambios en la estructura exportadora en nueve países de América Latina y el Caribe: 1980 – 1995. # 19 of the Series Medio Ambiente y Desarrollo de CEPAL, Santiago de Chile.

other changes to meet the requirements of international markets and to ensure the continuity of its productive base.

Considering the relation between the value of the environmental market (environmental services, technology and equipping) and the Gross Domestic Product of the countries as an indicator of the effort and importance assigned to the solution of environmental problems, countries such as Argentina, Brazil and Chile — like great part of the countries of the region — are way below developed countries (See **Table II-14**), a factor which could produce environmental restrictions for their exports, although there have been acknowledged advances showing that these barriers are being overcome.

Table II-14. Environmental Market / GDP (1994)

Country	Index
Argentina	0.63
Brazil	0.68
Chile	0.86
Sweden	*3.29*
Germany	*2.60*
United States	*2.78*

Source: Schaper, M., 1999.

3. EXPLICIT ENVIRONMENTAL PRIORITIES IN THE COUNTRIES' NATIONAL AGENDAS

Along with identifying the set of administration and environmental problems of the countries of the subregion, documents were examined. In these, the countries express explicitly their priorities in areas of environmental policy. Notable among the information examined are the work agendas based on environmental policies in countries like Brazil and Chile, the identification of explicit guidelines for national environmental legislation in Paraguay and Uruguay, and some guidelines within a framework of regional integration initiatives in Argentina.

Since the study centers on the identification of explicit aspects, the findings indicate insufficient management of medium and long-term priorities on environmental topics, as there is still a tendency to treat these aspects in a sectoral way with reduced insertion of the environmental administration in the set of national public policies. However, it is possible to identify four great topics that have been treated explicitly by most of the countries of the subregion. These render accounts of very broad aspects of the countries' environmental administration that may be recognized as their priority middle and long-term central topics. The key topics are:

- Administration of water resources, including recovery of contaminated courses and bodies of water, integrated management of hydrographic basins and ordering its multiple uses (irrigation, supply of drinkable water, energy, etc.).
- Biodiversity conservation, including protection of native land and aquatic flora and fauna species, as well as management of the subregion's representative ecosystems.
- Urban environmental administration, including management of atmospheric and water contamination, administration of solid wastes, and territorial ordering to salvage the environmental deterioration of cities.
- Trade and environment, including initiatives to increase the competitiveness of national economies and incorporate environmental criteria in the economic integration of the Southern Cone countries.

Table II-15 summarizes the key topics of the countries' environmental agenda, in accordance with the explicit contents that have been verified in the examination of both agendas and national environmental legislation. It shows those topics that are stated explicitly by most Southern Cone countries.

Table II-15. Key Topics Stated Explicitly in Environmental Agendas of Southern Cone Countries

Key Topics (a)	Countries (b)				
	Argentina (c)	Brazil (d)	Chile (e)	Paraguay (f)	Uruguay (g)
Management of Natural Resources					
Administration of water resources		x	x	x	x
Administration of forest resources		x	x		
Administration of fishing resources		x	x		
Environmental mining policy			x		
Biodiversity conservation		x	x	x	x
Energy and environment			x		
Ecological – economic zoning		x			
Prevention and combat of droughts		x			
Urban / Industrial / Rural Management					
Urban environmental administration		x	x	x	x
Coastal environmental administration		x			
Rural environmental administration		x		x	
Administration of solid wastes		x			
Quality of life in cities			x		
Landscape		x			x
Air quality		x			
Territorial ordering			x		
Environmental vulnerabilities			x		
General Topics					
Environmental certification		x	x		
Environmental education		x	x		
Ecotourism		x			
Trade and environment (h)	x	x	x	x	x
Global environmental problems			x		
Monitoring			x		
Economic instruments			x		
Sectoral administration		x	x		

Source: Authors

(a) Corresponds to key explicit topics in official documents of the national governments.
(b) The "x" indicates that the countries contemplate key topics in their respective environmental agendas.
(c) The structural changes Argentina is undergoing hinder the availability of an environmental priority agenda; they are waiting to make the Law on Minimum Environmental Budgets passed effective, currently under legislative consideration.
(d) National Agenda of the Environment 2001-2002; Institutional Agenda, Brown Agenda, Blue Agenda, Green Agenda (Agenda Nacional del Medio Ambiente; Agenda Institucional, Agenda Marrón, Agenda Azul, Agenda Verde) and Pluriannual Plan (Plan Plurianual) 2000-2003
(e) Environmental Agenda on the Policy for Sustainable Development (Agenda Ambiental de la Política para el Desarrollo Sustentable) of 1998
(f) Law that creates the National Environmental System (Sistema Nacional Ambiental), 2000.
(g) General Law on Protection of the Environment (Ley General de Protección del Ambiente), 2000.
(h) Within the framework of the Working Subgroup # 6 (Subgrupo de Trabajo Nº6) of MERCOSUR, topics related with trade and the environment are relevant in the countries' agendas. Argentina, Brazil, Paraguay and Uruguay are members of MERCOSUR and Chile is an associate country.

In respect to the availability of specific documentation on priorities that may be considered as central topics for short, middle and long-term work, there were conspicuous findings on the cases of Brazil and Chile. These countries have general agendas that comprise a great variety of environmental topics. **Table II-16** presents a summary of the contents of the Brazilian and Chilean environmental agendas, which are related to some of the priority environmental problems identified for the subregion.

Table II-16. Key Environmental Topics in the Chilean and Brazilian National Agendas

Priority Environmental Problems	Key Topics of the Chilean Environmental Agenda (a)	Key Topics of the Brazilian Environmental Agenda (b)
Deforestation	Definition of policies and systems of administration for renewable natural resources (pronouncement of the Native Forest Law (Ley del Bosque Nativo); increasing assessed value of the nation's patrimonial natural resources).	Green Agenda – Biodiversity and Forest Resources regulations on system of forest and plantation concessions for productive purposes; regulations on access to forest resources; regulations on the administration of basins in the areas of Mata Atlantica; national policy on biodiversity and regulation on certificates for carbon emissions; forest code; genetic resources; conservation units).
Biodiversity	Conservation and sustainable use of the biological diversity (administration of a protected wild areas national system; promotion and incentives for the creation of protected wild areas in private property; formulation of wild flora and fauna species classification regulations according to their state of conservation; updating of registers and inventories of said species; implementation of a monitoring system on the norms of preservation and conservation).	
Water Resources	Integrated administration of water resources (classification of the water courses according to their possible uses; identification of critical basins due to overdemand; rational assignment of the resource; establishment of criteria on quality; formulation of regulatory instruments and models to conserve the resource and ensure the required quality; generation of capacities to have a vision on future demand for water resources and its impact on the sources and the ecosystems).	Blue Agenda – Water resources (decontamination of priority hydrographic basins according to the Pluriannual Plan 2000-2003 of the Federal Government; implementation of a national system of water resources administration; prevention and combat of droughts).
Impoverishment of Soils	Compromise with global environmental problems and its effects in Chile (includes desertification problems)	
Atmospheric Contamination Solid wastes Wastewater and Liquid industrial Residues	Quality of life in the cities (atmospheric contamination, water contamination due to discharges of wastewater, and contamination of soils due to inadequate disposal of solid wastes)	Brown Agenda – Environmental quality (sectoral administration instruments; urban environmental administration; coastal and marine environmental administration; environmental administration in rural settlements).

(a) CONAMA, 1998. Política para el Desarrollo Sustentable del Gobierno de Chile. 14 Temas de la Agenda Ambiental. Comisión Nacional del Medio Ambiente (Policy for the Sustainable Development of the Government of Chile 14 Topics of the environmental Agenda - National Commission of the Environment).
(b) MMA, 2001. National Agenda of the Environment Biennium 2001-2002. Ministry of the Environment of Brazil.

CHAPTER III. ADVANCES IN THE ENVIRONMENTAL ADMINISTRATION OF SOUTHERN CONE COUNTRIES

1. MAIN ACHIEVEMENTS ATTAINED IN THE COUNTRIES' ENVIRONMENTAL ADMINISTRATION

Achievements with respect to policy, legislation and environmental institutionality in the Southern Cone countries have been basically produced during the last decade, particularly during the last five years. In this part of the executive profile, a practical focus is applied in the examination of the main achievements or progresses in environmental administration by examining the information that has been possible to obtain for each country, the identification of conspicuous cases among the countries and the consideration of three general analysis criteria on the progresses. These criteria are:

- Verification of the countries' national environmental policies that are considered strategic guidelines or principles explicit in some formal document or legal text. Environmental policies not only render accounts of aspects directly related with the administration of the environmental authorities of the countries, but also denotes the incorporation of the environmental topic transversally in public policies to acquire a tendency towards sustainable development.

- Verification of the implementation of national environmental legislation that express policies in regulatory mandates and provide the basis for the countries' environmental institutional performance. The availability of a legislation framework on environment represents a more significant advance with respect to the profusion of sectoral and disperse legislation, since it is fundamental to attain ordering, rationalization and priorities on the key aspects, including the generation of administration instruments concordant with identified environmental priorities.

- Verification of an environmental institutionality of national character that has diverse expressions in accordance with the countries' legal and institutional structure and their administration decentralization progresses in states or provinces, regions and municipalities. Environmental institutionality represents the way in which the countries have organized to proceed with their respective environmental policies, which denotes a strong integration with the scopes of the strategic guidelines and environmental priorities identified in the previous section.

The analysis on progresses and achievements in matters of policy, legislation and environmental institutionality provides some indications related to the development of environmental administration instruments of the subregion's countries. Administration instruments are those that permit the government to respond to environmental priorities through prevention, recovery and control of environmental deterioration. In this context, the development of environmental administration instruments in the countries presents the following general characteristics:

- There is a tendency towards implementation and strengthening of instruments of command and control as central topics of the implementation of policies and national environmental legislation. Particularly, the generalized use in the countries of the environmental impact evaluation systems and the environmental norms and standards shows an emphasis in creating mechanisms of environmental authorization for projects and the protection of the environmental quality, although there are acknowledged limitations for the comprehensive

development of the instruments' potentials.

- ✍ The implementation of economic instruments is not generalized in the countries, although there are specific cases that make possible foreseeing their future development, both at a national level as well as at levels of states or provinces in the federal countries. Prominent among these is the implementation of the Ecological ICMS in Brazil and the Clean Production Agreements in Chile.

- ✍ The progress on environmental administration instruments aimed at improving the countries' competitiveness bears relation with the increasing incorporation of mechanisms for environmental certification at entrepreneurial levels, the promotion of clean production and the efforts to create an environmental protocol within the framework of Mercosur. However, it is acknowledged that all these efforts, although relevant, are still slightly developed, especially at the level of small and medium-sized enterprises (PYMEs).

1.1. Generation of National Environmental Policies

In the Southern Cone countries progress is acknowledged in the definition of explicit environmental policies. Among these, the experience of Brazil, Chile are notable and, to a lesser degree, that of Uruguay, Paraguay and Argentina. The information examined on these last three countries has revealed that this aspect is undertaken through the contents of national environmental legislation or through programmatic directions in Agendas 21 levels. In the case of Brazil and Chile, as it has been written in the section on priority aspects on environmental problems, the countries have explicit policies including environmental agendas that make possible identifying progresses, although like with all Southern Cone countries, it is difficult to know the evolution of processes with time due to the lack of follow-ups on the development of policies.

Within this framework, the development of environmental policies in the Southern Cone countries show partial progress. There is still an important lack of substantial efforts aimed at the environmentalization of public policies in general. However, there are interesting experiences that yield indications on the partial advances achieved.

Brazil is the subregion's country that began environmental administration first, and which perhaps presents the greatest development of environmental policies in the subregion. It is notable for advancing in important aspects such as the insertion at federal government plans at the level of policies and the definition of budgets and environmental investment portfolios (See **Box III-1**).

In Chile's case, a recent study by the World Bank on the evolution of the environmental administration during the last decade indicates that one of its main advances to date is achieving explicit environmental policy, although it is still predominantly indicative and has not been fully effected. Among other relevant aspects, the management of natural resources is still pending (See **Box III-2**). The development of environmental policies has also gained importance in the Chilean private sector, providing the means for a notable stimulus in the search for clear directions on environmental policy.

Box III-1. Development of Environmental Policies in Brazil

Brazil was one of the first Latin American countries to incorporate explicit guidelines. On 1981 Law # 6,938 was enacted, establishing the National Policy on the Environment (Política Nacional del Medio Ambiente). This generated important dynamics in institutional environmental development, both at federal and state levels. Even when there was already an explicit environmental national policy in the 80s, it was not until the end of the 90s that the country incorporated for the first time budgetary aspects in connection to the countries' environmental priorities. This constitutes one of the most significant achievements on environmental administration.

The Pluriannual Plan 2000-2003 defines strategic directions for Federal Government actions and establishes a portfolio on priority environmental initiatives in the national sphere, creating public and private investment opportunities for the environmental sector of R$ 15.7 thousand million. This portfolio bears relation with priority actions for national level programs for the Ministry of the Environment.

In the 90s, the treatment of environmental topics was consolidated by means of national agendas (Institutional Agenda, Green Agenda, Brown Agenda and Blue Agenda). In addition to these thematic agendas, there is the Environmental Agenda of the Presidency (Agenda Ambiental de la Presidencia), which for the first time stipulates the Government Program (Programa del Gobierno) explicitly, as well as its strategic and priority actions.

The National Environment Commission (CONAMA) with deliberative powers and competencies to establish norms, criteria and standards related with the control and preservation of environmental quality, setting as its objective the rational use of environmental resources. In this way, sectoral policies are established at federal level with CONAMA's regulations.

Although there are frequent threats of discontinuity in the different policies established due to changes in the executive structures of the institutions, the process of establishing environmental and sectoral policies in the different States is notable. The active participation of state environmental institutions to create the National Program of the Environment (PNMA II) shows the current good level of development of environmental administration decentralization in Brazil. In the present year (2001), important efforts have been carried out, achieving a Diagnosis on Environmental Administration within the Federation Units (Diagnóstico de Gestión Ambiental en las Unidades de la Federación) that includes the following aspects for each one of the States:

- Environmental characterization and main environmental problems (human environment and natural environment)
- Institutional and legal aspects (state environment systems, relation with Public Ministry (Ministerio Público), institutional articulating, state environmental programs and projects, environmental planning)
- Environmental administration actions (administration of forest resources, administration of water resources, administration of solid wastes, economic instruments for environmental administration, environmental monitoring, administration of state natural protected areas, decentralization of environmental administration, environmental licensing, participation in environmental administration and other relevant actions)

Source: National Program of the Environment (PNMA II), Ministry of the Environment of Brazil.

Box III-2. Progresses in Chilean Environmental Policies

A study carried out by the World Bank (Ruthenberg, 2001), reveals the following results in relation to progresses in Chilean environmental policies in Chile during the period 1990 – 2000:

- Change from an absence of an explicit environmental policy in 1990 at national, regional and local levels, to the publication of a national policy (1998), regional environmental policies and the generation of sectoral policies related, for example, to water resources, the management of residues and the promotion of clean production.
- Introduction of environmental considerations in the productive sector promoting the creation of environmental commissions in associations such as the Society of Industrial Promotion (Sociedad de Fomento Fabril - SOFOFA), National Mining Society (Sociedad Nacional de Minería - SONAMI), Association of Chemical Industrialists (Asociación de Industriales Químicos - ASIQUIM), Chamber of Commerce, Chilean Chamber of Construction (Cámara Chilena de la Construcción), among others.

The environmental policy for sustainable development published in 1998, has provided the means to make relevant priority environmental topics in the public and private agenda, favoring the development of new environmental administration instruments and the continuity of key environmental topics.

Concerning environmentalization of public policies, Chile presents important progresses with the publication of the document "National Policy on Waters", Ministry of Public Works, 1999 ("Política Nacional de Aguas", Ministerio de Obras Públicas, 1999) and the "Basis for the Policy on Promotion of Clean Production 2001 – 2005 ("Bases para la Política de Fomento a la Producción Limpia 2001 – 2005") produced on July 2001 and approved by the National Clean Production Council (Consejo Nacional de Producción Limpia), which is dependent on the Ministry of Economy, Mining and Energy (Ministerio de Economía, Minería y Energía).

Source: Ina-Marlene Ruthenberg, 2001 (World Bank) / National Clean Production Council of the Government of Chile (2001) / CONAMA (1998).

In the year 2000, Argentina initiated a new and incipient stage in national environmental policy by creating the Ministry of Social Development and the Environment - Ministerio de Desarrollo Social y Medio Ambiente, (Law # 22,520, amended by Laws # 24,190 and # 25,233)[5]. The Secretariat of Sustainable Development and Environmental Policy (Secretaría de Desarrollo Sustentable y Política Ambiental), which is dependent on this Ministry, contemplates the following thematic directorates which, although they are only indications, may be interpreted as policy priorities:

- Directorate of Environmental Quality (Dirección de Calidad Ambiental): environmental monitoring, environmental impact evaluation, norms on environmental quality, environmental ordering of human settlements, national plan on residue assessment, preservation of environmental patrimony.
- Directorate of Soil Conservation (Dirección de Conservación del Suelo): combat desertification, sustainable development of Gran Chaco.
- Directorate of Wild Fauna and Flora (Dirección de Fauna y Flora Silvestres): conservation

[5] According to the National Report of the Republic of Argentina (Informe Nacional de la República Argentina) World Summit on Sustainable Development Rio + 10 (April 2001).

and management of significant species, national program of model forests, national program of forest statistics, national program of non timber-yielding forest products.

- Directorate of Icticolous and Aquicolous Resources (Dirección de Recursos Ictícolas y Acuícolas): conservation and sustainable use of biodiversity in key basins and wetlands.
- Directorate of Environmental Technology, Processes and Services (Dirección de Tecnología, Procesos y Servicios Ambientales): national program for the promotion of sustainable production.
- Sub-Secretariat of Environmental Ordering and Policy (Subsecretaría de Ordenamiento y Política Ambiental): management of contamination, prevention of coastal contamination, native forests project, system of national environmental information.

Within the framework of the Basis for the Environmental Policy for the Argentinean Republic (Bases de la Política Ambiental para la República Argentina), carried out through the Institutional Environmental Development Program (Programa de Desarrollo Institucional Ambiental) approved by Resolution # 311 of 1999, two strategic objectives were defined:

- Establish an environmental administration planning process that progressively generates interactive participation of all the parties involved to improve it.
- Develop objectives and actions to solve critical environmental problems for all the thematic areas of Agenda 21.

In general terms and according to the information obtained, the cases of Uruguay and Paraguay are probably the ones presenting least development on explicit environmental policies. However, it is possible to indicate that in relation to public environmental policies, Paraguay has mandates in its Political Constitution of 1992 that make reference to environmental protection in several articles, which imply progress — at least in the base — to formulate the country's environmental policy[6]. In the case of Uruguay, environmental legislation and the development of technical cooperation to develop institutionality, are acknowledgements of environmental policy priorities that may constitute a base to make it explicit. Among the priorities, the following are notable:

- Undertake contamination problems of superficial, subterranean and marine waters.
- Achieve integral management of solid wastes.
- Make progress ordering the coastal fringe and recovering degraded areas.
- Incorporate environmental criteria in territorial ordering plans to confront regular and irregular urbanization in inapt zones.
- Implement a law on protected areas to reduce the risk (not assessed) of biodiversity loss.
- Introduce the environmental dimension in the agriculture and livestock policy to recover soils and prevent the impoverishment of soils that have agricultural value.

1.2. Development of National Environmental Legislation

All the countries of the subregion have environmental legislation. These reveal two important aspects:

- The increasing concern of the countries with environmental topics, acknowledging the role of environmental protection in sustainable development.

[6] For example, Article 8 "On Environmental Protection" ("De la Protección Ambiental"), establishes that *"those activities susceptible of producing environmental alteration shall be regulated by the law. Likewise, the law may restrict and prohibit those actions that it may consider hazardous".*

✍ The great quantity of existent legislation that is dispersed and that many times overlap, contradict and generate conflicts of competencies and problems of noncompliance.

This situation — which is common in all the Southern Cone countries — has experienced important progress during the last years in the formulation of environmental framework laws that have provided the means to organize, rationalize and prioritize main aspects of national environmental policies.

In this context, Brazil, Chile, Uruguay and Paraguay have framework environmental legislation. On this, Brazil's progress is notable as well as recent achievements in Paraguay and Uruguay. Argentina is the only country in the Southern Cone that does not yet have framework environmental legislation, although it has developed legislation at the level of provinces (See **Table III-1**).

Table III-1. Framework Environmental Legislation Southern Cone Countries (a)

Country	Framework environmental legislation	Year of Enactment
Argentina	National Law on Minimum Environmental Budgets	Being considered by National Legislature
Brazil	National Policy on the Environment Law (Law # 6,938)	1981
Chile	General Environment Framework Law (Ley sobre Bases Generales del Medio Ambiente) Law # 19,300)	1994
Paraguay	Law on the creation of the National Environmental System (Law # 1,561)	2000
Uruguay	General Law on Protection of the Environment (Law # 17,283)	2000

Source: Authors.

(a) Corresponds to the framework of general laws that regulate the national systems of environmental administration; it does not consider secondary levels of administration such as states, provinces, regions, departments, etc., nor sectoral or specific legislation.

In relation to the effects that the implementation national environmental legislation has had in the countries, the following comments ensue:

✍ In the cases of Chile and Brazil, framework environmental legislation has provided the means to make important progresses in the implementation of national environmental administration systems, which has favored — among other aspects — institutional development and the generation of environmental administration instruments consistent with national policies (See **Box III-3** and **III-4**).

✍ In the cases of Paraguay and Uruguay, the recent promulgation of framework environmental legislation has provided the means to initiate, although late with respect to other countries, the ordering of previous efforts made on institutionality and administration instruments. The brief time this legislation framework has been operating does not yet provide the means to have a vision on its effects, more so considering that adjustments on its scopes and implications are still being made (See **Box III-5**).

✍ In the case of Argentina, the situation of deep national structural changes, do not provide the means to see if the National Law on Minimum Environmental Budgets may be promulgated in a short term, giving more relevance to what is being done in the provinces on sectoral

environmental legislation (See **Box III-6**).

Box III-3. Progresses in Brazilian Environmental Legislation

To Law # 6,938/81, Brazil adds other important milestones to its environmental legislation:

- Decree # 99,274 of June 6, 1990, which establishes regulations for the law on national environmental policy.
- Law # 9,433 of January 8, 1997, which establishes the National Policy on Water Resources (Política Nacional de Recursos Hídricos) and creates the National System of Water Resources Management (Sistema Nacional de Gerenciamiento de los Recursos Hídricos).
- Law # 9,605 of February 12, 1998, on Environmental Crimes.

Sectorally, Brazilian legislation has progressed constantly. It currently has specific legislation for the establishment of urban lots, of industrial zoning in areas of critical contamination, industrial property, of responsibility for damages caused to the environment, of control of agro-chemicals, of regulations on the activity using traditional methods for gold extraction ("garimpeiros"), of agricultural policy (including environmental criteria), and of standardization in the implementation of genetic engineering (from the harvest, manipulation and transportation of genetically modified organisms to their marketing, consumption and release into the environment).

Among the most significant regulations and norms in the country are the CONAMA deliberations, which treat topics such as:

- Environmental licensing of big constructions (mainly in the energy sector).
- National program of air quality control, including standards, criteria and guidelines on noise emission; air quality standards; methods of sampling and analysis of atmospheric contaminants.
- Establishment of regulations for the use of conservation units environments.
- Compensation for environmental damages caused by human actions with significant environmental impacts.

In brief, the main achievements and strengths son:

- The laws, regulations and determinations on the environment are in an advanced state, making the protection of the environmental resources possible — upon their full observance.
- The competence to legislate on forests, hunting, fishing, fauna, conservation of nature, defense of soils and natural resources, protection of the environment and control of contamination, ceases to be exclusive right of the Federal Union when the States and the Federal District legislate concurrently on the environmental. This constitutional principle is important to the extent that it allows greater autonomy to state entities and strengthens decentralized implementation of environmental policy.
- The competency acquired by the States to legislate concurrently with the Federal Union, permits the mobilization of the state legislative powers to formulate their own laws aimed at adjusting general Federal Government norms to the particularities of each States and its municipalities.
- The law that established the National Policy on Water Resources and created the National System of Water Resources Management promotes radical decentralization of administration towards the local sphere (hydrographic basins). The law authorizes delegating to Water Agencies (Agencias del Agua) to charge for the water, although it keeps the right to grant rights of use within the public power.
- The Law on Environmental Crimes represents an important progress. Among its main regulations are the criminal responsibilities of the legal entity and/or the public sector (from its management to its technicians) that contributes to environmental crimes by concealing, facilitating or omission.

Source: Suzana Alvarenga Alves of Brito and Laura Lago (2000).

Box III-4. Regulations Associated with the Law on General Basis of the Environment that have been Promulgated in Chile

Along with the promulgation in Chile of the Law # 19,300 in 1994 —General Basis of the Environment Law — the country has passed the following regulations that govern key environmental administration instruments:

- Regulations on Pronouncement of Environmental Quality and Emission Norms, 1995.
- Regulations for the Formulation of Prevention and Environmental Decontamination Plans, 1995.
- Regulations on the Environmental Impact Evaluation System (1997).

Source: Guillermo Espinoza and M. Ulloa (2000).

Table III-5. Development of Environmental Legislation in Uruguay

In Uruguay, the main achievements in environmental legislation are the following:

- Law 16,112 of 1990 creating the Ministry of Housing Territorial Ordering and the Environment (Ministerio de Vivienda Ordenamiento Territorial y Medio Ambiente – MVOTMA). It gave this Ministry jurisdiction over aspects related with the environment, with the assignment of integrating disperse environmental competencies by means of a flexible system that may be regulated by the Executive Power. It fundamentally centers on patrolling responsibilities, license processing and coordination.
- Law 16,466 of 1994 on Environmental Impact Evaluation (Ley de Evaluación de Impacto Ambiental). Focuses on procedures to carry out EIEs. Promulgation of EIE Regulations (Decree 435/994, of September 21, 1994).
- General Law on Protection of the Environment (Law 17,283 of 2000). Covers the following aspects: air quality, water, soils and landscape; biodiversity; management of toxic or hazardous substances and wastes in general; prevention, elimination, mitigation and compensation of negative environmental impacts; protection of natural resources; and management of international and global environmental problems. Establishes basic principles of the national environmental policy, environmental administration instruments and responsibilities for its implementation at national and departmental levels.
- Law 17,234 on Protected Areas, approved in the year 2000 (Ley de Areas Protegidas). Defines the MVOTMA as a competent administration organization, unifying responsibilities in what concerns formulation and implementation of the policy, its management and protection.
- Law on Territorial Ordering (Ley de Ordenamiento Territorial). Being discussed in the Parliament). Pretends to improve the articulation between the Central Government and the Municipal Councils.
- Law 16,221 of October 22, 1991 approving the Basel Convention of 1989 on the control of the movement of hazardous wastes across borders and their elimination.
- Law 17,220 of November 11, 1999 prohibiting the introduction of all types of hazardous wastes into zones of national jurisdiction.
- Law 16,157 of November 12, 1990 (Montreal Protocol on ozone layer depleting substances).
- Law 16,517 of July 22, 1994 (United Nations Convention on climactic change).
- Law 16,408 of August 27, 1992 (Agreement on biological diversity).
- Promulgation of Law 17,279 (November 23, 2000), which approves the Kyoto Protocol of the Convention on Climate Change.

Source: CLAES (2001).

Box III-6. Main Aspects of the Development of Environmental Legislation in Argentina

In the case of Argentina, the Constitutional Reform of 1994 introduces in the National Constitution of the Nation (Carta Fundamental de la Nación) articles with explicit stipulations on the preservation of the environment, the concept of sustainable development, the participation of the society, the access a the justice, the right to obtain information and environmental education and the acknowledgement of the ethnic and cultural preexistence of indigenous communities. Although these constitutional precepts have marked a positive tendency generating several initiatives on programmatic regulations to achieve its operational capacity and execution, to date (April 2001) none of these have been approved by the National Legislative Power.

In the year 2000 the nation began the process formulating environmental regulations to initiate compliance with the constitutional mandate, preparing — in the sphere of the national environmental organization — draft projects of laws on minimum budgets whose main objective is to establish the minimum required for environmental protection and sustainable use of natural resources, applicable in all the territory of the Nation. Provincial constitutions with reforms, some reformed before the national constitution, included specific clauses on environment preservation and developed sectoral regulations on this respect, even surpassing the national initiatives.

Other relevant aspects in Argentina are the development of legislation and regulations on the integral administration of hazardous wastes (Law # 24,051/91 and Decree # 831/93), environmental regulation on activities of exploration and exploitation of hydrocarbons (Law # 17,319/92), the ratification of the Rotterdam Convention (Law # 25,278/2000), and the regulation of the atmospheric contamination in urban areas (Law # 24,449/94 and Decree # 779/95).

Source: National Report Rio + 10 (2001).

1.3. Implementation of Environmental Institutionality in the Countries

In general, the design and implementation of national environmental institutionality in the countries has developed in a series of successive changes in time. This is mainly due to a marked tendency to define previously environmental competencies of institutions before defining environmental policies and a framework environmental legislation.

In this context, the main achievements of the Southern Cone countries on environmental institutionality is that to date all of the countries have institutions responsible for environmental administration at a national level (See **Table III-2**) although they differ on their level of implementation and operational capacity. While in the case of Brazil and Chile the development of the institutionality has been evolving on a par with environmental policies and legislation, in countries like Paraguay, Uruguay and Argentina there is a strong tendency of successive institutional adjustments — the most recent were in the year 2000 — which implies a reduced period of time to count with information on their effects on the countries' environmental administration.

In regard to the decentralization of environmental institutionality, the advances present some general considerations, namely:

- Countries such as Paraguay, Uruguay and Chile have made progressive advances during the last years in the creation of environmental units at regional, departmental and municipal levels. However, the information available indicates that the degrees of incorporation of

environmental institutionality tends to be greater in regions or municipalities with larger population concentrations — which coincides with the national capitals Asuncion, Montevideo and Santiago — with less institutionality development in the rest of the national territories, especially in rural municipalities.

- In countries such as Argentina and Brazil, there is a greater development of environmental institutionality in provinces and states, respectively. This is due to the attributions the federation units have to generate their own institutionality, without affecting negatively those actions undertaken by federal governments. In relation to the institutional development of the provinces of Argentina, the creation of the Federal Council of the Environment (Consejo Federal del Medio Ambiente - COFEMA) at the beginning of the 90s is noticeable. It was conceived as an organization to create spaces to generate consensus on environmental policies between the Nation and the provinces. This organism has representatives from all the provincial organizations with environmental competencies. In the case of Brazil, the states have recently completed their environmental diagnosis — which includes the description of their state environmental institutionality — within the framework of the federal government's National Program of the Environment.

- In the countries of the subregion, progresses in the explicit stipulation of environmental competencies of sectoral institutions have been made such as those for public services related to the administration of water resources, forest resources and municipalities, among others. However, in those countries having with ministries of environment (as are the cases of Brazil, Uruguay and Argentina), there is a tendency to concentrate functions and environmental competencies in the units dependent to those ministries. In the Chilean case, there has been a wider range of sectoral environmental competencies due to the coordination model applied from the onset of the 90s. Finally, Paraguay is in the midst of its process of adjustment to environmental institutionality, since it has recently promoted actions that tend to concentrate environmental functions in the Presidential Secretariat of the Environment.

In regard to the evolution of national institutionality of the countries, it is interesting to observe that while Brazil, Argentina and Uruguay have opted for the figure of a ministry (See **Tables III-7 and III-8**), Chile has opted for a coordinating commission dependent on the Ministry General Secretariat of the Presidency (Ministerio Secretaría General de la Presidencia) (See **Table III-9**), and Paraguay for a secretariat directly dependent on the Presidency (See **Table III-10**).

Table III-2. Key National Environmental Institutionality in the Southern Cone Countries (a)

Country	Type	Key Environmental Institutionality	Year Created
Argentina	Ministry	Ministry of Social Development and the Environment (MDS and MA)	2000 (Law # 22,520, modified by Laws # 24,190 and # 25,233)
Brazil	Ministry	Ministry of the Environment	1992 (Law # 8,490) and structural adjustments in 1999 (Decree # 2,972)
Chile	Coordination Agency	National Commission of the Environment (CONAMA)	1994 (Law # 19,300)
Paraguay	Executive Agency	Secretariat of the Environment (SEAM)	2000 (Law # 1,561)
Uruguay	Ministry	Ministry of Housing Territorial Ordering and the Environment (MVOTMA)	1990 (Law # 16,112)

Source: Authors

(a) Corresponds to key institutionality at the level of national governments; it does not consider secondary levels of administration such as states, provinces, regions, departments, etc.

Box III-7. Evolution of National Environmental Institutionality in Brazil

Up to the last years of the 80s Brazilian environmental institutionality suffered constant modifications and variations according to the levels of political priority of the time. The most prominent breakthrough of those times was the creation of the Brazilian Institute of the Environment and Renewable Natural Resources (Instituto Brasileño de Medio Ambiente y Recursos Naturales Renovables - IBAMA). At the onset of the 90s, and particularly with the Earth Summit (Rio 1992), the country mobilized to make relevant the environmental topic under strong international pressure related to the relevance of Brazil in priority aspects of biodiversity and climactic change.

In the 90s achievements on institutionality evolved in the following manner:

- Creation of the Special Secretariat of Environment of the Presidency of the Republic (Secretaría Especial de Medio Ambiente de la Presidencia de la República).
- Creation of Ministry of the Environment (Law # 8,490 of 1992).
- Creation of Ministry of Environment, Water Resources and Legal Amazonia (Ministerio de Medio Ambiente, de los Recursos Hídricos y de la Amazonía Legal), initiating a new phase of environmental administration and consolidating a more substantial support to state environmental organizations in accordance with a decentralization of administration process.
- With Decree # 2,972 of February 26, 1999, the nation finally endeavored to make adjustments in environmental structures and policies. The Ministry of the Environment is implemented once again, conformed by a Secretariat that assumes specific aspects such as biodiversity and forests, coordination of the Amazonia, water resources, policies for sustainable development and environmental quality in human settlements.

Source: Suzana Alvarenga Alves of Brito and Laura Lago (2000).

Box III-8. Some Achievements of the Uruguayan National Environmental Institutionality

In Uruguay, the main achievements in environmental institutionality during the last 10 years, are:

- The formulation, execution, supervision and evaluation of national plans for environment protection and the instrumentation of the national policy in that subject, as well as the management of protected areas, corresponding to MVOTMA, through the DINAMA (created in 1990).
- DINAMA is responsible of proposing the environmental policy of the country and ensure its compliance, as well as guaranteeing environmental quality of those operations proposed by the private and the public sectors.
- In 1993 the Environment Technical Advisory Commission (Comisión Técnica Asesora del Medio Ambiente - COTAMA) was created by means of Decree # 261/993, integrated by delegates of public and private organizations and presided by the Minister of the MVOTMA.
- There is express willingness of the central government to achieve gradual decentralization of public environmental administration towards the municipal councils.

Source: IDB (2001).

In regard to environmental institutional capacities, difficulties are still acknowledged to obtain the optimum in financial, human and technical resources to execute all the functions and environmental competencies that the legislation of the countries le assign unto national environmental authorities and a its decentralized units. Acknowledging the scarce information available on the evolution of the institutional capacities in the countries, the case of Chile — analyzed within the framework of study by the World Bank (2001) — provides a vision of some interesting indicators that show evidence of a tendency towards an increase in the subregion's capacities.

Box III-9. Evolution of Chilean National Environmental Institutionality

In Chile the institutional progresses show an increasing strength of the coordinating role of the environmental authority and the decentralization of administration in the national territory. The main breakthroughs that give account of these progresses, are the following:

- The creation of institutional authorities such as the Interministerial Ecology Commission (Comisión Interministerial de Ecología - 1984), the National Commission of Ecology (Comisión Nacional de Ecología - 1984), the National Commission of the Environment (1990), the Special Decontamination Commission for the Metropolitan Region (Comisión Especial de Descontaminación de la Región Metropolitana - 1990), environmental units in the ministries (since 1990) and the approval of the Program of Institutional Development CONAMA - World Bank (1993).
- Providing the State with institutionality that specifically undertakes environmental topics. This provided the means to organize public service through the creation of the National Commission of the Environment, CONAMA, with the direct involvement of the Ministry General Secretariat of the Presidency, the maximum authority of interministerial coordination in the country.
- Opening an action space within the State for environmental affairs, creating functions of coordination in CONAMA and of execution in the sectoral ministries. They were given resources, even budgetary, financed by international organizations, such as the program of institutional strengthening of the World Bank, creating small internal structures that support environmental administration.
- Generation of a positive effect of demonstration on the private sector on environmental quality, for which decontamination plans for the main Chilean state foundries were established. This generated an important effect since the enterprises were forced to consider decontamination in their investment plans and not only factors on exploring and increasing production.
- Design and implementation — as a specific measure — of a voluntary environmental evaluation system before the promulgation of the law. The topic has also acquired importance in the entrepreneurial level, promoted basically by the process of internationalization of the economy, potential trade agreements, and by the decision of the government of supply the country with basic environmental administration mechanisms. The recent pronouncement of the first ISO 14,000 Norms is a breakthrough in this sense.

Source: Ina-Marlene Ruthenberg, 2001 (World Bank).

Box III-10. Evolution of Paraguayan National Environmental Institutionality

In respect to environmental institutionality, the positive evolution of the topic is conspicuous, from the sectoral vision of the Ministry of Agriculture and Livestock (Ministerio de Agricultura y Ganadería - MAG) to a transsectoral vision of first priority under the dependence of the Presidency of the Republic. The main achievements during the last decade are the following:

- In 1989 the Directorate of the Environment (Dirección de Medio Ambiente), later denominated "Directorate of Environmental Regulation" ("Dirección de Ordenamiento Ambiental" – DOA) is created. In accordance with the Organic Law of the Ministry of Agriculture and Livestock (promulgated in 1992) and of its creation decree, the DOA later constitutes the administrative authority of the Law that regulates the EIE.
- In 1991 Decree # 8462 is promulgated, *"by which the Interinstitutional Commission is created for the coordination and studies of Evaluations on Environmental Impact due to construction of public roads"*, establishing the EIE of development projects —in an organic and formal way — as a condition to obtain loans from international financial organizations (IDB and World Bank). The coordination of this Commission is in charge of the Sub-Secretariat of State of Natural Resources and the Environment (of MAG).
- On December 14, 1993, the Congress sanctions Law # 294 on Environmental Impact Evaluation and is promulgated by the Executive Power on December 31 of that same year. In 1994 Interinstitutional Commission is conformed of 10 public institutions of different sectors, with the purpose of formulating a Regulation Project on Law # 294. Finally, on July 31, 1996 Decree # 14281 is promulgated establishing regulations for the EIE Law.
- In the framework of the judicial reform of 1999, the promulgation of the new Penal Code typifies to great extent environmental crimes. This Code and the Agrarian and Environmental Legislation of Paraguay — although with several interpretative vacuums — constitute key elements nowadays in the efforts to defend the environment.
- Law # 1561, of July 21, 2000. Creates the National Environmental System with the object of treating environmental topics integrally. It also creates — although with no budgetary assignment for 2001 — the National Environment Commission as a forum of discussion and definition of the country's environmental policy and the Secretariat of the Environment (SEAM), which is responsible for the preparation, standardization, coordination, execution and supervision of the environmental policy. The SEAM reports directly to the Presidency of the Republic, which gives more relevance to the priority assigned to the topic. The SEAM is composed of the following departments: i) environmental administration; ii) control of environmental quality and natural resources; iii) conservation and protection of biodiversity; and iv) water resources. This law establishes a new institutionality and legal framework for the country, acknowledging the importance of the responsibility of environmental protection of the public and private sectors. The objectives of this law are i) transparency in the actions of constituted authorities; ii) participation of civil society in environmental decision-making; and iii) decentralization of control and environmental monitoring of natural resources.

Source: IDB (2000).

Table III-3 summarizes some relevant indicators that render information on the evolution of environmental institutional capacities in Chile during a period of 10 years.

Table III-3. Relevant Indicators on Environmental Administration in Chile (1990 – 2000)

Relevant Indicators	Beginning of the Decade	End of the Decade
1. CONAMA Budget (a)	US$ 76,000	US$ 21 million (approx. in 1999)
2. Resources of the Public Sector in Environmental Topics	Data not available	US$ 289 million
3. CONAMA Personnel (b)	6 persons	370 persons
4. Public Environmental Personnel (c)	Data not available	4,758 persons
5. Environmental Units (d)	2	10
6. EIE submitted in the Decade	0	1,873
7. EIE approved in the Decade	0	1,137
8. Decontamination Plans	0	8
9. Promulgation of norms and standards	0	8
10. Formal Instances of Citizen Participation	0	4 (EIE, Norms, Plans and Meeting Councils)
11. Environmental Consultants	5	>50

(a) CONAMA is the National Commission of the Environment, which decentralizes in 13 regional directorates in throughout the country.
(b) Corresponds to total CONAMA personnel in the country.
(c) Corresponds to total number of personnel in institutions with environmental competency in the country.
(d) Corresponds to environmental units in sectoral ministries with environmental competencies.

Source: World Bank (2001)

1.4. Development and Application of Management Instruments

1.4.1. Systems of Environmental Impact Evaluation

All the countries administer the environmental impact evaluation (EIE), although with different scopes, procedures and implementations and operational processes. While Argentina, Paraguay, Uruguay and Brazil administer the EIE by sectors or decentralized territorially into states or provinces, in Chile there is a unique system that operates at national level.

The fundamental aspects of the EIE process are accepted and used in the countries. This has provided the means to acquire and incorporate a multidisciplinary focus and the institutionalization of a preventive vision in environmental administration. However, its adjustment is still insufficient with respect to the countries' realities, especially on aspects concerning available capacities. Likewise, a recent study[7] indicates that the countries' EIE systems do not yet perform concrete environmental evaluations of their policies, plans and programs, tending instead towards descriptive processes that are hardly predictive and not sufficiently preventive, and performing few follow-ups and controls on the projects once these are authorized.

[7] CED / IDB, 2001. Examination of the Environmental Impact Evaluation of Latin American and Caribbean Countries. Methodology, Results and Tendencies. (Revisión de la Evaluación de Impacto Ambiental en Países de América Latina y el Caribe. - Metodología, Resultados y Tendencias.) Center of Studies for Development – Inter-American Development Bank.

A study carried out by CED/IDB concludes that the countries' EIE systems still present difficulties with aspects such as[8]:

- Protection of landscape and of traditions, customs and cultures.
- Monitoring execution of projects and activities that have been approved.
- Harmonization of sectoral policies' specific actions and principles with the environmental national policy.
- Operational capacity and efficiency of EIE systems concerning insufficient institutional capacities (human, technical and financial).
- Training programs on environmental evaluation.
- Validation unto the community of the authorities responsible for EIE systems and the incomplete incorporation of mechanisms to involve citizens effectively.
- Criteria homogeneity and unity on implementation and revision for all the cases or projects submitted to the EIE systems.

1.4.2. Environmental Norms and Standards and Decontamination Plans

During the last ten years the countries have achieved substantial progress in the formulation of environmental norms and standards, particularly on those concerning health protection of humans (water and atmospheric contamination).

The implementation of environmental quality norms and standards tends to be more developed for the management of contamination in the most important urban centers of the countries. Such is the case, for example, of the air quality norms and the norms on industrial liquid waste discharges. The countries — especially Chile and Brazil — have also achieved advances on the formulation of superficial water quality norms, with major boost on defining quality goal standards for courses and bodies of water.

Along with environmental norms and standards, the countries have developed instruments aimed at preventing contamination and at decontaminating geographical zones with high atmospheric contamination levels in big cities such as Buenos Aires, Sao Paulo and Santiago. Chile stands out for the implementation of effective measures on atmospheric decontamination in Santiago, where it applied radical decontamination programs such as restrictions on motor vehicle circulation, paralyzation of industries, promotion of technological changes, massive withdrawal of contaminant small buses, etc. Afterwards, the State provided Santiago with a permanent decontamination plan, understanding that it would not obtain a positive result with only the first effort. For this, a Decontamination Plan with broad range of long-term structural measures was made official and is being fully implemented. Furthermore, it is currently revised.

1.4.3. Environmental Monitoring

Environmental monitoring has increased, especially in some Brazilian states (Rio de Janeiro, Espirito Santo, Minas Gerais) which passed specific laws and in its voluntary implementation in Chile. Its use is increasing in some Brazilian states (Rio de Janeiro, Espirito Santo, Minas Gerais and some municipalities) where they have recently passed laws on environmental monitoring. Likewise, the Congress is considering a law to institute environmental monitoring on contaminant industries (among other things, refineries, crude oil terminals, thermoelectric plants, and ports) throughout the country. There have also been interesting experiences in industry

[8] Idem.

self-monitoring (for example, in Bahia of Guanabara) which engage independent monitoring firms and send the reports to the environmental organization.

1.4.4. Instruments of Certification

The increasing number of enterprises which have opted for the ISO 14,000 certification is another indicator of a greater competitiveness in international markets (See **Table III-4**).

Table III-4. Number of Enterprises with ISO 14,000 Certification in Southern Cone Countries

Country	1995	1996	1997	1999
Argentina	1	5	28	63
Brazil	2	6	63	88
Chile	--	--	2	5

Source: Schaper, M., 1999.

The growing importance of the forest resources market has made the countries carry out efforts to obtain environmental standards required by international markets. **Table III-5** shows the rapid increase in the forest surface area of the countries (natural forests and plantations) certified by the Forest Stewardship Council (FSC). Up to November 2001 the certified forest surface area of the Southern Cone countries represented 4.8% of the world's certified surface area. On October 2001 the recently created Brazilian FSC National Initiative (Iniciativa Nacional Brasileña del FSC) carried out its first Board of Directors meeting which defined national forest certification standards. Chile is also designing its Standard on Sustainable Forest Management for Plantations (Estándar de Manejo Forestal Sustentable para Plantaciones), in order to consider environmental, social and economic variables simultaneously and in a balanced way. The principles that support this standard's proposal are:

- Planned use of forest resources in accordance with a long-term forest management plan.
- Protection of environmental value of native ecosystems that have forest management units and minimization of impacts on biodiversity.
- Maintaining forest resources productivity.
- Protection of soils and of water resources quality and quantity.
- Respect for traditional customs and rights of local communities.
- Respect for legally established rights of native ethnic groups.
- Respect for rights of forest workers.
- Respect for international treaties, laws and agreements.
- Incorporation of periodic evaluations for continuous improvement of forest operations.

Table III-5. Number of Enterprises and Forest Surface Area Certified by the Forest Stewardship Council (FSC) in Southern Cone Countries

Country	February 2000 (a)		November 2001 (b)	
	# Enterprises	Surface Area (Ha)	# Enterprises	Surface Area (Ha)
Argentina	0	0	3	22,232
Brazil	N.A.	665,558	15	869,020
Chile	0	0	2	180,527
Paraguay	0	0	0	0
Uruguay	0	0	3	62,004
Southern Cone Total	**N.A.**	**665,558**	**23**	**1,133,783**
World Total	**N.A.**	**17,531,452**	**345**	**23,837,810**

(a) According to World Resources Information 2000-2001 (WRI) based on www.fscoax.org (FSC, Oaxaca, Mexico, February 2000).
(b) www.fscoax.org (updated up to November 8, 2001).

1.4.5. Economic Instruments

In general, the design and implementation of economic instruments in the Southern Cone countries has been slow and basically associated with specific and novel endeavors that have not yet attained massive use. However, examination of available information on the countries show interesting initiatives on contamination reduction, clean production promotion and environmental administration in small and medium-sized enterprises for natural resources markets (among other things water, mining resources, protected areas, organic agriculture and fishing).

Chile and Brazil have documented precedents on the development of market and tax instruments for economic promotion and regulation. The following are highlighted:

- Rights of water use and financial compensation for the exploitation of water and mineral resources (Brazil).
- Fiscal compensation for ecological preservation areas by means of the Tax on the Circulation of Goods and Services (Impuesto a la Circulación de Mercaderías y Servicios), known as Ecological ICMS (Brazil).
- Operation of Technical Assistance Fund (Fondo de Asistencia Técnica - FAT) to finance jointly — with small and medium-sized enterprises — contracting environmental consultancy (Chile).
- The Associative Promotion Programs (Programas Asociativos de Fomento - PROFOS) to finance jointly actions undertaken by at least five goods or services enterprises (Chile).
- System of compensations for particulate material emissions, also known as Negotiable Emission Permits (Permisos de Emisión Transables). Chile).
- Individual transferable fishing quotas (Chile).
- Ecolabeling for products that do not harm the ozone layer and organic agriculture (Chile).
- Insurance for environmental damage within the framework of the temporary authorization applications of the environmental impact evaluation system (Chile).

One of the fiscal instruments mentioned in the list above that is being increasingly developed in Brazil — not without controversies due to its name: the *"Robin Hood Law"* (*"ley Robin Hood"*), is

part of the Ecological ICMS. The ICMS is a State tax. The State quota furnishes at least 75% of the amount collected and municipalities up to 25%. Of this 100%, three fourths are assigned to the municipalities from where each amount comes from and the other fourth is redistributed according to the priorities of each State. Generally, the criterion for distribution is the proportion between the municipal population in relation a the state's population. The innovation of the Ecological ICMS lies in the percentage of municipal territory under the conservation unit regime or that is occupied by water reserve for the production of hydroelectric energy. The principle that inspired this criterion is compensating localities or municipalities whose possibilities to generate income were limited once they decided to protect determined spaces or territories.

On the other hand, Brazil has begun to develop environmental accounts, economic assessments and environmental budgets. These instruments are very incipient still. In 1999 the Federal Government undertook environmental administration as a permanent power of government. The new programmatic classification is divided in i) environmental preservation and conservation; ii) environmental control; iii) recuperation of degradated areas; and iv) water resources and meteorology. The Ministry of the Environment, jointly with the Institute of Applied Economic Investigation (Instituto de Investigación Económica Aplicada - IPEA) published the "Guide for Economic Assessment of the Environmental Resources" ("Manual para Valoración Económica de los Recursos Ambientales").

1.4.6. Other Relevant Instruments

In the Southern Cone, advances were identified in the development of instruments that combine a series of resources from spheres such as planning, regulation, economic instruments, environmental improvement plans and requirements associated to international trade agreements. These instruments respond innovatively to specific needs and conditions in individual countries or grouped nations.

a) Mechanisms of Cooperation

The Program "Brasil Juega Limpio" is prominent in Brazil. It is one of the 365 programs that conform the Pluriannual Plan 2000-2003 of the Federal Government of Brazil. The program promotes projects on ordering solid waste collection and final disposal, implementation of environmental information system, creation of norms and legal instruments and the support to illustrative projects. The program is financed by resources from the National Environment Fund (Fondo Nacional del Medio Ambiente - FNMA), by external financing and offsetting entries from states and municipalities. From the moment it was launched in 1999, one of the most prominent aspects is the establishment of alliances with public and private organizations and institutions. Another relevant aspect is the action named "implantation of technological and methodological instruments for environmental administration in rural settlements" which assumes — among other things — management of agro-toxic residues, conservation of natural resources, management of forest and agricultural residues, and agreements with the Universidad Libre de Medio Ambiente of Parana for the development of clean technologies.

b) Mechanisms of Mediation and Conflict Resolution

In Brazil, the implementation of the Terms of Conduct Adjustment (Términos de Ajuste de Conducta - TAC) allow solving problems derived from interdictions on enterprises for environmental reasons. An interesting example is what happened with the oil spill in one of the PETROBRAS refinery sites in Rio de Janeiro. The Public Ministry of the State decided to suspend the motion of interdiction on the refinery's industrial activities (which operates without

environmental license) after reaching a compromise with PETROBRAS of signing a TAC in which the company undertook to engage an International Classifying Society to perform an inspection of all the refinery ducts. In the TAC, the company undertakes to carry out, within the term of six months, an environmental monitoring of all the refinery to identify the company's environmental vulnerabilities. A new TAC must be done after this monitoring. In it, the company shall undertake compromises aimed at solving those vulnerabilities.

c) Emergency Plans

In Brazil, the Regional, State and Local Emergency Plans to confront oil spills is prominent. As a result of the problems caused in Guanabara Bay, the CONAMA Resolution # 265/2000 was approved. It establishes a terms of twelve months to present plans aimed at facing accidents caused by oil industries or its products.

In Chile, the National Commission of the Environment (CONAMA) has developed guides to draft technological emergency plans for small and medium-sized enterprises, especially for those that generate, manipulate and transport hazardous substances. Since the accidents and great fires in chemical plants such as those that took place in Mathiessen Molypac in Santiago and in Oxiquim in Viña del Mar, exigencies have been formulated requiring the adequate availability of equipment and emergency plans, including the strengthening of good neighbor relations with the vicinity.

d) Voluntary Agreements

Voluntary mechanisms are acquiring relevance in the countries, where the role of the private sector has been prominent designing and implementing them (large enterprises or labor unions). On the other hand, Chile stands in this aspect by establishing a mechanism of voluntary agreements promoted by the Ministry of Economy, generating the bases for a National Policy on Clean Production Promotion for the period 2001 – 2005. Its central object is having enterprises incorporate good administration practices and undertaking voluntary compromises to reduce contaminant emissions (liquid, solid and gas).

e) Environmental Planning of the Territory

In Brazil, the development of the Ecological–Economic Zoning (Zonificación Ecológico–Económica - ZEE) since 1990 stands out. It operated under the coordination of the Secretariat of Strategic Affairs of the Presidency of the Republic (Secretaría de Asuntos Estratégicos de la Presidencia de la República) and now with the Ministry of the Environment. The zoning is carried out in a 1:250.000 scale on areas classified as productive, critical (conservation or restoration) or special (preservation, restricted or strategic use). Zoning is carried out in a 1:1.000 scale for evaluations on anthropic pressures and standards on the use of soil. The development of this instrument focuses on the Amazonian region States with the establishment of state ZEE commissions.

Other environmental planning instruments of the territory are those related with the establishment of reserves for the conservation and sustainable exploitation of the resources. An example of these are the extractivist reserves, which in Brazil have already involved around 1,200 local communities dedicated to the extraction of primary natural resources — including fishing with traditional methods.

In Chile interesting experiences have been developed on protected private areas that have been

reserved for natural resources conservation and preservation. These initiatives induce decision processes on alternative uses of the land. One of the most relevant cases is the acquisition for preservation of more than 300,000 hectares in the XI Region of the country by a well-known North American entrepreneur. This generated discussions on the need of counting with instruments to support decision-making. Among these, the strategic environmental evaluations stand out.

f) Negotiations of International Treaties

In Chile, the incorporation of environmental aspects in international treaty negotiations are notable. For this, it was necessary to rationalize and modernize Chilean environmental regulations so as to facilitate its implementation. Within the framework of the agreement with Canada, special follow-up groups were conformed under the auspices of the Ministry of Treasury (Ministerio de Hacienda), to consult with different social and private organizations, and propose revisions and adjustments of environmental regulations that are being executed. In the specific case of exporting productive sectors that have been affected by environmental restrictions in their target markets, they have been able to prove that they have carried out adjustments for most of the affected products. These adjustments have basically consisted of the adaptation of productive processes (as response to restrictions of the United States market, changes of packages and wrappings (as response to restrictions of the European Economic Community) and changes of consumables, as well as other mechanisms such as those mentioned above (clean production agreements, certifications and monitoring).

In the context of the Southern Cone, particularly under the auspices of Mercosur, the negotiations of the project Environment Protocol stand out. Its purpose is achieving a process of regional integration that deals with environmental, social and economic sustainability. Relevant to this respect are the advances achieved within the framework of the Working Subgroup # 6 in which Argentina, Brazil, Paraguay and Uruguay participate. The topics undertaken are the following:

- Non-tariffary restrictions (analysis of non-tariffary measures on environment and determination of its handling).
- Competitiveness and environment (evaluation and studies of productive processes to ensure unbiased conditions for environmental protection and competitiveness among the States Parties, third countries and/or regional groups).
- International ISO 14,000 Norms – Environmental Administration (complement of the process of elaboration, discussion, definition and implementation of the series and analysis of its implementation impacts on the international competitiveness of products from Mercosur).
- Sectoral topics (the environmental subject matter and its management by other Subgroups and Specialized Mercosur Reunions).
- Legal instrument legal on environment for Mercosur (elaboration of a document to optimize administration of environmental quality levels of the States Parties).
- System of environmental information (technical concept, development and implementation of a substantive environmental information system among the States Parties).
- Green Mercosur Seal (development and formalization of a common environmental certification system).

- Approval of project on "Promotion of Environmental Administration and Cleaner Production in the Small And Medium-Sized Enterprises" ("Fomento de la Gestión Ambiental y de la Producción más Limpia en las PyMEs") with GTZ funds (Germany) for Mercosur, with a

technical agency for the project in Uruguay.

2. NOTABLE ADVANCES IN THE ADMINISTRATION OF PRIORITY ENVIRONMENTAL PROBLEMS

Concerning natural resources management, the main achievements are related with the advances in water resources administration, biodiversity protection and forest resources conservation. However, it must be made clear that advances in this subject matter tend to be more on generating legal frameworks and policy principles, and less on concrete actions to implement administration instruments although precise cases are acknowledged in the countries.

The most significant achievements in the urban, industrial and agricultural sectors lie in the implementation of regulatory and non-regulatory instruments to prevent and control contamination, ordering of cities and incorporation of clean production criteria in the productive sectors. Although these advances are comparatively more developed than those achieved for the management of natural resources, they have less impact at the level of rural settlements and of small and medium-sized enterprises, where difficulties to execute of the necessary environmental measures are evident.

2.1. Management of Water Resources

Countries such as Chile, Argentina and Brazil have developed advances in the definition of national management policies on water resources, promoting the integrated administration of water at the level of hydrographic basins. In general, the implementation cases on management of basins are reduced, but a set of subnational initiatives has developed that allow foreseeing its posterior implementation in the countries.

In Chile, for example, the launching of the Water Resources Management Program (Programa de Manejo de los Recursos Hídricos) with the support of the World Bank, will make possible the incorporation of the Directorate Plans in eight priority basins of the country, including the political decision of administering strategic environmental evaluations to the planning instruments and the incorporation of aquatic biodiversity protection.

2.2. Protection of Biodiversity

In general, achievements on biodiversity protection have been basically attained in the realm of policies. For example, Uruguay has a National Strategy for the Conservation and Sustainable Use of Biological Diversity (project GEF – UNDP), in accordance with the implementation of the Convention on Biological Diversity (Convenio sobre Diversidad Biológica - Decree # 487/993). Brazil and Argentina have a similar situation. Additionally, there are significant advances on the protection of biodiversity within the context of the subregion. For example, in 1999 a cooperation agreement was entered into among Argentina, Chile and Bolivia for the conservation of the upper Andean wetlands. On the other hand, the Misiones Province (Argentina) has been a pioneer in the promotion to create ecological corridor networks by means of the law “Missionary Green Corridor” (“Corredor Verde Misionero”). Finally, there are different degrees of formulation for other similar projects, some with scopes that cross borders such as the Yungas (with Bolivia), the Gran Chaco (with Bolivia and Paraguay) and the one of the Patagonian Forests (with Chile).
Concerning loss of biodiversity, one of the most frequently used responses in the countries of the subregion is the establishment of protected areas by the States (See **Table III-6**).

Table III-6. Surface of Protected Areas in Southern Cone Countries (1996)		
Country	Protected Areas (Km^2)	% of the Territory
Argentina	46,600	1.7
Brazil	355,500	4.2
Chile	141,300	18.9
Paraguay	14,000	3.5
Uruguay	500	0.3
Total Southern Cone	557,900	4.4
Total Latin America and the Caribbean	1,456,300	7.3
Source: World Bank – World Development Indicators - 2000		

The above table highlights the situation of Chile, which surpasses the countries in great measure on protected areas surface area within national territory. However, as has been indicated in this document, there are still an important number of ecosystems that are not represented or that are sub-represented, a fact that definitely implies important limitations to the objectives of biodiversity conservation.

In Brazil the protection of representative samples of native ecosystems through the implementation of Conservation Units, represents a total of 160.5 million hectares of protected areas, of which 112.9 million are indigenous areas and the other 48.1 million hectares are Conservation Units of different categories. Around 33.4 million hectares are under the responsibility of IBAMA (See **Table III-7**).

Table III-7. Conservation Units Dependent on IBAMA	
Categories	**Number of Units**
National Parks	35
Biological Reserves	23
Ecological Stations	21
National Forests	39
Areas of Environmental Protection	10
Extractivist Reserves	11
Total	**139**
Source: Ministry of the Environment, 1997. Environmental Conservation in Brazil – PNMA 1991-1996.	

On its part, the following achievements are prominent in Argentina:

- Increase in the number of protected areas (provincial and federal) in 35%, and in protected surface area with relation to the country's territory (in provincial jurisdiction, from 3.33% in 1990 to 4.27% in 2000; and in federal jurisdiction, from 1.05% to 1.28%).
- Constitution of four new Biosphere Reserves acknowledged by the UNESCO: Yaboti (1995), Mar Chiquita, Rio Teuquito (2000) and Parana Delta (2000).

- The project of a Framework Agreement on Access to the Genetic Resources and Participation on the Benefits (Acuerdo Marco sobre Acceso a los Recursos Genéticos y Participación de los Beneficios) was agreed in the XXIX Ordinary Assembly of COFEMA on

November 2000. The provincial governors will sign it.

Additionally, the countries are also promoting protected private areas. In Chile, for example, there are different conservation categories of private nature, of which 39 correspond to protection areas that are strictly for the conservation of lands (See **Table III-8**), which up to 1997 already added to 450 thousand hectares[9]. However, like the rest of the countries of the subregion, there is still no policy or regulation to this respect.

Table III-8. Distribution of Private Conservation Initiatives in Chile

Type	Category	Subcategory	#
Private Initiatives of Strict Conservation	Conservation of Lands	✍ Creation of private parks and reserves	15
		✍ Conservation communities	10
		✍ Eco-tourism and eco-estate projects	8
		✍ Donation and gratuitous loan of private lands to the National System of State Protected Wild Areas (SNASPE)	3
		✍ Private administration of fiscal conservation areas	3
	Conservation of Species and Ecosystems	✍ Protection of forests, wetlands and coastal zones	20
		✍ Protection of species	6
		✍ Restoring of ecosystems	4
	Conservation Ex Situ	✍ Botanical gardens, seed banks and establishment of greenhouse systems for native flora	15
		✍ Wild fauna recovery and reproduction centers	4
	Donation of Financial Resources and Materials	✍ Financing of conservation programs on species and ecosystems	6
		✍ Financing of administration of SNASPE units	2
		✍ Donation of equipment and infrastructure to SNASPE units	3
Private Conservation Initiatives of Low Intensity	Generation and Dissemination of Knowledge and Information for Conservation	✍ Investigation and registers of species and ecosystems	13
		✍ Dissemination of information for conservation	5
	Educational and Training Programs for Conservation	✍ Educational programs for conservation	9
		✍ Training programs for conservation	4
	Voluntary Corps for Conservation		5
	Productive Initiatives with Focus on Conservation		19
Initiatives in Quality of Projects			7
Total			**162**

Source: C. Sepúlveda, P. Villarroel, A. Moreira and D. García, 1998. Catastro de Iniciativas Privadas en Conservación de la Biodiversidad Implementadas en Chile (Register of Private Initiatives in Biodiversity Conservation Implemented in Chile).

[9] Geisse and Sepúlveda, 2000.

2.3. Conservation of Native Forest Resources in Argentina and Paraguay

In Argentina, the promotion of private initiative has been conspicuous in the efforts to progress towards conservation, promote sustainable exploitation of the native forest mass and restore degradated forest ecosystems. Law # 25,080 on Investments for Cultivated Forests (Inversiones para los Bosques Cultivados) includes the promotion for the restoration of existent native forests, establishing the presentation of an environmental impact study (EIE) for projects. There are also advances in the development of conservation actions for wild flora and fauna of economic value, aimed at coordinate the environmental, social and economic variables. This has provided the means to achieve active involvement of the rural communities that receive more income from the extraction and sale of the live wild resources embraced in the conservation projects. An interesting example is the management of the talking parrots (*Amazone aestiva*). On the other hand, the elaboration and launching of the National Action Program to Combat Desertification (Programa de Acción Nacional de Lucha contra la Desertificación - PAN), begun in 1995 by the National Focal Point to Combat Desertification (Punto Focal Nacional de Lucha contra la Desertificación). However, there are still important difficulties on the subject due to the lack of regulation on Law # 24,701 that ratifies the Convention to Combat Desertification, which impedes the possibility of counting with a proper fund to finance the operation of the PAN Executive Committee and related activities.

Concerning reforestation in Paraguay, there is a decided promotion of these activities, within the framework of the facilities and benefits of the Law # 536/95 on Forestation and Reforestation. The high levels of corruption in state control and monitoring systems promote deforestation rather than halt it. In view of this situation, the government is reformulating the National Forest System (Sistema Forestal Nacional) within the framework of a new institutional model for the Ministry of Agriculture and Livestock. With Law # 536/95, the nation has had 3,316 reforestation projects submitted, and more than 450 projects have been subsidized during the period 1997/98. This legal framework subsidizes 75% of the direct forestation or reforestation costs, as well as cultural care during the first three years in the same proportion. Concerning control and monitoring of the traffic of timber in rolls, the Monitoring Program has been strengthened, both in fixed bases as well as mobile, with the collaboration of the Attorney General and the National Police, with encouraging results diminishing illegal traffic. Another applied measure has been the suspension of fitting out of lands through clearance of native forest, to halt the uncontrolled advance of deforestation. At the level of the Ministry of Agriculture and Livestock (MAG), it promoted some reforestation projects since 1992. One of these is financed with funds from the National Forest Service (Servicio Forestal Nacional) and another within the framework of a compensatory system. These two projects, although small in their magnitude, served as a start to redefine once more the entire reforestation problem. In regard to timber-yielding forests — especially those from the Eastern Region — the National Forest Service approved Forest Exploitation plans on 78,950 hectares and Land Use plans on 165.000 hectares.

2.4. Development of Clean Production Agreements in Chile

Since 1997 Chile has promoted and implemented a Policy on the Promotion of Clean Production, conceived as the link that articulates environmental policy with the productive development policy.

On January 2001 it created, under the form of the CORFO committee, the National Clean Production Council, directed by the Executive Council that is presided by the Minister of Economy and integrated by environmental, monitoring and production promotion authorities of the public sector and private sector representatives of both from large, medium and small

enterprises, as well as of the labor sector.

By mid-2001 the nation had seven Clean Production Agreements focused on specific sectors (pig producers, cellulose, foundries, sawmills, chemicals, construction and paints) and two framework agreements (mining and agro-industry), which incorporate more than 300 enterprises.

On July 2001 the National Clean Production Council approved the Basis for the Policy on the Promotion of Clean Production for 2001 – 2005, whose general objective is generating and consolidating a critical mass of public and private actors that produce in clean ways and promote the use of this strategy to minimize contamination and increase the competitiveness of the enterprises[10]. The specific objectives of the policy are[11]:

- Consolidate and strengthen public-private cooperation.
- Develop the institutionality for clean production.
- Improve and simplify the regulatory framework to encourage and facilitate contamination prevention.
- Contribute in developing the market of goods and services for clean production.
- Form capacities in private and public spheres for the management of clean production, both at a national and at a regional scale.
- Favor generation of knowledge and the development of clean production incentive and promotion instruments.
- Conform a clean production culture.
- Generate the framework of the Subprogram of Clean Production including the agreement entered upon by the Ministry of Economy and the IDB to implement the 2001 – 2005 Innovation and Technological Development Program (Programa de Innovación y Desarrollo Tecnológico 2001 – 2005).

The Clean Production Agreements constitute one of the most promissory administrative instruments within the sphere of Chilean public-private cooperation. It is prominent at a Latin American level due to its institutionalization in a key ministry for decision-making and for the generation of public policies aimed at productive development, competitiveness and the insertion of the small and medium-sized enterprises in the global dynamics of the economy.

The country has recently hosted important international reunions in which Chile's leadership in clean production has acquired more relevance. On November 26 and 27 of 2001 CEPAL and UNEP carried out a roundtable in Santiago on topics related to sustainable performance of the financial sector and the creation of a sustainability dynamic through the interaction of direct foreign investment and the small and medium-sized industry[12]. Likewise, on November 29 and 30 Chile hosted the Inter-American Reunion of Senior Staff and Government Ministers on Clean Production within a framework of continuity with respect to advances and agreements achieved in Sao Paulo 1998, Viña del Mar 1998, Santa Fe de Bogota 1999 and Buenos Aires 2000[13].

---

[10] Chile, País que Produce Limpio. Bases para la Política de Fomento a la Producción Limpia 2001 – 2005 (Chile, Country that Produces Cleanly. - Basis for the Policy on Promotion of Clean Production 2001 – 2005. Approved by the National Clean Production Council. Santiago, July 2001. In: www.pl.cl

[11] Idem.

[12] ECLAC / UNEP FI, Double Roundtable. Day One: The Financial Sector in Latin America and Caribbean – The Business Case for Sustainability Performance. Day Two: Foreign Direct Investment – Creating a Sustainability Dynamic. Santiago of Chile, November 26 and 27 of 2001.

[13] Cleaner Production Conference of the Americas (Sao Paulo, August 17 – 19, 1998) – First International Conference on Clean Production (Viña del Mar, November 28, 1998) – II Conference on

2.5. Application of Ecological ICMS in Brazil

The ICMS, or Tax on the Circulation of Goods and Services, is established in the Article 158 of the Brazilian Federal Constitution of 1988. Its version as Ecological ICMS was created in 1990. It concerns the incorporation of environmental criteria to the distribution of state resources from taxes caused by the circulation of goods and by rendering of interstate and intermunicipal transportation and communication services. Some precedents that show the increasing implementation of this tax instrument in Brazilian states are the following:

- In the State of Sao Paulo, a total of 148 municipalities se benefit from the Ecological ICMS, instituted in 1993, and assigns 0.5% of the collected taxes to municipalities that have territorial spaces protected by the state.
- In the State of Minas Gerais, the Ecological ICMS exists since 1995. It benefits those municipalities that promote natural resources preservation, such as protection of legal reserves, and treatment of solid wastes and wastewater.
- The State of Parana pioneered the adoption of the Ecological ICMS in 1992. The environmental variable was introduced as a criterion for the redistribution of funds, assigning 5% for this.
- The legislation of Rondonia, Santa Catarina, Rio Grande do Sul and Pernambuco already has provisions for the adoption of the Ecological ICMS.
- On the other hand, the State of Mato Grosso has established the exemption of the ICMS on operations with used packaging and uncontaminated with pesticides, including its transportation.

2.6. Advances in Environmental Decontamination

In general, the advances of the countries of the subregion are related with the increasing incorporation and implementation of administrative instruments of destined to the reduction of the environmental impacts of urban and industrial development

Concerning the treatment of the wastewater, progress derived from the privatization of sanitary companies stand out, generating an important boost to the construction and operation of treatment plants in Chile. Likewise, in 1996 Paraguay initiated some experiences on participation of the private sector in investment projects for sanitary works such as the concession of sanitary sewage in the Lambare Municipality. In like manner, the Municipality of Asuncion is preparing an international tender for the concession of wastewater and rainwater drainage works based on the same financing system.

In relation to efforts on atmospheric decontamination, countries such as Chile have developed advances in the strengthening of activities on monitoring and dissemination of information on atmospheric contamination in the zones with most problems in the country, particularly in the Metropolitan Region of Santiago. On the other hand, also in Chile, the pronouncement of the Supreme Decree # 185 (1991) that regulates at a national level those operations of installations hat produce emissions of sulfurous anhydride, particulate material and arsenic, has provided the means to generate important decontamination plans in industrial zones where copper foundries have a great incidence on atmospheric contamination (See **Table III-11)**.

Cleaner Production (October 5 – 7, 1999) – Conference with Experts from the Governments of the Americas for Clean Production (Buenos Aires, October 2000).

Box III-11. Advances on Decontamination in Chile

Some of the relevant milestones on decontamination are the following:

- Since 1997, the following zones have been declared saturated: Maria Elena - Pedro de Valdivia (PM_{10}), Chuquicamata camp (SO_2, PM_{10}), Potrerillos foundry (SO_2, PM_{10}), Hernan Videla foundry (SO_2), Ventanas foundry (SO_2, PM_{10}), Caletones (SO_2, PM_{10}), and Metropolitan Region (PM_{10}, SO_2, O_3).
- Additionally, the Metropolitan Region is included as a latent zone for NO_X, and the locality of Chagres for SO_2.
- There are decontamination and prevention plans for the Chuquicamata, Ventanas, Chagres and Paipote foundries and for the Metropolitan Region.
- Between 1997 and 1999 eight norms have been promulgated on: environmental quality, emissions related to discharges of liquid residues to superficial waters, regulation of arsenic contaminants emitted to the atmosphere, luminous contamination, fetid compounds associated to the fabrication of sulfurized pulp, and particulate breathable material PM_{10}.
- Inventories of contaminants were carried out in the Metropolitan Region in 1997 and 2000. A comparison of both inventories yields as general result that between 1997 and 2000 contamination has diminished for all the contaminants except NOx, which has increased by 10%. In the case of the fixed sources there is an important decrease of SO2 (71%) and PM10 (64%). For the case of the mobile sources, there has been an increase in almost all the contaminants, except CO and COV.

Source: Espinoza and Ulloa (2000) / Pizarro and Vasconi (2001).

Concerning solid waste management, the launching of the control and authorization system by the integral administration of hospital solid wastes in Uruguay is notable. Similar cases in Chile and Brazil denote advances in the generation of policies and strategies of solid waste management, although in general these aim at solving priority problems in the big cities. In Chile, for example, despite the fact that there is a national policy on solid wastes, its concretion has been hampered by the scant control of an important volume of industrial residues that have a unknown destination. Prominent at a subregional level is the execution of an agreement among the MVOTMA of Uruguay, the Secretariat of the Basel Convention and CIID, to strengthen the system of information of the Regional Coordinating Center (Centro Coordinador Regional) for training and transference of technology on hazardous wastes.

CHAPTER IV. ENVIRONMENTAL ADMINISTRATION CHALLENGES OF SOUTHERN CONE COUNTRIES

1. GENERAL CHALLENGES

The processes of environmental administration in the countries — taking into account the priority environmental problems and the achievements reached — face the great challenge of being able to tend towards sustainable development models that ensure economic growth, competitiveness growth, natural resources conservation and sustained improvement of the quality of life of the inhabitants of the countries within the framework of overcoming poverty.

On the other hand, a study carried out by Schaper (1999)[14] suggests that the contamination problems and environmental deterioration in the countries seem to have intensified during the last two decades, where the exporting structure related with natural resources and with "dirty" industries is environmentally vulnerable, although advances on institutionality, regulation and implementation of environmental administration instruments are acknowledged. In general, the process of resource reassignment between 1980 and 1995 that tended to lead the countries towards a more intensive specialization in natural resources, hindered the establishment of a sustainable growth pattern. This poses the double challenge of: i) reverting the increasing deterioration of the environment, both in the sphere of natural resources as in the sphere of urban – industrial and agricultural management; and ii) protecting the abundant environments that are still not degradated or that have a low degree of human intervention, many of the which are of global relevance.

Within the framework of the great challenges described, it is essential to identify the common efforts that the Southern Cone countries must undertake to strengthen environmental administration and advance in the sustainability of development. For this, resources and capacities must be mobilized, creating opportunities to exchange experiences and good practices among the countries in order to tackle common limitations. Among these, the following are conspicuous:

a) Insufficient institutional capacities for full implementation and adequate administration of administration instruments such as support to decision-making that ensures progresses on the sustainability of development. This limitation is seen more strongly at a subnational level (states, provinces, departments and municipalities), which do not have optimum conditions on quantity and qualification of human resources nor sufficient tools to undertake the totality of functions and powers of institutions with environmental competency.

b) Unfavorable conditions for the compliance of the legal mandates, expressed in a weak internalization of the environmental topic in sectoral public policies and excessive dispersion of the legislation with environmental relevance, with lack of definition, duplicities and "gray areas".

c) Insufficient available resources, both financial and technical, to undertake the environmental requirements of the countries. This is derived from the need to give priority to efforts and resources aimed at solving problems of social equity — a common

[14] Schaper, M., 1999. Impactos Ambientales de los Cambios en la Estructura Exportadora en Nueve Países de América Latina y el Caribe: 1980 – 1995. CEPAL.

situation in developing countries.

d) Low levels of effective participation by citizens and relevant actors in environmental decision-making, mainly due to an increasing perception of environmental problems and the inefficiency of the authorities responsible for its management. Although improvements on this respect are evident in the countries the mechanisms of citizen participation and environmental education are still insufficiently assumed.

Along with establishing common challenges and limitations, it is important to leave record of the different environmental administration evolutions existent among the countries, manifested in certain relevant particularities, of which the following are notable:

- The challenge of ensuring the continuity of environmental institutionality at a national level in Argentina, where the crisis that the country is undergoing has caused the unworkability of the Ministry of Social Development and the Environment. This situation shall have particular incidence in the future promulgation and implementation of the Law on Minimum Environmental Budgets, actually under parliamentary consideration.
- The need to make new institutionality and national environmental legislation operative in Paraguay, rationalizing the administrative structures of the Secretariat of the Environment that is nurtured by human resources from other government departments with environmental competencies, and strengthening administrative capacities at national and municipal levels.
- The important impulse required to reinforce institutional capacities with competencies in environmental monitoring in Brazil, mainly in states and municipalities, and the availability of a national system of environmental information that allows public policy decision-makers to incorporate effectively the environmental dimension in the policies, plans and programs.
- The need to develop an integral administration of the coastal fringe in Uruguay, where 70% of the national population is concentrated, as well as several ventures on real estate, tourism and exploitation of coastal and marine natural resources.
- The challenge of having national policies and strategies to manage renewable natural resources and biodiversity conservation in Chile, as well as incorporating environmental variables in the strategic policies on national economic development (among other things, water resources, energy, mining, agro-industry, forest and fishing resources).

2. RESPONSES TO THE ENVIRONMENTAL CHALLENGES OF THE SUBREGION

The opportunities Southern Cone countries have to respond to challenges and make progress in achieving adequate national environmental administration in short, medium and long terms are related with: i) the development of environmental and sectoral policies that provide the means to insert environmental sustainability in public policies and decision-making; ii) the creation of efficient institutional arrangements aimed at facilitating compliance of legal mandates and strengthening capacities; iii) the implementation of technological innovations that strengthen environmental information systems; iv) the development and strengthening of environmental administration instruments; v) building up citizen participation and environmental education to incorporate relevant actors effectively in the environmental administration; and vi) the consolidation of the environmental administration in Mercosur, within the process of economic, political and territorial integration of the countries.

2.1. Development of Explicit Policies

The challenge of achieving sustainable and stable environmental policies requires efforts aimed at finding ways to reconcile environmental policy with economic and social policies, including the integration of their corresponding strategies and action plans at national, regional and municipal levels. This is particularly relevant for those countries that do not yet have explicit environmental policy documents, and which therefore require more effort to accomplish this goal.

Within this framework, identification has been made of at least three response mechanisms to undertake the lack of comprehensiveness, decentralization and participation in decision-making and in public policies in general. These are:

- The development and implementation of Strategic Environmental Evaluation as a tool to support decision-making in sectoral policies, plans and programs. Its use favors the assessment of environmental variables with respect to economic and social variables in these decisions.

- Making the decentralization process of environmental administration more expedite, starting from a strengthening based on convenient pilot experiences that lead to the development of specific policies. The countries need to undertake — through clear and explicit policies — topics on management of residues[15], territorial ordering[16], safe management of hazardous substances, energy plans, water resources integrated administration at the level of basins and incorporating mechanisms for the recovery and conservation of soils[17], among others[18].

- Development and implementation of follow-ups and evaluations on the performance of public environmental and sectoral policies, incorporating criteria and indicators on their impact and compliance, their participation procedures (citizen control), and their mechanisms for the extensive diffusion of processes.

2.2. Efficient Institutional Arrangements

It is easily verified that — concerning environmental in the countries — a high rotation of agents has been reported in virtue of the scant importance given to this topic, and above all, of the political culture inclined to make changes in their groups of administrators. Furthermore, when the countries' top authorities do no include the environmental topic among their administrative priorities, the processes to strengthen it tend to be transitory and subordinated to the government of the moment.

---

[15] Concerning this, the countries center efforts to confront this challenge on the adoption of modern residue treatment and disposal systems, and the promotion of strategies to recycle and minimize wastes.

[16] In the case of Uruguay, a key challenge is acknowledged concerning the need of have integral management policies on the coastal fringe that provide means to articulate the territorial ordering instruments with the development of sustainable projects on tourism, infrastructure and the use of coastal and marine natural resources.

[17] Concerning this, we recommend examining the analysis carried out by Jouravlev, A. (2001) in relation to the need to build up water administration systems in the countries of the region.

[18] It is important to stress that the revision of the countries' environmental priorities and achievements make evident the fact that the topic of sustainability of the fishing sector has not been adequately undertaken. The fishing sector in the countries is far from being sustainable, a fact that gives more relevance to this topic, making it one of the chief challenges on sustainable development.

In this context, having optimum institutional arrangements requires efforts aimed at incorporating the various actors — especially the Presidents and the economic and Treasury authorities — that ensure an adequate level of priority in the designations for resources.

The lack of interinstitutional articulation, coordination and cooperation prevent a solid strengthening of the global capacities of environmental institutionality. The main challenge on this matter lies in how to obtain more professionalization and intersectorality within the administration. Despite the fact that during the last years intersectoral coordination mechanisms have been multiplied — there are prominent examples on this effort —environment subject matters frequently remain enclosed within themselves, and no consideration is given towards involving these with other sectors. This fact gives more relevance on the need to undertake training processes related with administration and follow-up of projects and programs, and with strategic environmental planning capacities and management, no only of environmental agents, but also of — and perhaps with more urgency — sectoral decision-makers.

Finally, environmental institutionality requires capacities to carry out policies, particularly to improve monitoring that is still insufficient and weak, add specific equipment and ensure obtainment of financial resources necessary to develop these functions[19]. Along with this, it is necessary to give more impetus to the private sector — which must assume a central role in the environmental management of the productive sectors — by establishing mechanisms on incentives, promotion and public-private cooperation to meet environmental goals.

2.3. Technological Innovations

The countries' environmental organizations put computerization of institutions among their priorities, and except for some of them, they still lack consolidated information systems. Environmental information is incomplete, dispersed among different organizations, and in general inaccessible to those responsible for formulating policies. The challenge lies on how to create useful information systems that meet the countries' needs and requirements, and that have technological support that facilitate citizen access to basic information for decision-making.

Part of the answer lies in generating information with emphasis on environmental quality and frailty, and risks analysis. Among other possible mechanisms, it is necessary to increase the quantity and diversity of resources for environmental investigation, including aspects such as training and forming professionals, creating investigation centers, and promoting public – private cooperation, in order to make available all information generated by EIE processes, supervisions and relevant data.

Another part of the answer for this challenge is related to the form in which generated information is made available and expedite. This requires massive use of information and communication technologies through, for example, environmental information centers and Internet, the generation of indicators and improvements on access to information at municipal levels, where nowadays available capacities for these innovations are minimal with the sole

[19] An example of this situation is what happens in the countries' rural areas, where effects on the health of the population derived from exposure to agro-toxins urgently requires the realization of epidemiological studies and the application of environmental control and monitoring measures the provide the means to ensure its mitigation in good time.

exception of the big municipalities of the countries[20].

2.4. Development and Strengthening of Administration Instruments

In general, the countries have a set of environmental administration operating instruments, although with different degrees of implementation and development. The examination of advances in matters of instruments reinforces the notion of a marked tendency to use command and control instruments as central themes of environmental administration. One of the most notorious problems in all the countries is that systems like the Environmental Impact Evaluation are not used with their full potential and key objectives.

The main challenge in this matter is to make the available and operative instruments reach their maximum potential as effective tools to support decision-making and the sustainability of human actions. On the other hand, it is necessary to achieve the institutionalized adoption of other instruments that are in their initial implementation phases. The fundamental object of instruments is to serve making environmental policies operative. Therefore, they require an adequate legal, regulatory and procedural framework.

To respond to these challenges, at least four lines of action are identified:

- The implementation of follow-ups to verify the performance of already existent instruments so as to introduce the necessary adjustments and improvements to develop their maximum potential according to the realities of each country. Some verifiable instruments are, among others, environmental evaluations, decontamination plans, emission and environmental quality standards, and the information systems. It is important to stress that a reengineering of classical instruments may generate the need to count with support tools such as, for example, methodological guides that provide the means to advance in the incorporation of the environmental evaluation to policies, plans and programs, obtaining environmental standards adapted to national realities, and adaptation of environmental monitoring to implement it in small and medium-sized enterprises.

- Impulse to self-regulatory or self-administration instruments. These are already being applied in the sphere of certification. Each time a greater number of enterprises — particularly those qualified as big — incorporate concepts such as eco-efficiency to their work philosophy, accept the challenge of gaining the qualified reputation of “clean industry” and try to participate in environmental self-regulation. In one form or another, attention to environmental aspects begins to form part of all big enterprises and of an increasing number of medium, small and micro industry.

- Designing and implementing new instruments such as norms on certification[21], voluntary agreements, negotiable emission permits, the environmental insurance for damages to the

[20] In the Southern Cone opportunities have been identified for the development of public and private information networks among the countries to facilitate the dissemination and adoption of novel experiences and good practices associated with strategies to undertake urban and industrial environmental problems. This is particularly relevant at municipal and subnational government levels (regions, provinces and states), where there are concrete cases of possible environmental management to respond challenges, both within countries and among these.

[21] In this matter the countries face the acknowledge challenge of creating national standards for the certification of native forest and forest plantations in Argentina, Paraguay and Uruguay, and strengthen those advances already obtained in this respect in Brazil and Chile.

environment, economic assessment of resources and regulations, patrimonial accounts, clean production mechanisms, early citizen participation, environmental budgets and protected private areas[22].

- Promoting and giving impulse to alliances and public-private cooperation mechanisms and to instruments that advance performance of environmental goals. The need to boost associativeness as a fundamental work strategy to share administration capacities of public and private institutions also becomes more relevant, being able to contribute in this way to integral, consistent and efficient efforts.

2.5. Building Up Citizen Participation and Environmental Education

Although during the last ten years citizen awareness of the environmental topic has increased ostensibly, this new perception is not reflected in optimum participation levels. Some of the reasons for this situation are the deficient mechanisms to channel citizen concerns, no only for the environmental topic, but for all public policies in general. Another symptom is the low levels of access citizens have to environmental information, including that of institutions in charge of environmental administration in their countries.

The challenge lies in reverting these difficulties with a focus on the continuous improvement of effective citizen participation levels, both in the operation of administration instruments as well as in the generation of environmental initiatives with a strong component of the active presence of civil society civil.

Among the paths that may be explored, those mostly used in these countries stand out. The first sees to long-term objectives and corresponds to forming habits through formal and non-formal environmental education programs and creating social awareness on the topic, emphasizing the role of environmental decisions in the improvement of the quality of life.

The second path — short and medium-term objectives — is creating and strengthening those channels necessary for citizen participation in environmental administration, including adequate mechanisms for the prevention and resolution of conflicts. The need of strengthen participation programs at municipal levels becomes more relevant, since it is at this level where the most important interactions about quality of life and environment occur. For this, alliances may be sought with various organizations and social authorities to generate positive conducts that reinforce sustainability and get the community involved in the generation of policies, plans, programs and environmental projects, and in their follow-up and control.

Among the values citizens need to internalize in order to achieve adequate participation — whether through environmental education or through access to effective participation channels — are co-responsibility and proactive conducts to prevent or solve problems that affect environmental sustainability.

[22] Concerning this, the countries assign relevance to the generation of mechanisms and regulations for protected private areas, the report and systematization of information on significant species, and the development of biological corridors, among other things.

2.6. Consolidation of Environmental Administration in Mercosur

The vulnerability of Mercosur on problems that the States Parties may face (Argentina, Brazil, Paraguay and Uruguay), adds even more relevance to the challenge of advancing incorporating environmental administration in the processes of economic, political and territorial integration.

From the recent study carried out by von Moltjke and Ryan (2001)[23], a set of considerations are identified that would provide the means to consolidate environmental administration Mercosur, taking into account the difficulties associated with each one of them.

- Strengthening the role of the SGT-6 is required to achieve more articulation with the other Mercosur work subgroups through the substantive advance in the institutional consolidation and the intensification of mechanisms for civil society and scientific community participation to protect those integration achievements already attained.

- The emergence of environmental topics that require cooperation among the countries is acknowledged, such as management of shared ecosystems and natural resources, contamination problems across borders[24], administration of shared hydrographic basins, and environmental problems associated with large infrastructure projects[25], among others. The challenge lies in incorporating these topics in Mercosur's integration agenda and in establishing common environmental requirements applicable to the different stages of the projects[26,27].

- The disparate development of the countries on matters of environmental policies and institutions is acknowledged, a fact that makes the processes of formulation and adoption of mutual positions among the countries more difficult. While environmental problems are not priorities in the political agendas of each country, the same will occur at regional levels[28]. The challenge lies in generating a process of substantive improvement of the countries' national environmental administration systems, in such a way that they may face integration in a better way.

---

[23] Von Moltke, K. and D. Ryan, 2001. Medio Ambiente y Comercio: El caso de Mercosur y los Principios de Winnipeg (Environment and Trade: The Case of Mercosur and the Winnipeg Principles). Environment Division of the Sustainable Development Department of the Inter-American Development Bank (IDB). Washington, D.C., January 2001.

[24] An interesting precedent is the problem of acid rain in a large portion of Northern Uruguay due to the emissions of the Candiota thermoelectric plant (Brazil).

[25] Some projects are the Parana – Paraguay Waterway, the Colonia – Buenos Aires Bridge, and the Rio de la Plata gas pipeline, among others.

[26] This is also applicable for the case of mining projects within the framework of the Mining Treaty (Tratado Minero) between Argentina and Chile, where challenges arise concerning the criteria to carry out environmental impact studies, the applicability of both countries' environmental regulations and other related aspects.

[27] In this matter, consideration must be given to the environmental implications on the demand for transportation infrastructure within the framework of the Protocol of Physical Integration (Protocolo de Integración Física) entered upon between Chile and Mercosur, wherein both parties acknowledge potential impacts such as contamination, flora and fauna deterioration (barrier effects and destruction of ecosystems), and other effects induced by primary and secondary economic activities that may exert a negative effect on the environment. (Susaeta, 1998).

[28] Von Moltke and Ryan (2001) indicate that the development of the State Parties' environmental legislation and policy presents significant differences. While Brazil is the most advanced country in this matter, Argentina presents a certain degree of regulatory development, especially in some of its provinces; and Uruguay and Paraguay lesser degrees of legislative progress.

- The fact that many times Mercosur countries assume opposing or different stances on environmental topics in international forums is verified. To face this difficulty, it is necessary, among other things, to advance in the formulation of conjoint, proactive and creative positions in the multilateral negotiations on topics related to trade and the environment.

- The inadequate availability and access to the environmental information is acknowledged. This requires the intensification of scientific and technological cooperation among the countries so as to overcome national budgetary restrictions and the insufficient investigation applied to confront the subregion's environmental problems[29]. Likewise, the SGT-6 could assume a significant function by generating spaces to articulate and formulate actions for these topics in the subregional sphere.

- The initiative of formulating the project Mercosur Environmental Protocol becomes more relevant. This aspect is prominent within the sphere of environmental administration integration at a subregional level. However, a significant effort is required to define the compatibility of the policies and national environmental legislation. For this, the challenge lies in finding ways to implement and ensure compliance of the Mercosur environmental regulations, which could be undertaken by means of an adequate system for the solution of subregional environmental controversies and conflicts.

[29] In this sphere, more articulation and coordination between the Reunion Specialized in Science and Technology (Reunión Especializada en Ciencia y Tecnología - RECYT) and the SGT-6 is desirable.

CHAPTER V. BIBLIOGRAPHICAL REFERENCES

1. GENERAL BIBLIOGRAPHY

***BID, 1996**. Environmental Management in the Southern Cone: A Study on the Legal and Institutional Framework (ATN/II-5109-96). Background Studies. Inter-American Development Bank – December 1996.*

***BID, 1996** Environmental Management in the Southern Cone: A Study on the Legal and Institutional Framework (ATN/II-5109-96). Final Report. Inter-American Development Bank – December 1996.*

***Camilo Arriagada Luco, 2000**. Estado del Medio Ambiente en Areas Urbanas de América Latina y el Caribe (Informe Preliminar elaborado para el Programa GEO3).*

***CED / BID, 2001**. Revisión de la Evaluación de Impacto Ambiental en Países de América Latina y el Caribe. Metodología, Resultados y Tendencias. Centro de Estudios para el Desarrollo – Banco Interamericano de Desarrollo.*

***Espinoza, G. y M. Rodríguez, 2001**. Informe de Consultoría sobre Tendencias de la Gestión Ambiental en América Latina y el Caribe. Banco Interamericano de Desarrollo (BID), 1999 – 2001.*

***Jouravlev, A., 2001**. Administración del Agua en América Latina y el Caribe en el umbral del Siglo XXI. Serie Recursos Naturales e Infraestructura Nº27 de CEPAL. Santiago de Chile, julio de 2001.*

***Schaper, M., 1999**. Impactos ambientales de los cambios en la estructura exportadora en nueve países de América Latina y el Caribe: 1980 – 1995. Nº19 de la Serie Medio Ambiente y Desarrollo de CEPAL, Santiago de Chile.*

***Susaeta, E., 1998**. Mercosur: Implicancias Ambientales de la Demanda por Infraestructura. En: Revista Ambiente y Desarrollo Vol. XIV Nº2, pp. 18-24. Chile.*

***Von Moltke, K. y D. Ryan, 2001**. Medio Ambiente y Comercio: El caso de Mercosur y los Principios de Winnipeg. División de Medio Ambiente del Departamento de Desarrollo Sostenible. Banco Interamericano de Desarrollo (BID). Washington, D.C., enero de 2001.*

2. SPECIFIC BIBLIOGRAPHY

2.1. Argentina

***BID, 1993**. Argentina. Institutional Strengthening Program for Environmental Management (AR-0065) Loan Proposal. Document of the Inter-American Development Bank (1993).*

***Informe Nacional de la República Argentina a la Cumbre Mundial sobre Desarrollo Sustentable Río + 10**. Evaluación sobre el Estado de Aplicación de la Agenda XXI. Abril 2001.*

***Ministerio de Desarrollo Social y Medio Ambiente**. Programas de la Secretaría de Desarrollo Sustentable y Política Ambiental (www.desarrollosocial.gov.ar)*

***Roberto Ronchietto, 1997**. Subprograma C: Fondo Ambiental Nacional. Recursos Naturales y Desarrollo Sustentable.*

***Solicitud de Preinversión Proyecto Fondo Ambiental Nacional (1997)**. Ministerio de Economía y Obras y Servicios Públicos / Subsecretaría de Inversión Pública. Secretaría de Recursos Naturales y Desarrollo Sustentable / Subsecretaría de Desarrollo Sustentable. Buenos Aires, Argentina.*

2.2. Brasil

***Agenda 21 Brasileira: Bases para Discussao**. Versión febrero de 2000.*

***Agenda de Governo Bienio 2001-2002** (www.redegoverno.gov.br/AgendaPresidente/agenda.htm)*

***Agenda Nacional do Meio Ambiente 2001-2002**. Ministerio do Meio Ambiente / CONAMA (www.mma.gov.br/port/conama/agenda.html)*

***Brazil – Country Profile 1997**. Implementation of Agenda 21: Review of Progress made since the United Nations Conference on Environment and Development, 1992.*

***Gestao Ambiental no Brasil. Um Compromisso com o desenvolvimento sustentável**. Disco compacto interactivo – ECOM Ecología y Comunicaciones, Ministerio de Medio Ambiente del Gobierno Federal de Brasil. Octubre de 2001.*

***Marc J. Dourojeanni, 1997**. Areas Protegidas de América Latina: Problemas antiguos y nuevos, nuevos rumbos. En: Atas do I Congresso Brasileiro de Unidades de Conservaçao. Rede Nacional de Unidades de Conservaçao, Curitiba 1997.*

***MERCOSUL SGT 6 (Subgrupo de Trabalho Meio Ambiente)**. Ministério do Meio Ambiente (www.mma.gov.br/port/sqa/mercosul)*

***Paulo P. de Gusmao, 2000**. Desafíos y propuestas para la implementación más efectiva de instrumentos económicos en la gestión ambiental de América Latina y el Caribe: El caso de Brasil. Serie Seminarios y Conferencias. División de Medio Ambiente y Asentamientos Humanos. CEPAL. Santiago de Chile.*

***Programa Brasil Joga Limpo**. Ministério do Meio Ambiente (www.mma.gov.br/port/sqa/brasiljl)*

***Programa Nacional do Meio Ambiente II – PNMA II**. Diagnóstico da Gestao Ambiental no Brasil. Minstério do Meio Ambiente (www.mma.gov.br/port/se/pnma2)*

***Suzana Alvarenga Alves de Brito y Laura Lago, 2000**. Gestión Ambiental en Brasil. Programa Gestión Ambiental en América Latina y el Caribe: Buenas Prácticas y Tendencias Novedosas (ATN/SF-5955-RG) BID – CED.*

2.3. Chile

***14 Grandes Temas Ambientales que el País debe Abordar (Agenda Ambiental de "Una Política para el Desarrollo Sustentable")**. En: www.conama.cl*

***C. Sepúlveda, P. Villarroel, A. Moreira y D. García, 1998**. Catastro de Iniciativas Privadas en Conservación de la Biodiversidad Implementadas en Chile.*

***Chile, País que Produce Limpio**. Bases para la Política de Fomento a la Producción Limpia 2001 – 2005. Aprobada por el Consejo Nacional de Producción Limpia del Gobierno de Chile. Santiago, julio de 2001.*

***Diagnóstico del Impacto de Posibles Restricciones Ambientales sobre el Sector Exportador Chileno**. Estudio del proyecto "Desarrollo de la Institucionalidad del Medio Ambiente" CONAMA / BIRF 1995, financiado con préstamo 3529-CH del Banco Mundial.*

***Geisse y Sepúlveda, 2000**. Iniciativas privadas y política pública de conservación ambiental. Ambiente y Desarrollo Vol. XVI Nº3, septiembre 2000 (pp. 6-13).*

***Guillermo Espinoza y M. Ulloa, 2000**. Gestión Ambiental en Chile: ¿Qué tanto hemos avanzado?. Cuaderno 9 del Centro de Estudios para el Desarrollo (CED).*

***Ina-Marlene Ruthenberg, 2001**. Una década de gestión ambiental en Chile. Environmental Economics Series. Paper Nº82. The World Bank.*

***Informe País. Estado del Medio Ambiente en Chile 1999**. Centro de Análisis de Políticas Públicas – Area de Desarrollo Sustentable. Universidad de Chile.*

***Memoria Anual 2000**. Comisión Nacional del Medio Ambiente (CONAMA – Chile).*

***Nicola Borregaard y J. Leal, 2000**. Desafíos y propuestas para la implementación más efectiva de instrumentos económicos en la gestión ambiental de América Latina y el Caribe. El caso chileno. Serie Seminarios y Conferencias – CEPAL.*

***Pizarro, R. y P. Vasconi, 2001**. Contaminación Atmosférica en la Región Metropolitana. Publicaciones Terram, Análisis de Políticas Públicas Nº3, septiembre de 2001.*

2.4. Paraguay

***Agenda 21 Paraguay**. Septiembre 1998.*

***BID, 2000**. Hacia una Estrategia Ambiental Paraguay. Documento de Discusión Sectorial, Banco Interamericano de Desarrollo (BID). Julio de 2000.*

***BID, 2000**. Paraguay, Program to Support the National Environmental System. Loan Proposal (PR-0116). Document of the Interamerican Development Bank (2000).*

***CCA – Naciones Unidas y su visión conjunta de la situación de Paraguay**. Asunción, 8 de marzo de 2001.*

***Jorge Pinazzo, 2000**. Programa Apoyo para el Mejoramiento de la Gestión Ambiental en América Latina y el Caribe. Informe – País Paraguay. Cooperación Técnica ATN/JF-6618-RG BID-CED.*

***Perfil Socioambiental de Paraguay (1998-1999)**. Secretaría Técnica de Planificación. Dirección de*

Políticas Sociales y Ambientales. Gobierno de Paraguay.
***Susanna Hess-Kalcher, 2001**.Compendio de datos sobre medio ambiente en el Paraguay.*

2.5. Uruguay

***BID, 2001**. Programa de Apoyo a la Gestión Ambiental (UR-0128). Informe de Proyecto. Banco Interamericano de Desarrollo. Junio de 2001.*
CLAES 2001**. Informe Situación Ambiental del Uruguay**.
***CLAES, 1999**. Desarrollo Sustentable en Uruguay. Conflictos Ambientales y Políticas Públicas. Alain Santandreu en Temas Claves Nº7 del Centro Latinoamericano de Ecología Social – Uruguay, julio de 1999.*
***M. Cousillas, 2001**. El Desarrollo del Derecho Ambiental Nacional. Montevideo, octubre de 2001.*
***Memoria Anual 2000 del Gobierno de Uruguay**. Capítulo IV, Dirección Nacional de Medio Ambiente.*
***Uruguay, Perfil de País (1998)**. PNUD – UNESCO (Capítulo IV Situación Ambiental).*

* * *