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EXPENDITURES, INVESTMENT AND FINANCING FOR SUSTAINBLE DEVELOPMENT  
IN BRAZIL

This document was prepared by Carlos E. F. Young (IE/UFRJ) and Carlos A. Roncisvalle (MOG), under the Project ECLAC/UNDP "Financing for Environmentally Sustainable Development," to be used as an input for discussions at the Panel on Financing for Sustainable Development within the Regional Preparatory Conference of Latin America and the Caribbean for the World Conference on Sustainable Development. The views expressed herein are those of the author and do not necessarily reflect the views of the Organization. This document has been reproduced without formal editing.

## Executive summary

The objective of this study is to examine the evolution and characteristics of the financing for the environment in Brazil, in order to identify the advances and retreats after the Rio 92 Conference. Brazil has a very decentralised administration, composed of three independent levels of public administration: the federal government, 27 state governments, and more than 5000 “municípios,” or municipalities; all of them with specific environmental institutions. However, there are no indicators that aggregate information from these different institutional levels. Thus, this study is a first effort to generate this kind of figures. Given the very short time for its completion, the main priority was to identify the resource flows from the federal government and some selected states. Efforts to estimate the spending on pollution control and other environmental activities by the private sector were also done. In addition, the issue of sources of funding is also discussed.

Despite many methodological problems involved in the elaboration of these indicators, it was possible to identify trends and conclusions for the environmental spending. At the federal government level, it was estimated that environmental expenditures were between 0.5% and 1% of the federal spending. Another important finding was that, although there was an official commitment to increase efforts in this area after the Rio 92 Conference, the overall federal government expenditures in environmental issues did not increase during the 1993-2000 period. Moreover, a matter of concern was the declining quality of this spending, with fewer resources directed to end-activities and more money diverted to means-expenditures. An important cause of this was the increasing share of debt related expenditures (interests and amortisation) in the total budget. On the other hand, investments suffered cutbacks, particularly in the more recent period, and the expenditures in personnel fell systematically about 25% in constant prices during the second half of the nineties.

Environmental projects are the most important single element in international cooperation agreements. However, the flow of foreign resources presented a declining trend since 1994, oscillating between 6% and 17% of the total expenditures. Most of these resources come from external credit operations (loans), which means that in the long term, they represent an extra pressure of financial expenses in the budget. The proportion of international donations/total expenditures in 2000 fell to the lowest level in the series (2.0%), clearly indicating the decline of international support for environmental projects in Brazil.

There is a clear need to generate aggregate figures for the states and *municípios*. The methodologies used for public budgeting and expenditure control vary widely, making it impossible to supply compatible aggregate numbers. In the three states that were studied (São Paulo, Paraná and Rio Grande do Sul), there was no consistent trend of increasing expenditures on environmental objectives. The problem of separating sanitation and water supply efforts complicated even more the results from the analysis. However, with or without water management expenditures, the trends were not very different. The estimated range of environmental spending oscillated between 1% and 3% of the total state budget. It was not possible to estimate the expenditures by the *municípios*, but a rough calculation of

waste collection and disposal costs, the most characteristic municipal environmental activity, was of R\$ 1.8 billion per year.

Another gap that needs to be fulfilled refers to the private sector environmental spending. There were positive signals which indicated that the private sector is getting more concerned with the environmental issues, particularly those agents that have interests/responsibilities at the international level. It was calculated that the environmental spending of the industry sector was around R\$ 160 million per year, slightly less than 1% of its value added. Although it is expected that this number will increase in the future, it is considerably lower than the public sector spending on environmental issues.

Most of the funding for environmental projects comes from the government (mainly federal, through BNDES), international development agencies, or from companies' own resources. The private financial sector has a minor role on the financing of environmental expenditures but, again, there were signals of positive changes, with the creation of innovative private funds specialised in environmentally friendly projects that combine financial and "green" interests as an example. The consolidation of economic instruments in international environmental agreements, particularly the Kyoto Protocol on greenhouse gases emissions, may accelerate this new financial market.

Another potential source of funding for environmental projects is connected to the implementation of economic instruments in the environmental management system. Command-and-control procedures, such as licensing and emission standards, largely dominate the environmental regulation in Brazil. However, some interesting experiences, such as the "green" tax rebound (*ICMS verde*) and the recent changes in the water resources policy adopting the user/polluter-pays principle, indicate that the role of economic instruments will increase and, consequently, that there is potential for developing self-sustained financial mechanisms to sponsor environmental expenditures.

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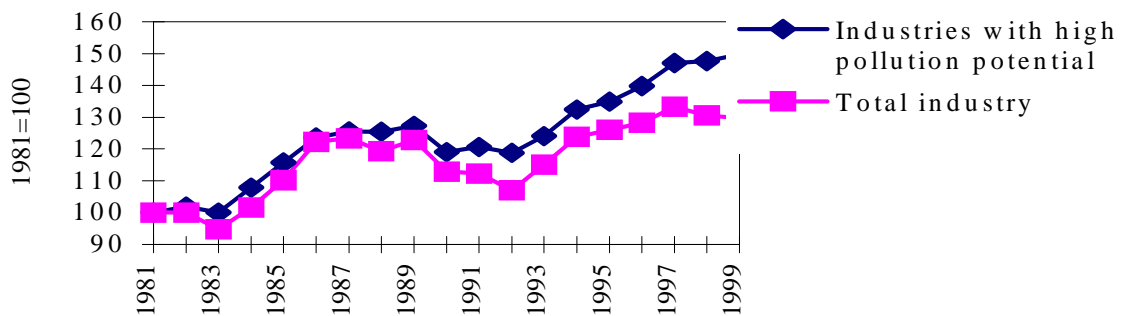
## 1. Introduction

Until the Rio 92 Conference, the environmental question in Brazil was mainly seen as antagonistic to the objective of economic growth. The adoption of pollution control procedures and other environmental measures were considered ones that increased production costs, thus reducing the international competitiveness of the economy. The lax environmental controls were even used by some policy makers as an incentive to attract emission intensive industries. Only after the occurrence of serious environmental disasters, such as the several health problems around the Cubatão industrial area (in the state of São Paulo) in the mid 1980s, there was more political interest for the adoption of more effective controls.

This traditional lack of importance has resulted in the absence of statistics concerning environmental issues in Brazil. Therefore, it is extremely difficult to generate aggregate figures, such as the volume of financial resources devoted to environmental improvements.<sup>1</sup> Sometimes the only possible way to provide an estimate is through indirect proxies, with evident costs to the credibility of the analysis.

On the other hand, the Brazilian economy is facing increasing environmental challenges. One of the few aggregate environmental indicators produced by the Brazilian Institute of Geography and Statistics (IBGE) is the industrial output growth according to a pollution potential classification. Graph 1.1 and Table 1.1 clearly show that the most dynamic industrial activities are the group with higher pollution potential.

**Graph 1.1 – Industrial output according to the pollution potential, Brazil, 1981/99  
(1981 = 100)**



Source: IBGE

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<sup>1</sup> The Brazilian Ministry for the Environment (MMA) is aware of this problem, and has been acting on the elaboration of a national system of environmental indicators with the collaboration of the Brazilian Institute of Geography and Statistics (IBGE). The recent creation of the Council for Environmental Statistics is an example of these efforts. However, results will appear only in the medium and long term, thus not being available for this study.

**Table 1.1. Industrial output according to the pollution potential, Brazil, 1981/99  
(1981 = 100)**

Year	Industries with high pollution potential	Total industry
1981	100	100
1982	101,9	100
1983	100,1	94,8
1984	107,9	101,6
1985	115,8	110,2
1986	123,6	122,3
1987	125,5	123,3
1988	125,4	119,3
1989	127,3	122,8
1990	119,1	112,9
1991	120,7	112,3
1992	118,8	107,1
1993	124,1	115,1
1994	132,4	123,8
1995	134,9	126,1
1996	139,8	128,3
1997	147	133,3
1998	147,6	130,6
1999	149,7	129,7

**Source:** IBGE

These results are confirmed by many empirical studies that show that the Brazilian industrial exports have an increasing concentration of “dirty” products in its composition (Young 1997, 1998, 2001). Other problems are the delay in the implementation and lack of enforcement of environmental standards and controls, and the incentives that were given to the expansion of natural resource activities.

Pollution problems are also the consequence of consumption patterns. Air emissions from cars and other mobile sources are a major problem in metropolitan areas, particularly São Paulo where car restriction measures (*rodízio*) have been in place since 1995. The lack of adequate sanitation results in major water pollution problems in urban areas, caused by household and other discharges. The same is valid for waste disposal: according to IBGE, 20% of the household waste is not collected, and only a minor fraction of the collected waste is destined to proper disposal facilities.

The situation in the “green” agenda is also a problematic one. Deforestation trends have not been controlled yet, as shown by the analysis of satellite images. Table 1.2 shows the most recent data for deforestation in the Amazon, where the average annual deforestation increased in the second half of the 1990s. Table 1.3 presents the loss of Atlantic forest (*Mata Atlântica*) in the states of the Southeast and South regions. As it

shows, there was a decrease in the absolute level of deforestation. However, this must be counterbalanced by the fact that what remained of the Mata Atlântica rainforest in 1995 was less than 10% of its original cover.

**Table 1.2. Deforestation in the Brazilian Amazon, 1989-1994**

State	Deforested area,1989/94 (1000 ha)	Deforested area,1994/99 (1000 ha)
Acre	226	307
Amapá	74	23
Amazonas	304	488
Maranhão	368	635
Mato Grosso	2401	3400
Pará	2106	3426
Rondônia	1026	1322
Roraima	136	115
Tocantins	218	214
Brazilian Amazon	6858	9929

**Source:** Instituto Nacional de Pesquisas Espaciais website (www.inpe.br)

**Table 1.3. Deforestation in Mata Atlântica, Southeast and South regions, 1985-1995.**

State	Deforested area, 1985-90 (1000 ha)	Deforested area, 1990-95 (1000 ha)	% of remaining forest relatively to the original cover
Espírito Santo	22	29	10,3%
Rio de Janeiro	165	22	11,0%
Minas Gerais	69	93	3,9%
São Paulo	76	64	9,0%
Paraná	157	79	10,5%
Santa Catarina	106	59	21,4%
Rio Grande do Sul	57	49	6,7%
Total	652	395	n.a.

**Source:** Fundação SOS Mata Atlântica, Instituto Nacional de Pesquisas Espaciais and Instituto Socioambiental (1998)

The environmental management system is heavily based on a fading public sector, which faces a continuous crisis of resources constraint, absence of motivation and technical capability to deal with the growing demand for a better environment. From this pessimistic perspective, the Rio 92 Conference was an isolated moment, and the intentions declared at that time were nothing else than empty promises.

But there are also good news. It is unquestionable that the private sector is changing its attitude towards the environment. The press has chosen the environment as one of the day-by-day issues covered by the news, the public opinion has also become more aware of the need of a better quality of life in all aspects, and politicians are being forced to consider this in the “realpolitik.” In other words, there are solid reasons to become optimistic about the future. However, for these changes to effectively take place, the availability of financial resources to allow for environmental improvements is crucial.

The objective of this study is to examine the evolution and characteristics of the financing for the environment in Brazil, in order to identify the advances and retreats after the Rio 92 Conference. Since this study had to be completed in a very short period of time, the main priority was to identify the resource flows from the federal government, carried out in section 2. Section 3 deals with data from selected states. Section 4 emphasises the role of private sector in the adoption of environmental investments. Section 5 presents two case studies of private sources of funding for environmental projects. Finally, section 7 presents the main conclusions of the study.

## **2. Federal government expenditures**

### **2.1. Methodological issues**

Although Brazil has a decentralised administration, composed of three independent levels (federal, state, and *municípios*), most of the official environmental programmes are conducted by the federal government. For this reason, and because of the methodological differences in the budgets for every Brazilian state that would require more time and effort than the ones available for this study, we decided to focus on the environmental expenditures of the federal government. We strongly recommend a more long-term study, in the same lines as this one, in order to provide a better view of the environmental expenditures in the state and municipal levels.

However, despite the relative centralisation of data concerning the federal government, tracking these expenditures is not an easy task. First of all, it is very difficult to build up a methodologically consistent time series for the environmental expenditures of the Brazilian federal government because of the many changes in the administrative system and in the budgetary procedures during the 1993/2001 period. For the purpose of this study, it was better to divide the whole period in two different stages: 1993/99 and 2000/01.

Regarding the 1993/99 period, the most disaggregate level of information can be obtained by the “sub programmes” classification of the federal government. Under this classification, one activity can be classified as “environmental” if the sub programme it belongs to has an environmentally related goal, even though the specific nature of the activity is not directly related to an environmental procedure. The following sub programmes were considered as “environmental activities:”



**Table 2.1. Sub programmes considered as environmental activities, 1993/99**

Sub programme code	Sub programme name
0059	Environmental inventories/surveys
0103	Fauna and flora protection
0104	Reforestation
0105	Soil conservation
0106	Botanic gardens and zoos
0296	Hydrological studies
0448	Sanitation (general)
0456	Pollution control <sup>1</sup>

1. This includes nuclear security, disposal and management of radioactive residuals, environmental control of mining activities, control of fires in forest areas, and measures to control air and water pollution.

The “Pluriannual” Plan, presented in 1999 for the 2000/3 period, introduced important changes in the methodology of the budget. Since then, the classification of environmental activities can be directly associated to the sub functions presented in the budget. This is an advantage, since expenditures are directly connected to their immediate objective, thus allowing the consideration of environmental activities in programmes that are not directly targeted to environmental objectives. Table 2.2. presents the list of the sub functions that were considered as environmental activities in this study.

**Table 2.2. Sub functions considered as environmental activities, 2000/1**

Sub function code	Sub function name
511	Basic rural sanitation
512	Basic urban sanitation
541	Environmental preservation and conservation
542	Environmental control
543	Recuperation of degraded lands
544	Water resources

Using these classifications, it was also possible to identify the expenditures of environmentally related activities taken outside the Ministry for the Environment for the 1993/2001 period. These include expenditures taken in the following Ministries:

- Agriculture
- Planning, Budget and Public Administration

- Defence
- Mines and Energy
- Transportation
- Science and Technology
- Education
- National Integration
- Health
- Development, Industry and Foreign Trade
- Presidency of the Republic

The analysis of the expenditures of the Ministry for the Environment (MMA) is complicated because of the changes in its structure, with the inclusion/exclusion of many different areas. The most important alteration happened in the 1995/99 period, when the Ministry for the Environment was also responsible for the management of water resources, including the federal programmes for irrigation (sub programme 0077) and water supply (sub programme 0447). In order to allow for methodological consistency in the series, these expenditures were not considered in the analysis. All the remaining sub programmes of the agencies listed below were included in the analysis:

- Direct administration/MMA
- Brazilian Institute for the Environment and Renewable Resources (IBAMA)
- National Environmental Fund (FNMA)
- National Water Agency (ANA)

This problem of separating water supply from sanitation is a major methodological issue for state data as well, since they are traditionally treated together in administrative terms. Almost all of the companies responsible for these services are state-owned (or recently privatised) and the budgetary information cannot be easily disaggregated between both functions.

Another problem is that the Ministry includes under its structure some regional development agencies that are not directly related to environmental protection. For this reason, the agencies listed below were excluded from the analysis:

- National Department for Drought Emergencies (DNOCS)

- São Francisco Valley Company Development Company (CODEVASF)
- Barcarena Development Company

These agencies' areas of action are mostly concentrated in the Northeast region. Since it is possible that part of the environmental expenditures are "hidden" in other categories of expenditure by these institutions, the final outcome may result in the underestimation of the environmental expenditures in the Northeast region.

It is very important to differentiate the "authorised expenditures," which refer to the forecasts of expenditures that are allocated in the budget, from the expenditures that effectively took place ("valores liquidados," in the official terminology). It was possible to obtain consistent series for both categories for the federal government, and there could be considerable differences between the two series.

The year average of the general price index for domestic goods (IGP-DI), estimated by the Getúlio Vargas Foundation, was used to produce time series with constant prices. It was obtained through the arithmetic average of the month indices, and for 2001 a forecast of 7,94% was used for the year inflation. Table 2.3 presents the price deflators used to achieve constant price series.

**Table 2.3. Price Deflators (based on the IGP/FGV)**

Year	1993 <sup>1</sup>	1994	1995	1996	1997	1998	1999	2000	2001
Deflator	0,022186	2,743621	1,718562	1,547134	1,434586	1,38616	1,245015	1,094422	1

1. Currency at the time: cruzeiros.

## **2.2. Analysis of federal government budget and expenditures in the 1992-2000 period**

Table 2.4 presents the data of the authorised environmental expenditures in the 1993/2001 period, while table 2.5 shows the effective environmental expenditures (in 1993 and 1994 only the expenditures of the MMA were considered). It is clear that the proportion of these expenditures compared to the total federal expenditures is extremely low, showing that the amount destined to environmental disbursements has barely followed the overall spending of the federal government.

**Table 2.4 Authorised expenditures in environmental activities in the Federal Budget, 1993/2001 (in R\$ 1.000, average prices of 2001)**

Year	A. Direct Administration	B. IBAMA	C. FNMA	D. ANA <sup>1</sup>	E. Total MMA (A+B+C+D)	F. Other Ministries <sup>2</sup>	G. Total (E+F)	% of Federal Budget
1993	147.459	587.453	16.435		751.346	913.877	1.665.223	0,5%
1994	375.058	409.876	22.158		807.092	956.520	1.763.612	0,4%
1995	376.497	609.881	19.634		1.006.012	954.555	1.960.567	0,7%
1996	544.903	537.838	16.181		1.098.921	54.449	1.153.370	0,5%
1997	526.745	546.971	14.346		1.088.062	77.028	1.165.090	0,4%
1998	688.635	560.613	20.104		1.269.352	36.207	1.305.560	0,4%
1999	418.005	483.823	9.786		911.614	50.662	962.276	0,3%
2000	361.233	585.842	29.861		976.937	1.001.132	1.978.068	0,7%
2001	355.767	562.085	46.200	243.291	1.207.343	2.639.219	3.846.562	1,4%

**Source:** Own elaboration using SIAFI data

1.ANA was created in 2000.

2.There was no time to get the information (the electronic system of data recovery was established in 1995, before that data collection was done manually).

**Table 2.5. Effective expenditures in environmental activities in the Federal Budget, 1993/2001 (in R\$ 1.000, average prices of 2001)**

Year	A. Direct Administration	B. IBAMA	C. FNMA	E. Total MMA (A+B+C)	F. Other Ministries	G. Total (E+F)	% of Federal Budget
1993	38.410	414.858	9.671	462.939			
1994	132.137	360.942	10.022	503.100			
1995	113.254	516.420	12.272	641.946	29.549	671.494	0,3%
1996	311.180	474.489	12.884	798.553	42.241	840.795	0,4%
1997	372.430	469.212	9.791	851.433	60.658	912.091	0,4%
1998	492.516	478.521	4.799	975.836	29.652	1.005.488	0,4%
1999	356.283	430.652	5.595	792.529	42.764	835.293	0,3%
2000	247.926	459.122	13.671	720.719	577.971	1.298.690	0,5%

**Source:** Own elaboration using SIAFI data

At first sight, table 2.4 suggests an upgrade of the authorised expenditures from around 0.5% to 1.4% of the total budget. This is due to the methodological changes for the 2000 and 2001 budgets, when the category used for building up the time series was the sub

functions instead of sub programmes, thus allowing the inclusion of environmentally related expenditures in programmes that are not directly targeted towards environmental goals. Therefore, examining the performance of the effective expenditures, the percentage over the total has not exceeded 0.5% and the average between 2000/1 (0.4%) is basically the same as in the previous period.

There is a consistent difference in the proportion of authorised and effective expenditures relatively to their totals: the former is always higher than the latter in a proportion oscillating between 62% and 86%. The analysis of the type of expenditure that was authorised but did not become effective shows that the probability of this happening with investments is much higher than with financial or personnel payments. The consequence is that the share of end-activities in the total spending is reduced, while a higher proportion of resources is allocated to mean-activities.

The situation has worsened after the adjustment measures agreed with the International Monetary Fund (IMF) after the exchange rate crisis in early 1999. As shown by a study of the Institute of Socioeconomic Studies (Viana Jr. *et al* 2000), the federal government prefers to concentrate in environmental programmes (and other social activities) the financial cutbacks that are required to the maintenance of a fiscal surplus. A more recent study by INESC (Melo 2001) shows that, between 1999 and the first semester of 2001, the accumulated primary fiscal surplus (i.e., excluding the payment of interests from the public debt) was R\$ 79 billion. All the payments concerning the public debt were fully respected: in the first semester of 2001, about 35% of the authorised expenditures concerning interest payments had already been spent. In contrast, the 125 programmes of social and economic interest, comprising 34% of the total budget, presented an execution of less than 5% of the authorised expenses. This is also confirmed by the results of a study by the Ministry of Budget and Planning (MOG), reported in *Folha de São Paulo* (19 Aug 2001), which shows that the strategic programmes of the government were frozen because of budget reasons, and less than 20% of the authorised budget was spent in the first half of the year. For example, the programme for the control of deforestation and forest fires presented an execution rate (effective expenditures as % of the authorised budget) of only 21.5%, and the programme for natural parks in Brazil had an execution rate of only 5.4%. In contrast, the overall spending of the government in the first semester of 2001, including the payment of interests and other current expenditures, was 42.5% of the total authorised budget.

Therefore, in spite of the increases in authorised environmental expenditures in the federal budget, the aggregate level of effective payments remains basically the same as in the early nineties. This shows that the theoretical commitment to sustainable development assumed by the Brazilian government has not resulted in more resource allocation towards environmental (and social) objectives, particularly in the late 1990s and early 2000s.

The problem of financial restrictions for environmental purposes is better understood if the expenditures presented above are classified as current expenditures (including payments to employees and interests) or capital expenses (including investments and amortisation). Tables 2.6 and 2.7 present the data for the effective spending of MMA (direct administration, IBAMA and FNMA) in the 1993/2000 period.

**Table 2.6. Effective environmental expenditures (MMA) according to their nature, 1993/2000 (in R\$ 1.000, average prices of 2001)**

Year	1993	1994	1995	1996	1997	1998	1999	2000
MMA total	462.939.151	513.011.289	641.945.527	798.553.312	851.433.309	975.835.967	792.528.945	720.757.180
Current expenses	350.402.613	446.910.949	574.056.387	591.159.428	598.882.562	614.945.138	600.614.198	557.814.071
Personnel	184.255.115	255.087.268	382.434.610	355.327.197	329.408.612	331.583.705	325.575.334	283.048.435
Interests	5.317.059	8.085.560	9.080.695	9.360.819	25.265.343	23.920.251	36.756.402	16.863.009
Other current expenses	160.830.439	183.738.121	182.541.082	226.471.412	244.208.607	259.441.183	238.282.462	257.902.627
Capital expenses	112.536.539	66.100.340	67.889.140	207.393.885	252.550.747	360.890.829	191.914.747	162.943.109
Investment	72.157.159	51.595.889	44.881.867	173.127.787	171.884.187	281.570.147	72.348.808	125.913.811
Financial outlays	35.491.162	5.272.221	4.207.040	12.932.201	2.594.789	-	10.723.746	12.343.665
Amortization	4.888.218	7.877.783	18.800.232	21.333.896	75.918.216	79.320.682	108.842.194	24.685.634
Other capital expenses	-	1.354.446	-	-	2.153.555	-	-	-
Direct administration	38.410.133	132.136.712	113.254.081	311.180.050	372.430.375	492.516.481	356.282.504	247.925.820
Current expenses	27.675.086	83.952.515	72.357.910	132.482.456	139.137.403	149.298.840	181.589.270	139.621.341
Personnel	2.075.194	3.238.438	7.045.552	9.088.847	11.552.044	13.935.148	14.276.931	14.565.986
Interest	5.317.059	8.085.560	9.080.695	9.360.819	25.265.343	23.920.251	36.756.402	16.824.595
Other current expenses	20.282.833	72.628.517	56.231.663	114.032.790	102.320.016	111.443.441	130.555.937	108.230.760
Capital expenses	10.735.047	48.184.196	40.896.171	178.697.594	233.292.972	343.217.641	174.693.234	108.304.479
Investment	5.824.947	38.949.160	22.004.168	157.363.698	157.374.756	263.896.959	65.851.040	83.742.200
Financial outlay	21.881	2.807	91.771	-	-	-	-	-
Amortization	4.888.218	7.877.783	18.800.232	21.333.896	75.918.216	79.320.682	108.842.194	24.562.279
Other capital expenses	-	1.354.446	-	-	-	-	-	-
IBAMA	414.858.306	370.852.918	516.419.623	474.489.031	469.211.574	478.520.820	430.651.686	459.159.930
Current expenses	315.736.603	355.257.142	493.033.568	448.889.739	451.034.158	461.873.532	414.054.644	408.884.121
Personnel	182.179.921	251.848.830	375.389.058	346.238.350	317.856.569	317.648.557	311.298.403	268.482.449
Interest								

	-	-	-	-	-	-	-	38.414
Other current expenses	133.556.682	103.408.313	117.644.509	102.651.389	133.177.590	144.224.975	102.756.241	140.363.258
Capital expenses	99.121.703	15.595.775	23.386.055	25.599.292	18.177.416	16.647.289	16.597.042	50.275.809
Investment	63.652.423	10.326.361	19.270.786	12.667.091	13.429.072	16.647.289	5.873.296	37.808.790
Financial outlay	35.469.280	5.269.415	4.115.269	12.932.201	2.594.789	-	10.723.746	12.343.665
Amortization	-	-	-	-	-	-	-	123.354
Other capital expenses	-	-	-	-	2.153.555	-	-	-
<b>FNMA</b>	<b>9.670.712</b>	<b>10.021.660</b>	<b>12.271.823</b>	<b>12.884.231</b>	<b>9.791.360</b>	<b>4.798.666</b>	<b>5.594.755</b>	<b>13.671.430</b>
Current expenses	6.990.924	7.701.292	8.664.910	9.787.232	8.711.001	3.772.767	4.970.284	9.308.609
Other current expenses	6.990.924	7.701.292	8.664.910	9.787.232	8.711.001	3.772.767	4.970.284	9.308.609
Capital expenses	2.679.789	2.320.368	3.606.913	3.096.998	1.080.360	1.025.899	624.471	4.362.821
Investment	2.679.789	2.320.368	3.606.913	3.096.998	1.080.360	1.025.899	624.471	4.362.821

Source: Own elaboration using SIAFI data

**Table 2.7. Environmental expenditures (MMA) according to their nature, 1993/2000 (in %)**

Year	1993	1994	1995	1996	1997	1998	1999	2000
MMA total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Current expenses	75,7%	87,1%	89,4%	74,0%	70,3%	63,0%	75,8%	77,4%
Personnel	39,8%	49,7%	59,6%	44,5%	38,7%	34,0%	41,1%	39,3%
Interest	1,1%	1,6%	1,4%	1,2%	3,0%	2,5%	4,6%	2,3%
Other current expenses	34,7%	35,8%	28,4%	28,4%	28,7%	26,6%	30,1%	35,8%
Capital expenses	24,3%	12,9%	10,6%	26,0%	29,7%	37,0%	24,2%	22,6%
Investment	15,6%	10,1%	7,0%	21,7%	20,2%	28,9%	9,1%	17,5%
Financial outlay	7,7%	1,0%	0,7%	1,6%	0,3%	0,0%	1,4%	1,7%
Amortization	1,1%	1,5%	2,9%	2,7%	8,9%	8,1%	13,7%	3,4%
Other capital expenses	0,0%	0,3%	0,0%	0,0%	0,3%	0,0%	0,0%	0,0%
Direct administration	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Current expenses	72,1%	63,5%	63,9%	42,6%	37,4%	30,3%	51,0%	56,3%
Personnel	5,4%	2,5%	6,2%	2,9%	3,1%	2,8%	4,0%	5,9%

Interest	13,8%	6,1%	8,0%	3,0%	6,8%	4,9%	10,3%	6,8%
Other current expenses	52,8%	55,0%	49,7%	36,6%	27,5%	22,6%	36,6%	43,7%
Capital expenses	27,9%	36,5%	36,1%	57,4%	62,6%	69,7%	49,0%	43,7%
Investment	15,2%	29,5%	19,4%	50,6%	42,3%	53,6%	18,5%	33,8%
Financial outlay	0,1%	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	0,0%
Amortization	12,7%	6,0%	16,6%	6,9%	20,4%	16,1%	30,5%	9,9%
Other capital expenses	0,0%	1,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
<b>IBAMA</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>
Current expenses	76,1%	95,8%	95,5%	94,6%	96,1%	96,5%	96,1%	89,1%
Personnel	43,9%	67,9%	72,7%	73,0%	67,7%	66,4%	72,3%	58,5%
Interest	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Other current expenses	32,2%	27,9%	22,8%	21,6%	28,4%	30,1%	23,9%	30,6%
Capital expenses	23,9%	4,2%	4,5%	5,4%	3,9%	3,5%	3,9%	10,9%
Investment	15,3%	2,8%	3,7%	2,7%	2,9%	3,5%	1,4%	8,2%
Financial outlay	8,5%	1,4%	0,8%	2,7%	0,6%	0,0%	2,5%	2,7%
Amortization	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Other capital expenses	0,0%	0,0%	0,0%	0,0%	0,5%	0,0%	0,0%	0,0%
<b>FNMA</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>
Current expenses	72,3%	76,8%	70,6%	76,0%	89,0%	78,6%	88,8%	68,1%
Other current expenses	72,3%	76,8%	70,6%	76,0%	89,0%	78,6%	88,8%	68,1%
Capital expenses	27,7%	23,2%	29,4%	24,0%	11,0%	21,4%	11,2%	31,9%
Investment	27,7%	23,2%	29,4%	24,0%	11,0%	21,4%	11,2%	31,9%

**Source:** Own elaboration using SIAFI data

Table 2.8 presents the distribution of expenditures according to their area. Due to the methodological changes in the classification of expenditures, it is not possible to compare these values to previous figures.



**Table 2.8. MMA expenditures according to the sub functions classification, 2000  
budget**

Expenditure Sub function	Total MMA		Direct administration		IBAMA		FNMA	
	Authorised	Effective	Authorised	Effective	Authorised	Effective	Authorised	Effective
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
General administration	22,3%	29,3%	7,6%	10,6%	32,5%	40,2%	0,0%	0,0%
Social security contribution	10,3%	14,0%	0,3%	0,4%	17,0%	21,7%	0,0%	0,0%
Sanitation	0,6%	0,2%	1,7%	0,6%	0,0%	0,0%	0,0%	0,0%
Environmental preservation and conservation	31,2%	22,0%	33,2%	33,3%	27,5%	14,2%	77,7%	79,8%
Environmental control	3,0%	3,2%	3,4%	3,4%	2,5%	2,9%	8,6%	9,5%
Recuperation of degraded lands	5,8%	6,4%	0,2%	0,3%	9,6%	9,8%	0,0%	0,0%
Water resources	10,8%	9,3%	27,6%	25,9%	0,3%	0,3%	13,7%	10,8%
Scientific development & diffusion	0,8%	0,8%	1,5%	1,4%	0,4%	0,5%	0,0%	0,0%
Tourism	3,0%	2,0%	5,1%	4,5%	2,0%	0,8%	0,0%	0,0%
Payment of debt services	9,0%	9,4%	16,8%	16,7%	4,7%	5,8%	0,0%	0,0%
Others	3,1%	3,5%	2,7%	3,0%	3,5%	3,8%	0,0%	0,0%

**Source:** Own elaboration using SIAFI data

The tables above show that administrative costs, payments to the social security system, financial operations (interests and amortisation) and other “mean-activities” consume a considerable share of the resources originally allocated to environmental expenditures. This means that the “real” allocation of resources to the assignment of environmental objectives is considerably lower than the one expressed in tables 2.4 and 2.5.

This financial burden increased in the late 1990s. In 2000, the payment of debt services reached almost 10% of the total expenditures of the selected sub functions. On the other hand, the spending destined to personnel and investments suffered a decline during the period. The federal government policies of adjusting the public deficit through the reduction of real wages paid in the public sector and not allowing pay rises since 1995, have resulted in the decline of the payments to personnel in real terms. Indeed, the payments to personnel in 2000 were a little less than three quarters of the payments in 1995. Of course this has important consequences in the quality of the services provided by the federal environmental agencies, as well as in the public sector as a whole.

The lack of attractiveness of public sector wages results in the loss of competent people who migrate to the private sector, international agencies or NGOs. In practical terms, the way that all Ministries have been bypassing this restriction is through the hiring of consultants via special agreements with development agencies, particularly the United Nations Development Programme. The mechanism is a triangle operation, in which the federal government provides the resources to the international agency to hire the consultant that will be working for the government. Even though this provides great flexibility, the problem is the lack of control and continuity of this kind of hiring process, and the already referred increase in the financial component of the expenditure.

The trend of investment expenditures is similar. After a declining trend in the 1993/95 period, there was a substantial rise in 1996. However, after this peak, the effective expenditures on investment declined steadily.

The budget for 2001 forecasts another important increase in investments, but this is due to the recently created National Water Agency (ANA), which will centralise the resources for water management that were dispersed among other Ministries. The high concentration of civil engineering works, such as dams, channels, pipelines, etc., explains why more than half of the authorised expenditures were assigned to investments in 2001. However, it is very likely that only a minor part of these resources will be effectively used, given the current Brazilian fiscal crisis.

It was not possible to identify the regional allocation for most of the expenditures, since around 80% of it was classified as “national.” For the remaining spending that could be classified according to the regions, there is a strong concentration in the North Region (which is entirely in the Amazon and covers almost half of the Brazilian territory) and in the Southeast Region (the most densely populated). Indeed, about 40 % of these expenses were located in the North Region, typically in forest conservation projects. The other three regions (Northeast, Centre-West and South) had a share of the expenditures below their shares of population or territory. This is an evidence of the unbalance between forest conservation and other environmental objectives in the definition of priorities in the federal government: the “green” agenda receives far more importance than urban environmental issues.

**Table 2.9. Regional distribution of expenditures**

Region	Area Km <sup>2</sup> (% of total)	Population 2000 (% of total)	Authorised expenditures 2000 (% of total regional expenditures)	Effective expenditures 2000 (% of total regional expenditures)	Authorised expenditures 2001 (% of total regional expenditures)
National expenditures	8547403 (100%)	169544443 (100%)	779884381	599467611	940.055.336
North Region	3869638 (45.3%)	12919949 (7.6%)	79018848 (40.1%)	46870974 (38.6%)	130.206.098 (48.7%)
Northeast Region	1561778 (18.3%)	47679381 (28.1%)	19404099 (9.8%)	18117057 (14.9%)	42.983.237 (16.1%)
Centre-West Region	1612077 (18.9%)	11611491 (6.8%)	27319031 (13.9%)	2581509 (2.1%)	30627207 (11.5%)
Southeast Region	927286 (10.9%)	72262411 (42.6%)	64382647 (32.7%)	50130324 (41.3%)	44.808.717 (16.8%)
South	577214 (6.8%)	25071211 (14.8%)	6927690 (3.5%)	3589704 (3.0%)	18.662.332 (7.0%)
Brazil	8547404	169544443	976936695	720757180	1.207.342.927

**Source:** Own elaboration using SIAFI data

### 2.3. BNDES

The National Bank for Economic and Social Development (BNDES) is the most important credit agent for investments in the productive sector. Its first environmental unit was created in 1989, and in the 1989/99 period the BNDES provided a total credit of US\$ 5 billion to environmental investments (6% of the total investments funded by the Bank in the same period).<sup>2</sup>

Among these projects, some were destined to revert the environmental liabilities of the following productive sectors:

- Iron and steel industries (total lending of US\$ 158 million)

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<sup>2</sup> Information provided in the document “O BNDES e o Meio Ambiente,” available at the BNDES website (<http://www.bndes.gov.br/apresent/ambient2.htm>).

- Petrochemical (US\$ 51 million) and chemical (US\$ 23 million) industries
- Service stations (US\$ 6 million)
- Recuperation of altered lands (US\$ 10 million)
- Integrated environmental control of the Camaçari Petrochemical Pole (US\$ 33 million)
- Integrated environmental control of the Santa Catarina Textile Pole (US\$ 5 million)

The improvement of the environmental quality in urban and rural areas was another field of action. BNDES has provided around US\$ 600 million in credit lines to private pollution control initiatives, including critical regions such as the metropolitan regions of São Paulo (environmental recuperation of the Tietê river), Rio de Janeiro (Guanabara Bay Pollution Control Programme), Belo Horizonte and Porto Alegre (environmental recuperation of the Guaíba Estuary).

Another area of action is the lending to companies responsible for sanitation and waste collection programmes, most of them state-owned. In the period 1996/2000, BNDES funded R\$ 718 million in sanitation projects. Adding up the other funding sources of these projects (mainly the FGTS, a fund created with resources from compulsory contributions from the private sector employees, and loans from international development agencies), plus those that are under analysis or in the contract stage, the total amount destined to sanitation projects reaches an estimate of R\$ 2.5 billion.<sup>3</sup>

Indeed, the estimate of investments in sanitation projects in 2001 exceeds R\$ 1.3 billion, the expected investment in the sanitation companies owned by four states (*Gazeta Mercantil*, 9 July 2001, p. A-7). According to the Association of Water and Sanitation Services Concessionaires (ABCON), the privatised companies expect to invest another R\$ 225 million, almost doubling the investment in 2000.

**Table 2.10. Investment in sanitation, R\$ million, 2000/01**

	2000	2001
SABESP (São Paulo state)	620	700
SANEPAR (Paraná state)	217	250
COPASA (Minas Gerais state)	110	204
EMBASA (Bahia state)	170	170
Private companies	110	225

**Source:** *Gazeta Mercantil*, based on interviews with the companies

<sup>3</sup> Information provided in the document “Carteira de projetos de saneamento já tem R\$ 718 milhões em financiamentos,” available at the BNDES website (<http://www.bndes.gov.br/noticias/not367.htm>).

However, there remains a huge deficit of resources to definitively solve the sanitation problem: the estimate of specialists is that US\$ 38 billions will be required until 2010 in order to achieve the targets of covering 98% of the households with proper water supply services, and to treat 65% of the water effluents.

Another area that is receiving more attention from BNDES is recycling. In 2000, the disbursement to industrial recycling projects were R\$ 3 million, with the same forecast for 2001.

## 2.4. External funding

External funding is a major issue for environmental projects. Tables 2.11 and 2.12 present the evolution of environmentally related effective expenditures of the MMA according to the source of funding. Note that the flow of resources presented a declining trend since 1994, with the exception of the years 1996 and 1998, oscillating between 6% and 17% of the total expenditures. Moreover, most of these resources come from external credit operations (loans), which means that in the long term, they represent an extra pressure of financial expenses in the budget. The proportion of international donations/total expenditures in 2000 fell to the lowest level in the series (2.0%), clearly indicating a decline of the international support for environmental projects in Brazil.

**Table 2.11. Environmental expenditures according to the source of funding, MMA, 1993/2000 (in R\$ 1.000, average prices of 2001)**

	Total	Domestic resources	External resources	Foreign credit	Donations
1993	462.939	392.041	70.898	n. a.	n. a.
1994	513.011	425.553	87.459	n. a.	n. a.
1995	641.946	577.582	64.363	51.000	13.363
1996	798.553	713.645	84.909	54.650	30.258
1997	851.433	801.626	49.807	27.241	22.566
1998	975.836	884.612	91.224	69.034	22.190
1999	792.529	723.328	69.201	38.116	31.085
2000	720.634	673.557	47.077	32.371	14.706

**Source:** Own elaboration using SIAFI data

**Table 2.12. Environmental expenditures according to the source of funding, MMA, 1993/2000 (% of the total)**

Year	Foreign credit	Donations	Total
1995	7,9%	2,1%	10,0%
1996	6,8%	3,8%	10,6%
1997	3,2%	2,7%	5,8%
1998	7,1%	2,3%	9,3%
1999	4,8%	3,9%	8,7%
2000	4,5%	2,0%	6,5%

**Source:** Own elaboration using SIAFI data

Another important feature of the external funding is that most of the resources are directed to current expenditures. Table 2.13 shows the amount of resources from external credit and donations to each area of the MMA, according to the type of expenditure. Most of the foreign resources were directed to current expenditures, and there was a declining trend in the share of the resources destined to investments: in 2000, only 18% of the foreign resources were spent in investments.

**Table 2.13. External resources destined to environmental expenditures according to the type of spending, MMA, 1993/2000 (in R\$ 1.000, average prices of 2001)**

	Current expenditures			Investments		
	Foreign credit (A)	Donations (B)	(A+B)/total external resources	Foreign credit (C)	Donations (D)	(C+D)/total external resources
1995	29.573.804	5.561.037	54,6%	7.802.188	21.426.332	45,4%
1996	27.903.633	18.061.199	54,1%	12.197.285	26.746.499	45,9%
1997	15.627.849	16.219.168	63,9%	6.346.912	11.613.262	36,1%
1998	17.552.149	10.725.129	31,0%	11.464.456	51.481.821	69,0%
1999	17.326.432	24.532.119	60,5%	6.553.128	20.789.702	39,5%
2000	25.592.652	12.885.186	81,7%	1.821.215	6.777.909	18,3%

**Source:** Own elaboration using SIAFI data

Despite this declining trend of foreign resources destined to environmental expenditures, environmental projects remain one of the most important categories for attracting external resources from international cooperation. According to the Brazilian Agency for Cooperation (ABC), the annual amount of resources that are donated to Brazil through bilateral cooperation agreements is around US\$ 92 million. According to the ABC website ([www.abc.mre.gov.br](http://www.abc.mre.gov.br)), the main donor country is Japan, which provided US\$ 53.0 million in 2000 (57% of the total), followed by Germany (US\$ 12.7 million), United Kingdom (US\$ 9.5 million) and France (US\$ 9.0 million). In June 2001, ongoing environmentally related projects were responsible for 41% of the total bilateral cooperation projects under the supervision of ABC, showing the concern of donors with the environment.<sup>4</sup>

The volume of resources from multilateral cooperation agreements is considerably higher, having reached US\$ 418.6 million in 2000 (ABC 2000). Although a similar statistic of distribution of the resource according to the project area was not available, there is a significant presence of environmental projects in multilateral cooperation. On the other hand, it is important to highlight that a considerable part of these resources were transferred from the Brazilian government, which uses these multilateral agencies to hire staff as consultants without the bureaucratic problems and costs associated with the admission of new civil servants. This is particularly important for the projects sponsored by the United Nations Development Program (UNDP), with projects of US\$ 207.6 million in 2000, or half of the total received from multilateral cooperation agreements. Interviews with federal government and UNDP personnel confirmed that the vast majority of these resources (around 90%) came from the Brazilian government. For example, in June 2001, in the MMA administrative staff (excluding IBAMA), there were civil servants (i.e., officially hired by the Ministry) and consultants hired by the UNDP (personal communication from a MMA employee).

This practice of “bypassing” the ordinary hiring procedures hinders the understanding of the real budget operations of the government. In addition, it contributes to the lack of continuity and institutional identity of the personnel. The dependence on “consultants” with high turnover rates, associated with the instability in the higher ranks of the government caused by political changes (when top positions are included in the bargaining process), makes long term planning nearly impossible for these agencies. Secretaries and departments appear and disappear frequently, and the reallocation of functions between the newly created institutions usually takes a considerable amount of time, with damaging consequences for the continuity and stability of the policies.

This does not mean that external resources are not needed to enhance sustainable development practices in Brazil. A good example of a successful experience is the Pilot

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<sup>4</sup> Note that this number is not compatible to the figures provided in tables 2.11 and 2.13. This can be explained by the fact that the classification of ABC is much wider than the strict definition of environmental activities adopted in the analysis of the budget, and because they refer to expenditures in all Ministries, not only the MMA.

Programme to Conserve the Brazilian Rain Forest (PPG7), the most important programme in terms of external funding. The PPG7 started in 1992 with an initial donation of US\$ 250 million, plus a ten percent counterpart of the Brazilian government. In May 2001, the total funds available to the Programme reached US\$ 330 million, a 20% increase over the original size. According to the 2001 Annual Financial Report of the Programme (World Bank 2001), from these US\$ 330 million, US\$ 218 have already been contracted, US\$ 72 million were firmly committed and the remaining US\$ 40 million have been indicated without a specific firm commitment or remains uncommitted in the Rain Forest Trust Fund (RFT).<sup>5</sup> Table 2.14 shows the contribution of each individual country to PPG7.

**Table 2.14. Contribution to PPG7, May 2001 (US\$ million)**

Source	To RFT	Projects Contracted	Projects Committed	Projects Indicated	Total
Germany	19.35	77.36	33.74	16.69	147.15
European Union	14.05	37.19	12.52	-	63.76
United Kingdom	2.32	17.81	2.15	0.72	23.00
United States	6.25	3.00	1.10	9.15	19.50
Netherlands	4.88	0.50	3.63	-	9.02
Japan	6.80	0.49	-	-	7.29
Italy	3.85	-	-	-	3.85
France	-	1.36	-	-	1.36
Canada	0.74	-	-	-	0.74
Subtotal Foreign	58.25	137.71	53.15	26.56	275.67
Brazil – Government	-	26.58	11.87	4.03	42.47
Brazil – Communities	-	8.90	-	2.56	11.46
Subtotal Brazilian	-	35.48	11.87	6.58	53.93
Total	58.25	173.19	65.02	33.14	329.60

**Source:** World Bank (2001)

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<sup>5</sup> The RFT was established in March 1992 by the World Bank and through funding from eight donors (Canada, the European Union, Germany, Italy, Japan, the Netherlands, the United Kingdom and the United States) with the objectives of co-financing the projects under the PPG7, including administrative expenses, support activities and pre-investment work (World Bank 2001). Only the interests and other financial gains obtained from the fund are available to projects, in a way that is sustainable in economic terms.



The PPG7 is specialised in sustainable development projects in the rain forests of the Amazon and Mata Atlântica ecosystems. It is divided into sub programmes that cover all aspects related to the conservation agenda, including social and economic aspects of stakeholders. Despite bureaucratic problems, such as the dependence on Federal Congress approval for the implementation of the projects and the excessive pressure on the executors in terms of filling activity reports, the overall evaluation is positive, and there is an increasing demand for PPG7 to expand its activities in the Mata Atlântica and to start projects in urban areas. However, the continuity of the Programme is largely dependent on a new round of donations, since only the RFT is financially sustainable.

## **2.5. Gaps in the analysis**

One important point that has not been considered is the effort of environmental research in the budget for science and technology. We recommend future work in the analysis of the share of environmental issues in the concession of scholarships and research grants by the federal government agencies- CNPq, from the Ministry of Science and Technology, and CAPES, from the Ministry of Education. This could be done with a specific research that would analyse the education disbursements according to the subject field (for example, estimating the number of research projects, M.Sc. and Ph.D. dissertations, and teaching activities in environmental subjects).

A second point that deserves attention is classifying the transfer of resources to states and *municípios* by functions or programmes. This procedure is complex and requires a patient analysis of the effective destination of the resources. Again, a specific research on the estimates of transfers to states and municípios according to the activity area is highly recommended.

## **3. Analysis of the public budget in selected states (São Paulo, Rio Grande do Sul, Paraná)**

Every state in the Brazilian Union decides autonomously its annual budget, which needs the approval of each state's legislative assembly. After the fiscal year ends, the government accounts are submitted to the state account tribunals, which are empowered to approve or disapprove the state executive financial activities, independently of the federal government. Because of this autonomy, every state has its own methodological procedures on the analysis of public budgets and expenditures. Given the limited time and resources and the already mentioned focus on the federal government activities, this study will consider only the budget information (authorised expenditures) for some of the most advanced states in environmental control practices.

Since the state agencies are the main responsible for pollution control activities and for a considerable share of protected areas, we strongly recommend a more long term study, in the same lines as this one, in order to provide a better view of the environmental expenditures in the state and municipal levels.

### 3.1. State of São Paulo

The main institutions responsible for environmental management in the State of São Paulo are:

- Secretary for the Environment
- CETESB (state environmental agency)
- Forestry Foundation
- Zoo Park Foundation
- Secretary for Water Resources, Sanitation and Public Works (including the Sanitation Fund – FESAN, and the Water Resources Fund – FEHIDRO)
- SABESP (state water supply and sanitation company)
- Department of Water and Electricity

It should be taken into account that the last three institutions are not responsible for sanitation only, but also for water supply and hydroelectricity. Therefore, considering all the budget of these institutions as destined to sanitation and other environmental objectives would overestimate the total sum of authorised environmental expenditures. In order to deal with this problem, table 3.1 presents two different series of authorised expenditures for the 1996/2001 period. The first one (“Environment without sanitation”) comprises the authorised expenditures for the Secretary for the Environment, CETESB, Forestry Foundation and Zoo Park Foundation and is a lower boundary for the total environmental expenditures of the State of São Paulo. The second one (“Environment plus water”) includes the Secretary for Water Resources, Sanitation and Public Works, SABESP and the Department of Water and Electricity, and is an upper boundary for the environmental expenditures.

**Table 3.1. Authorised environmental expenditures in the budget for the State of São Paulo, 1996/2001 (in R\$ 1000 at 2001 prices)**

	1996	1997	1998	2000	2001
Total Environment without Water (A)	292.876	292.568	344.003	287.914	247.638
Total Environment plus Water (B)	1.089.560	1.284.387	2.977.279	1.664.285	1.604.277
Total Budget State of São Paulo (C)	48.745.996	35.497.049	50.162.836	42.260.423	43.580.251
(A)/(C)	0,6%	0,8%	0,7%	0,7%	0,6%
(B)/(C)	2,2%	3,6%	5,9%	3,9%	3,7%

**Source:** Own elaboration based on the budget laws of the State of São Paulo

Regardless of the chosen methodology, it is clear that the authorised environmental expenditures have declined in absolute terms and in proportion of the total authorised expenditures in the budget since 1998. This is a strong indication that environmental objectives have been receiving less importance and resources from the state government, in a similar way to what has happened in the federal government for the most recent period.

In 1998, the peak on water related investments was caused by the approval of funding for projects on water supply and sewerage systems (collection and treatment), sanitation in the Guarapiranga watershed and depollution of the Tietê river. In the 2000 and 2001 years, the approved funding for projects in these areas have dropped considerably.

As a final comment it has to be noted that the total volume of environmental expenditures in the State of São Paulo budget has a close dimension to the federal expenditures. However, given the lack of time, it was not possible to examine the effective expenditures – data for the federal government have shown that the difference between them can become considerable. This is another reason why specific in-depth studies looking at state-level expenditures must be carried out to complement this analysis.

### 3.2. State of Paraná

The state of Paraná is considered one of the leaders on environmental issues in Brazil. The same Secretary is responsible for environmental protection and water resources management -thus, again, difficulting the separation between environmental control and water supply measures. One interesting characteristic is that since 2000 the state of Paraná has adopted a classification of functions/sub functions similar to the one proposed by the federal government.

Table 3.3 presents the evolution of authorised environmental expenditures in the 1999/2001 period. Table 3.4 presents the distribution of the authorised expenditures per sub-function.

**Table 3.3. Evolution of authorised environment expenditures, Paraná State, 2001**

	1999	2000	2001
Environmental expenditures (A)	232.910	361.965	254.684
Sanitation (subtotal)		170.056	95.004
Environmental management (subtotal)		191.909	159.680
Total expenditures (B)	11.784.671	11.339.323	12.249.434
(A)/(B)	2,0%	3,2%	2,1%

**Source:** Secretary of Finance, Paraná State (SEFA)

**Table 3.4. Distribution of expenditures per function/sub-function, Paraná State, 2001**

Function/Sub-function	Authorised expenditure (R\$ 1000)	% over total environmental expenditure
Sanitation (subtotal)	95.004	29,1%
Rural basic sanitation	1.400	0,4%
Urban basic sanitation	93.604	28,6%
Environmental management (subtotal)	159.680	70,9%
Preservation and conservation	96.353	29,5%
Environmental control	27.184	8,3%
Recuperation of degraded lands	30.953	9,5%
Water resources	5.190	1,6%
Technological development and engineering	72.190	22,1%

**Source:** SEFA

Note that the magnitude of the environmental expenditure as a proportion of the state budget is similar to the one observed for São Paulo (around 2 and 3%, including the expenses on water related projects). There was a peak in 2000, but the decline of environmental expenditures observed in the 2001 budget has restored the authorised spending at a similar level to that of 1999.

Another interesting characteristic of the public environmental management in Paraná is the tax allowance for *municípios* with higher proportion of protected areas (“green tax”). This point is discussed in the following subsection.

### **3.3. State of Rio Grande do Sul**

The situation in Rio Grande do Sul is not different from that of the other states. The total allocation for environmental expenditures has not increased during the period, with the possible exception of 2001, when a considerable increase in the allowance of resources has reverted the declining allocation in the 1999/2000 period. Nevertheless, it is important to remember that these are authorised expenditures, which only become effective if the state government decides to.

**Table 3.5. Authorised environmental expenditures in the budget for the State of Rio Grande do Sul, 1995/2001 (R\$ 1000 at 2001 prices)**

	1995	1996	1997	1998	1999	2000	2001
Secretary for the Environment (A)	11.883	11.580	8.508	10.327	8.451	10.904	35.343
Zoobothanic Foundation (B)	10.734	9.663	9.979	11.742	10.594	12.376	13.476
Secretary for Public Works and Sanitation (C)	32.281	49.612	25.724	31.939	16.480	12.250	27.013
Total (A+B+C)	54.899	70.856	44.211	54.008	35.525	35.531	75.833

Source: Secretary of Finance, Rio Grande do Sul

In proportion to the total budget for the state, the allocation of resources is lower than in other states. It is possible that the total environmentally related expenditures are underestimated, since programmes in other secretaries (such as Organic Agriculture, for example) were not considered. This could have been solved if the state budget data were presented with the same methodological approach as the one used by the federal government (like Paraná State does).

**Table 3.6. Authorised environmental expenditures in the budget for the State of Rio Grande do Sul, 1995/2001 (in percentage)**

	1995	1996	1997	1998	1999	2000	2001
Secretary for the Environment (A)	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,3%
Zoobothanic Foundation (B)	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
Secretary for Public Works and Sanitation (C)	0,3%	0,4%	0,2%	0,2%	0,2%	0,1%	0,2%
Total (A+B+C)	0,5%	0,5%	0,3%	0,3%	0,4%	0,3%	0,7%

Source: Secretary of Finance, Rio Grande do Sul

### **3.4. State laws of environmental criteria for tax redistribution among municipalities (“green ICMS”)**

The tax on the circulation of goods and services (ICMS) is a VAT-like tax that is collected by the state governments, and part of these revenues has to be redistributed among the *municípios*. Part of this redistribution to the *municípios* (75% of the total) has to follow the criteria established in the federal constitution, but the redistribution of the remaining 25% depends on the decision of each state’s legislative congress. In 1992, the state of Paraná introduced a law directing 5% of the ICMS (around R\$ 40 million per year) to *municípios* in proportion to environmental conservation units and watershed protection areas.

This tax redistribution system has been very effective in encouraging the *municípios* to increase the total protected area in their boundaries, since this would represent a higher

budget. For example, the *município* of Morretes was the 203<sup>rd</sup> in the ranking of tax redistribution before 1992, and after the law it became the 107<sup>th</sup>, while the *município* of Antonina moved from the 191<sup>st</sup> to the 84<sup>th</sup> position. Another indication that the law has been successful is that the number of *municípios* that are considered eligible for the benefit increased from 112 in 1992 to 192 in 1998 (Veiga Neto 2000).

After the experience of Paraná, other states (São Paulo, Rio Grande do Sul and Minas Gerais) have approved laws with similar objectives, and their introduction is under negotiation in the states of Santa Catarina, Bahia, Espírito Santo, Mato Grosso, Mato Grosso do Sul, Ceará and Rio de Janeiro. The Minas Gerais experience is the most interesting one because it has already been implemented with an important innovation: waste collection and basic sanitation indicators became part of the environmental criteria for the reallocation of ICMS among *municípios*. These two criteria alone were responsible for the transfer of R\$ 18 million to *municípios* from the beginning of the programme (end of 1995) until June 2000.

### **3.5. Municipal expenditures**

Waste collection and disposal activities are, by far, the most important environmental issue under the responsibility of the local administration. They also represent one of the most important components of the municipal budgets: the *município* of São Paulo alone has an annual expenditure of around R\$ 500 million, or 6% of its budget (Brum and Crivellaro, 2001). Even though there are aggregate estimates of the number of households that have waste collection services and there is an approximate idea of the total amount of waste that is collected everyday (125.000 tons per day, according to IBGE), no numbers are provided for the costs of this activity. A “back of the envelope” exercise can provide a rough estimate of this number. Assuming a collection and disposal cost of R\$ 40/ton, approximately 2/3 of the average cost in the city of São Paulo, the total expenditure in this activity reaches the annual value of R\$ 1,8 billion per year, highly concentrated on the municipal budgets. This is, nevertheless, a very imprecise figure, and we strongly recommend a specific study on the aggregate level of expenditures on this issue.

## **4. Environmental expenditures in the private sector**

There are no empirical surveys of the private sector expenditures on environmental issues. Interviews with staff members of the Industry Federations of São Paulo and Rio de Janeiro were carried out and both have answered that studies on this issue are being considered for the near future. The only available data refers to recycling, which are detailed in subsection 4.3.

In the absence of direct observations, qualitative indicators were used. For the industrial sector it was possible to use the Survey of Economic Activities in the State of São Paulo (PAEP), detailed in subsection 4.1, and the report on the competitiveness of the Brazilian industry, examined in subsection 4.2. The only data identified for the agriculture sector was the production and consumption of defensives, analysed in subsection 4.4.

#### 4.1. Empirical evidence of the determinants of environmental expenditures in the private sector

The Survey of Economic Activities in the State of São Paulo (PAEP) was carried out by the SEADE Foundation using data for the year 1996. Questionnaires were sent to 43.900 companies, from all sectors. The answers were voluntary, explaining the difference in the total of answers in each table. Lustosa and Young (1999) used this data set to examine the perception of environmental issues in the firms' competitiveness.

The questionnaire was divided in chapters, one of them with specific questions about the environmental perception of the firm. One of these questions was whether the firm had invested in changes in the production process for environmental reasons. Table 4.1 presents the results according to the capital ownership and proportion of exports over total sales. The vast majority (82%) declared that in 1996 they had no investments motivated by environmental issues.

**Table 4.1. Firms with investments in production processes for environmental reasons, 1996**

Investment in the production process for environmental reasons	Capital Ownership (in 31/12/1996)			Total
	National	Foreign	National and Foreign	
Yes (A)	7.294	251	92	7.636
A/C (%)	18,2	43,1	35,5	18,7
Exports/revenues (%)	1,54	12,91	8,83	2,00
No (B)	32.674	331	167	33.173
B/C (%)	81,8	56,9	64,5	81,3
Exports/revenues (%)	0,60	6,14	5,53	0,68
Number of Firms (C)	39.968	582	259	40.809
Exports/revenues (%)	0,77	9,06	6,69	0,93

**Source:** Lustosa and Young (1999), based on PAEP/SEADE data.

The presence of foreign owners and the importance of exports in total sales increase the probability of environmentally motivated investment in the firms. The proportion of companies partially or entirely owned by foreigners that answered positively to this question was 40.8%, against only 18.3% of the domestically owned companies.

Another issue that increases the probability of environmentally motivated investments is the proportion of exports over total sales. The proportion of the firms with positive answer (2.0%) is considerably higher than the same proportion for the firms with negative answers.

An econometric study using the same data (Ferraz and Seroa da Motta 2001), has reached similar conclusions, adding the following factors that increase the probability of investments caused by environmental questions:

- The size of the firm, measured by the number of employees (the probability of environmental investments increases with the size of the firm).
- The age of the industrial unit (the probability of environmental investments increases with the age of the firm).
- Tighter environmental controls (firms established in areas where the application of environmental standards is more severe tend to invest more in environmental issues).
- Local pressure from the society (firms established in areas where the local population has revealed more interest on environmental issues tend to present higher levels of environmentally motivated investment).

#### **4.2. Competitiveness Report of the Brazilian Industry**

The National Bank for Economic and Social Development (BNDES), the National Confederation of Industries (CNI) and the Brazilian Support Service for Micro and Small Companies (SEBRAE) have been carrying out a survey on many aspects concerning the Brazilian industrial firms since 1999 (BNDES/CNI/SEBRAE, 2001). A sample of 1158 firms answered the questionnaires in 2000, covering 22 different sectors and all the regions of the country, with answers referring to the previous year (1999).

The environmental performance of the industry was examined according to the following aspects:

- Characteristics of the environmental management of the firm
- % of the net revenues spent on environmental investments
- Motivation for the environmental investments
- Financial sources for the environmental investments
- Classification of environmental investments
- Results from the environmental investments

Only 10% answered that the firm had a specific unit responsible for the environmental management. Half of the firms in the sample replied that environmental management decisions were taken by the general direction, and other 20% said that the production management was responsible for the environmental management. Almost a quarter of the sample (23%) informed that no environmental management procedures were considered in the firm.

The average spent on environmental investments in 1999 was 0.8% of the net operational revenue (NOR) of the firms. This value was slightly higher than the figure obtained for 1998 (0.7%) in the previous survey. Most importantly, the firms declared an intention to increase these expenditures to 1.1% of the NOR in the 2000/1 period, indicating a trend of rising investments in the private sector on environmental issues.

According to the Brazilian Geographic and Statistical Institute (IBGE), the added value of the Brazilian transformation industry in 1998 was around R\$ 227 billion, and



R\$201 billion in 1999 (in 2001 prices). Assuming the added value as a proxy for the NOR, this could represent an annual environmental investment of around R\$ 160 million in both years. Table 4.2 presents the estimates for each industry:

**Table 4.2. Estimated environmental investment per sector, 1998/98**

Sector	Environmental investment as % of NOR <sup>1</sup> 1998	Value added <sup>2</sup> 1998	Estimated environmental investment 1998	Environmental investment as % of NOR <sup>1</sup> 1999	Value added <sup>2</sup> 1999	Estimated environmental investment 1999
Leather and footwear	0,3	2.234.791	670	0,2	1.974.316	395
Rubber and plastic products	0,2	8.956.305	1.791	0,3	7.853.066	2.356
Textiles	0,6	5.927.567	3.557	0,4	5.245.733	2.098
Vehicles and transport equipm.	0,4	15.323.492	6.129	0,5	13.061.645	6.531
Wearing Apparel	0,3	4.944.822	1.483	0,5	4.277.434	2.139
Chemical products	0,7	50.545.183	35.382	0,6	45.363.572	27.218
Metal products excl. machinery	0,5	11.925.267	5.963	0,6	10.247.197	6.148
Machinery and Equipment	0,7	20.178.865	14.125	0,9	17.504.317	15.754
Basic Metallurgy	0,9	11.231.944	10.109	1,1	10.351.502	11.387
Wood products	0,8	7.571.928	6.058	1,1	6.787.998	7.467
Electric Material	0,7	12.509.675	8.757	1,2	9.938.378	11.926
Pulp, Paper and Paperboard	0,8	9.322.663	7.458	1,2	8.624.590	10.350
Food and beverage	0,8	39.137.611	31.310	1,3	34.879.563	45.343
Non-metallic Minerals	1,4	12.504.994	17.507	1,6	10.975.597	17.561
Furniture and other industries	0,8	14.640.354	11.712	0,6	13.588.303	8.153

1. **Source:** BNDES/CNI/SEBRAE (2001)

2. **Source:** Adapted from IBGE data, R\$ 1000 at 2001 prices. Vehicles and transport equipment include parts; basic metallurgy refers to iron and steel and non-ferrous metallurgic, while other metallurgic were classified as metal products; electronic material was added to electric material; wood products include furniture; printing, pharmacy and veterinary products were added to other industries.

The most important reasons declared for adopting environmental investments were the compliance to legal requirements and the improvement of the image of the company, both with a bit more than 60% of the answers. Other important motivations were the

improvement of the management process (28% of the answers) and access to new markets (24%).

The majority of the environmental investments were financed with the firms' resources: for investments in the 1998/98 period, 69% were funded this way. The government banks were responsible for the funding of 22% of environmental investments in the same period, and the private banks for only 17%. The forecast for the 2000/01 period points out an increase in the demand for credit from the government banks from 22% to 41% of the environmental investment projects, while the participation of private banks would remain at around 18%. This shows that the industrial companies are cautious in the funding of environmentally motivated projects, making use of own resources or special credit lines of the government credit agencies preferably to private credit lines.

The most important category of environmental improvement was the reduction of losses and rejects of materials and finished products, adopted in 63% of the firms that had investments in the 1998/99 period. The control/treatment of noise, solid waste and water effluents, and energy conservation were also adopted in more than half of these firms (see table 4.3). The areas that will receive more attention in the near future are energy conservation, staff training and implementation of environmental management systems.

**Table 4.3. Type of environmental investments, % of positive answers**

Type of investment (% of firms that declared this type of investment over the total number of firms that declared environmental investments)	Observed investments 1998/99	Forecast 2000/2001	Never
Treatment/control of water effluents	51.8%	35.6%	34.5%
Treatment/control of solid waste	52.8%	39.5%	30.2%
Treatment/control of gas emissions	40.3%	29.1%	45.7%
Treatment/control of noise	54.2%	44.9%	26.8%
Reduction in losses and rejects of material and finished products	63.0%	50.7%	20.6%
Energy conservation	52.0%	54.2%	21.7%
Clean energy sources	22.3%	33.3%	53.0%
Re-circulation and recuperation of water	37.2%	38.2%	41.6%
Improvement in the project, design and packaging of products	44.2%	48.7%	33.4%
Staff training for environmental management	38.8%	53.1%	29.9%
Implementation of environmental management systems	19.0%	50.0%	41.9%

**Source:** BNDES/CNI/SEBRAE (2001)

The results for the firms with environmental investments have been quite positive: for 49% of them, there was input optimisation, for 47%, reduction in the emission of air pollutants and reduction, re-circulation and control of liquid effluents, and for 31% there was reduction in solid waste disposal.

The most important benefit of the investments was the improvement in the image of the company. Other competitive advantages identified were increasing sales and access to new markets and, even though the final cost of products have increased for one third of these firms (table 4.4).

**Table 4.4. Results of environmental investments**

	Increased/improved	Reduced/worsened	No change
Final cost of the product	34.4%	5.7%	59.9%
Sales	25.2%	1.2%	73.6%
Access to new markets	29.2%	1.2%	69.6%
Image of the company	67.4%	0.3%	32.3%

**Source:** BNDES/CNI/SEBRAE (2001)

### 4.3. Recycling in the private sector

Despite its continuous growth in the nineties, the recycling industry in Brazil has a relatively small size, with less than 0.08% of the total employment and 0.05% of the total income of the transformation industry. Table 4.5 presents its evolution in the 1996/98 period, according to the annual industry survey (PIA/IBGE). Total sales have reached R\$ 192 million in 1998, of which 73% were originated from metallic rejects.

**Table 4.5. Recycling industry in Brazil, 1996/98**

	1996	1997	1998
Total recycling			
Output <sup>1</sup>	150.019	191.038	192.808
Value added <sup>1</sup>	97.613	128.319	121.253
Wages <sup>1</sup>	35.731	43.304	43.050
Occupied personnel	3.144	3.752	3.755
Number of units	117	132	164
Metallic rejects			
Output <sup>1</sup>	94.971	122.314	139.918
Value added <sup>1</sup>	69.279	97.563	92.045
Wages <sup>1</sup>	26.393	31.624	31.722
Occupied personnel	1.931	2.377	2.251
Number of units	44	52	62
Non-Metallic rejects			
Output	55.049	68.724	52.890
Output <sup>1</sup>	28.334	30.756	29.208

Value added <sup>1</sup>	9.339	11.680	11.328
Wages <sup>1</sup>	1.213	1.375	1.504
Number of units	73	80	102

**Source:** PIA/IBGE

1. R\$ 1000 at 2001 prices

#### 4.4. Consumption of chemical defensives

The lack of environmental indicators for the agriculture sector in Brazil has forced us to use only one indirect indicator: the production and consumption of defensives. Table 4.6 shows the evolution of the industry in the 1996/98 period. There is a clear trend of diminishing sales, with a considerable reduction of employment and production units. This reduction in the demand for agriculture defensives may be an indication of changes in cultivation practices; however it is a very weak indicator (for instance, it needs the verification of exports and imports of this product). Further research needs to be done to have a better idea of the environmental performance of the agriculture sector.

**Table 4.6. Chemical defensives industry in Brazil, 1996/98**

	1996	1997	1998
Output <sup>1</sup>	3.894.767	3.818.546	3.315.798
Value added <sup>1</sup>	1.583.829	1.489.826	1.412.787
Wages <sup>1</sup>	445.813	398.521	323.315
Occupied personnel	10.304	9.273	7.258
Number of units	151	141	122

**Source:** PIA/IBGE

1. R\$ 1000 at 2001 prices

### 5. Private sector funds

The BNDES/CNI/SEBRAE survey has shown that most of the investment is carried out with own resources or through special lines of public financial institutions. However, there are some new experiences that show that the private sector is getting more involved with environmental issues. Again, there is no systematic information on this topic. Therefore, we opted to analyse two case studies – one non-profit trust fund and a profit-oriented private company – in order to illustrate these new financial mechanisms.

#### 5.1. FUNBIO

The National Biodiversity Fund (FUNBIO) was created in October 1995 with a US\$ 20 million donation from the Global Environmental Facility (GEF). The objective was to install a non-governmental trust fund to support projects on conservation and sustainable

use of biological resources, with a time span of 15 years. The Fund must raise additional funds to complement the initial allocation of GEF resources in order to guarantee its long-term operation, so it has been seeking other donations or financial counterparts. The target is to accumulate an endowment fund that will permit operations solely based on the interests generated (FUNBIO 1999).

The management of the Fund is taken by an Executive Secretariat, under the guidelines and supervision of an independent Board of Directors. The Board of Directors is composed of representatives of different segments of the civil society, including government, private business sector, academic institutions and non-profit environmental NGOs.

Eligible projects must refer to the one of the following topics:

- Biodiversity conservation
- Sustainable use of biodiversity
- Technological development and applied research that contributes to biodiversity conservation and/or its sustainable use
- Policy analysis on biodiversity conservation and/or its sustainable use

In the 1997/98 period, FUNBIO has provided US\$ 1,03 million to support projects. This is a relatively small quantity if compared to administrative and indirect costs, that consumed half million US\$ in the same period. This is an evidence that the problem of a considerable share of resources going to mean-activities, instead of end-activities, happens outside the government as well.

**Table 5.1. FUNBIO Expenditures, current US\$, 1997/98**

	1997	1998
Contribution to Projects – direct support	77070	953307
Contribution to Projects – indirect support	23318	76561
Administration	325158	284660
Institutional development	10810	10373
Planning activities	6209	201
Information and studies	15101	63208
Fund raising	2884	26044
Project funding	30672	4058
Contractual commitments	121292	134303
Total	612514	1552535

**Source:** FUNBIO 1998 annual report (FUNBIO 1999)

## 5.2. A2R

The A2R Environmental Funds is a Brazilian financial company specialised in composing and administrating investment funds in environmentally-related projects in Latin America. The pioneer was the Terra Capital Fund, which started its operations in December 1998. This is a fund for “green” projects following appropriate sustainable practices, including organic agriculture, aquaculture (fish and shellfish farming), reforestation using native species, non-timber forest products and ecotourism. The total disbursement in projects in Brazil until now was US\$ 4,5 million, and there is capacity for lending other US\$ 5 million. Like other A2R funds, Terra Capital finances projects in other Latin American countries, and most of the fund raising (in a total of US\$ 15 million) was done with foreign capital.

The Clean Tech Fund is expected to start its operation by October 2001. This fund is destined to support clean technology projects in Latin America, and it has already raised US\$ 20 million for funding, with the expectation of a second round of fund raising of around US\$ 15 million (almost exclusively foreign capital). The target is small and medium companies, investing between US\$ 0.5-2.5 million per project in the following areas: renewable energy, energetic efficiency, effluent treatment/control, recycling, and transportation. They expect that around 40% of the funds will be invested in Brazil.

The most ambitious project is the Forest Fund, yet at a project level, aimed at sustainable forest management and forest plantation projects. They expect to raise up to US\$ 100 million, half of it coming from Brazilian investors.

Some foreign investment funds are also interested in operating in Brazil. However, the main restriction has been the identification of projects that are technically eligible for those funds, since they have to comply simultaneously with financial profitability and restrict sustainable management criteria.

The consolidation of economic instruments in international environmental agreements, particularly the Kyoto Protocol on greenhouse gases emissions, may accelerate this new financial market.

## 6. Main conclusions

- Despite the official commitment to increase efforts in environmental matters, the federal government expenditures in this area did not augment in the 1993-2000 period, remaining at the level of 0.5%-1% of the total federal spending.
- It is particularly worrying that expenditures in personnel fell systematically in constant prices in the second half of the nineties: the aggregate expenditure in 2000 was less than three quarters of the spending with personnel in 1995, measured in real terms.
- On the other hand, the spending related to the federal public sector debt (interests and amortisation) increased considerably. This is another evidence that the quality of the public spending on environmental programmes has declined, with less money being directed to end-activities.
- The former problem is connected to increasing importance of foreign resources. Environmental projects are the most important single element in international cooperation agreements, either bilateral (40% of the total) or multilateral (28%). Nevertheless, these resource flows are mostly directed to issues that are of international priority (mainly the green agenda and the Amazon), and only a minor volume is directed to the “brown” or “blue” agendas, or to projects outside the Amazon. It is particularly worrying that the Northeast region receives only a fraction of the international funds, despite the fact that this region concentrates the higher proportion of the poor population, whose lives are directly dependent on the conditions of the environment.
- Another important issue concerning external funds is the need to separate what is “new” money that comes as donations from the external borrowing of the public administrations. The increasing proportion of the latter is one of the causes of the elevated burden of financial costs on the environmental budgets.
- There is a clear need to produce aggregate figures for the states and *municípios*. The methodologies used for public budgeting and expenditure control vary widely, making it impossible to produce compatible aggregate numbers.
- In the states that were studied, there was no consistent trend of increasing expenditures on environmental objectives. The difficulty of separating sanitation from water supply efforts complicates even more the results from the analysis, but the trends with or without water management expenditures are not very different. The estimated range of environmental spending oscillates between 1%-3% of the total state budget.
- Another gap that needs to be fulfilled refers to the private sector environmental spending. Using surveys based on the opinion of industrial firms, there are positive signals that the private sector is getting more concerned with the environmental consequences of the production-consumption cycle. This is better perceived in the most dynamic companies, particularly those with interests/responsibilities at the international level.

- Combining one of these surveys with the IBGE data, it was possible to (roughly) estimate the environmental investment of the industry at around R\$ 160 million/year. Even though there is an expectation that this number will increase in the future, it is considerably lower than the public sector spending on environmental issues.
- Most of the funding for environmental projects comes from the government (mainly federal, through BNDES) or international development agencies, or from companies own resources. The private financial sector has a minor role on the financing of environmental expenditures – less than 20% of the environmental investments have had resources coming from private financial institutions, according to the BNDES/CNI/SEBRAE survey.
- On the other hand, it is important to note the appearance of innovative private funds specialised in environmentally friendly projects. These funds aim at foreign investors who want to combine “monetary” and “green” interests. The consolidation of economic instruments in international environmental agreements, particularly the Kyoto Protocol on greenhouse gases emissions, may accelerate this new financial market.



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## 8. Methodological Attachment

### National Currency Deflators

	1993	1994	1995	1996	1997	1998	1999	2000	2001
mult	0.022186446	2.743620852	1.718562204	1.547133882	1.434586147	1.3861604	1.245015365	1.094421802	1

To change the prices in the article (year 2001 prices) to year 2000 prices: divide by 1,094422

### Exchange rates (annual average)

1994	1995	1996	1997	1998	1999	2000	2001 (current)
0.6377	0.9519	1.0042	1.0792	1.1597	1.8139	1.8294	2.5

To change prices into US dollars, in constant prices of year X, divide by the corresponding values shown below:

1994	1995	1996	1997	1998	1999	2000	2001 (current)
1.749607017	1.635899362	1.553631844	1.548205369	1.607530216	2.25833337	2.002135244	2.5

For example: To change values expressed in R\$ in 2001 prices into US\$ in 2000 prices, divide all the values by 2,002135

To change prices into US dollars, in constant prices of year X, divide each year's value by the corresponding value in the table above.  
(NOTE: the values will be VERY different to the ones obtained for the series at constant prices.)