

**FINANCING THE GREEN PLAN ('PLAN VERDE') IN COLOMBIA:  
CHALLENGES AND OPPORTUNITIES**

by

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<b>1</b>	<b><i>Colombia and its forests</i></b>	<b>3</b>
1.1	Population and Land Use	3
1.2	Forests and Deforestation	4
1.3	Forest Ownership	5
<b>2</b>	<b><i>Environmental management institutions</i></b>	<b>5</b>
<b>3</b>	<b><i>Economic instruments and new financial resources</i></b>	<b>6</b>
3.1	Substantial resources for environmental protection out from economic instruments	6
3.2	Pollution charges in practice	8
<b>4</b>	<b><i>Recent 'plan verde' background</i></b>	<b>9</b>
4.1	The Micro-Basin Programme (IBRD-IDB Credit)	10
4.2	National Development Plans (1994-1998 and 1998-2002) and Forest Policy.	11
<b>5</b>	<b><i>Main goals and features of the 'plan verde' action programme.</i></b>	<b>12</b>
5.1	Annual Targets	12
5.2	Ecological Restoration	13
5.3	Reforestation	14
5.4	Research and Monitoring	15
5.5	Management and Follow-Up	15
5.6	Training	16
<b>6</b>	<b><i>'Plan verde' financing</i></b>	<b>16</b>
6.1	Sources of Financing	16
6.2	Joint Financing Strategy	18
6.2.1	Joint Financing Strategy Involving Three or More Entities.	18
6.2.2	RAC - Community Strategy	19
6.2.3	Distribution of Funds	19
<b>7</b>	<b><i>Expected impact and benefits</i></b>	<b>20</b>
7.1	Social Benefits	20
7.2	Environmental Benefits	20
7.3	Economic Benefits	21
7.4	Institutional Benefits	21
<b>8</b>	<b><i>Final considerations and conclusions</i></b>	<b>22</b>
	Bibliography	26

## **Financing the green plan ('plan verde') in Colombia: challenges and opportunities**

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### **Colombia and its forests**

Colombia covers an area of 1,141,748 km<sup>2</sup>, and has close on 900,000 km<sup>2</sup> of land bordering the Caribbean and the Pacific Ocean.

Its geographical position in the north west corner of South America along the earth's inter-tropical strip and with a coastline on two seas, coupled to the nearby presence of the Andean range which crosses the country from south to north and from south to north east, mean that Colombia is a country which can boast an abundant supply of renewable natural resources. In fact, 10% of the world's biodiversity is to be found in an area equivalent to 0.7% of its land mass (Von Humboldt Institute, 1998). Colombia occupies third place, after Brazil and Indonesia, in the list of the world's twelve richest countries in biodiversity and combined endemisms (Mittermeier, 1997). Colombia has a mean annual rainfall of 3,000mm., and this produces a specific surface runoff flow of 58.0 l/s/km<sup>2</sup>, a figure which is three times higher than the South American average and six times greater than the world-wide water supply figure. This abundant water supply is not homogeneously distributed around the different regions, however (García, 1997).

#### **1.1 Population and Land Use**

The population of Colombia has increased nine times during the present century, from 4,355,000 inhabitants in 1905 to 37,422,000 in 1996 (DANE, 1996). It is estimated that the population will reach 40,000,000 in 1999 and that this figure will have risen to 54,600,000 in 2025 and 59,000,000 in the year 2040 (MMA, IDEAM, DNP, 1995). As with most Latin American countries, Colombia has undergone a rapid urban development process over the last fifty years. Whereas 37% of the population lived in urban areas in 1951, this figure had risen to 60% by 1975 and 70% by 1993. It is estimated that no less than 74% of the population will live in urban areas by the year 2000; in other words, in the 1,068 towns and cities there are in the country.

As far as land use for human activities is concerned, 26% of the country's surface is considered to be used intensively, 15% partially, and 59% slightly or not at all. The former is to be found basically in the Andean region, in inter-montane valleys and along the Caribbean coast, where most of the country's population live. The second group consists mainly of fragmented agricultural ecosystems and the eastern plains, where the principal activity is extensive cattle raising. The final

group is made up predominantly of Amazonia, certain parts of the Pacific region, areas where access is difficult - such as the Darien Gap - and other areas where slopes are steep and rugged.

## **1.2 Forests and Deforestation**

Approximately half the country is covered by woodland, some 50,000,000 hectares.

The higher levels of human intervention in the Andean and Caribbean regions have resulted in only a very low proportion of the natural forests that once existed there being preserved: the figures are 30% and 10%, respectively. This is in marked contrast to the forests of Amazonia and the Pacific, where approximately 65% and 75%, respectively, have been preserved. The position is particularly complex in the case of Andean forests, since recent research has shown that this is the part of the country which is the richest of all in terms of biodiversity, a clear indication of the extent of the threat to species and ecosystems (Von Humboldt Institute, 1998).

A major controversy is currently raging about deforestation statistics in Colombia over the last twenty years, and also about the extent of woodland cover and the make-up of this. During the sixties and seventies, the deforestation rate rose to 600,000 hectares a year (INDERENA, 1974). A rate of some 820,000 hectares per year was given in 1980, while the figure for 1989 was 650,000 hectares a year (Myers, 1989). FAO has placed the current deforestation figure at 262,000 hectares per year (FAO, 1997). The National Institute for Environmental Studies (IDEAM) has stated that there is no negative variation in the vegetation cover, but rather, quite the contrary, that there is a positive variation because much secondary forest has been recovered, notably in Amazonia. The institute quantified changes in vegetation cover between 1986 and 1996 on the basis of an interpretation and comparison of satellite pictures. From these maps, "it has been calculated that during the decade analysed, the country lost approximately 145,000 hectares of forest and recovered about 3,445,000 hectares in secondary woodland cover. It therefore recorded a net gain in woodland cover of 3,300,000 hectares in ten years, some 330,000 hectares per year" (Sánchez, J., p. 295, 1998)<sup>1</sup>. It also states that large-scale deforestation seems not to be taking place as it did in the sixties, seventies and eighties. Deforestation appears to be going on within the agricultural frontier.

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<sup>1</sup> The authors make it clear that their comparisons relate to "large areas, based on satellite pictures, analysed on the large scale of 1:500,000", and that these figures should be viewed cautiously, not only because of the degree of resolution at which the work was done but also because of the lack of any intensive verification work in the field. They also stress that the maps, idem pages295-299.

Forests planted for commercial purposes amount to only 300,000 hectares. Timber exploitation is carried out to a large extent in natural forests throughout the country. Some 90,000 hectares were exploited during 1995 and 1996. This forestry activity is not sufficient to meet domestic demand, and the country is accordingly a net importer of timber (Sánchez, J., 1998).

### **1.3 Forest Ownership**

Much of the land where the greatest environmental supply levels in the country are to be found, equivalent to 37% of the surface area, comes under three different landholding systems. National natural parks cover an area of 9,195,000 hectares, indigenous reserves 30,000,000 hectares, and collective property belonging to negro communities a further 1,300,000 hectares. 80% of the total indigenous reserve area is to be found in Amazonia. Collective lands belonging to negro communities are situated in woodland Pacific regions, and the total area covered by these will rise to approximately 3,000,000 hectares once work has been completed on giving them title of ownership. The total number of people living in the indigenous reserves is 330,000, while the figure for the collective negro community lands so far created is 66,000 (Home Office, 1998; INCORA, 1999).

### **Environmental management institutions**

Environmental management institutions have undergone a drastic change as a result of the reform process which got under way at the beginning of the present decade.

The legal framework for environmental management in Colombia is set out in the National Constitution (1991), the Natural Resources Code (1974), Law 99 of 1993, and certain sections of the Health Code. Sundry laws, Presidential decrees and Ministry of the Environment Resolutions in turn expand on this main legislation. The Constitution contains seventy nine articles on environmental matters, a fact which led the Constitutional Court to refer to it as the "Ecological Constitution".

The present public environmental management system was set up in 1993, but the main precedents to it go back to the fifties. At the heart of the system are the Ministry of the Environment, thirty four regional autonomous corporations, four special environmental bodies located in the four largest cities in the country, and five research institutes. Regional entities (the towns and departments) should, in turn, perform a number of duties in connection with environmental matters, as established in the constitution and the law.

The Ministry of the Environment is the guiding body as far as environmental management at national level is concerned, and as such it has the job of coordinating the National Environmental System (NES), which consists of all the regulations, resources, state entities and private-sector, community and non-government organisations which have responsibilities in this area. The law grants the regional autonomous corporations a decisive role as basic organisations in the National Environmental System, and gives them prime responsibility for executing Colombian environmental policy.

The Ministry of the Environment is responsible for natural forest policy, and the regional corporations have the job of executing this. Meanwhile, the Ministry of Agriculture is responsible for promoting the exploitation of, and for exploitation policy with respect to, forests which are planted specifically for commercial purposes (Rodríguez, 1997).

### **Economic instruments and new financial resources**

Colombia has had a successful tradition on implementing economic instruments for environmental management oriented towards getting financial compensations from major economic activities that are used on environmental protection. More recently, Colombian environmental authorities are implementing new economic instruments to abate pollution that are showing positive and promising results.

#### **3.1 Substantial resources for environmental protection out from economic instruments**

Between the time Law 99 of 1993 was approved and 1998, public investment in the environment tripled in real terms, as a result of the new sources of environmental management funds envisaged in that law coming on line. The total investment in 1998 was USD362,000,000 (DNP, 1999)<sup>2</sup>.

There was also a substantial change over the same period in the make-up of the sources of economic funding for public investment in the environment, with there being a drop in central government funds (national budget) and an increase in the funds of the regional corporations themselves, and the National Royalties Fund also became a key contributor to the system. The share the different sources represented in the total public investment for 1998 was as follows: national budget 18%, regional corporations' revenue 62%, National Royalties Fund 15%, and international technical cooperation 5% (DNP, 1999).

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<sup>2</sup> In 1998 USD.

The high percentage share represented by corporation's revenue is due mainly to the provisions established in Law 99-1993, which favours decentralisation of environmental management and seeks to give greater autonomy and stability to NES environmental authorities, especially those of a regional nature. The main sources of financing for the regional corporations are local, and this commits the regions to meeting present and future environmental funding demands and to taking a greater interest in seeing that funds are used well. These regional sources are many and varied: property taxes; electricity sector contributions; retributive, usage and compensatory rates; a percentage of the stamp tax on automobiles; fees for licences, concessions and transportation permits; and a percentage of the product of indemnities and fines for environmental damage (**see Table 1**).

However, 80% of the regional autonomous corporations' (RACs) own funds currently comes from two sources: property tax and transfers by the electricity sector, which is predominantly in private hands. Because of their origin, these two sources tend to be concentrated mainly in the richest parts of the country, and this results in an imbalance between these and the poorer areas in terms of funds available for environmental management. An attempt has been made to correct this problem by means of a compensation mechanism which directs 20% of income from the electricity sector into a general fund, from where it is redistributed amongst those corporations which do not benefit from this source. An attempt is also currently being made to favour the poorer regions through the National Royalties Fund (Galán, 1998; Sandoval, 1998; Rodríguez et al., 1996).

It should be pointed out that these two sources have a long history. In 1954 a percentage on property tax was established as a source for financing environmental protection in the Cauca Valley Autonomous Corporation (the environmental authority in a Colombia "departamento"). This instrument was adopted by other regional authorities, but in 1993 (when the new Ministry of the environment was established) it only covered 25% of the country. In 1981, other autonomous regional corporation (in the east of Antioquia Department) established a financial transfer from the electric sector (estimated as a percentage of gross electricity sells) mainly oriented to protect the watersheds associated with hydro-power generation. This system was as well adopted by other autonomous corporations but, as in the case of property tax, it only covered a minor portion of environmental regional authorities (However the hydro-power plants located in other areas had a responsibility for protecting watersheds) .

The National Royalties Fund established in the 1991 Political Constitution earns an economic compensation by way of royalty for permitting non-renewable natural resources to be exploited, and these sums are allocated to regional entities (departments and towns). Approximately 30% of its funds are allocated to

environmental management activities, which are to be executed by the said regional entities (departments and towns) through projects which they submit to the Fund.

Income from the percentage, electricity sector transfers, property tax and the National Royalties Fund (NRF) are devoted to environmental investment projects because according to the Law only a small proportion could be allocated to functioning - salary payments, office spending etc. These three sources are not subject to the ups and downs of the economy and the whims of politicians, since the latter two have their origin in the Constitution while the first was established by Law of the Republic. They were provisions which were established with a view to setting the environmental sector up on a sound footing as far as its funding was concerned and preventing this funding from being dependent upon the priorities of the government of the day or any particular economic situation. The value of these provisions has been amply shown in the current economic crisis in the country, where there is a fiscal deficit which has resulted in the government having to make drastic cuts in the budgets of various sectors, yet this has not affected the funds in question. Of course, the possibility always exists that this "shielding" of environmental sector revenue will be dismantled by means of an amendment to the Constitution (as with the NRF and the property tax percentage) or to the law (electricity sector transfers), which are channels that are somewhat complex.

### **3.2 Pollution charges in practice**

Among the economic instruments oriented to abate pollution, trying to modify major actors behaviour, the new system of pollution charges (called retributive charges) has been singled out as a successful and promising practice (World Bank, 2000). This new system is based on the Baumol-Oates principles, and in its first stage is oriented to reduce industry's organic emissions and TSS discharges to Colombia watersheds. Seven regions, those with the greatest economic activity and pollution, are now involved in implementing the charge system. The pioneer region in establishing the programme, the industrialised east Antioquia ("el corredor industrial del oriente antioqueño") shows very encouraging results (MMA, 1997).

*Table 1*

## **ENVIRONMENTAL SECTOR REVENUE**

- **Property Tax.** A percentage (between 15% and 25.6%) of the total property tax collected in towns is allocated to the Regional Autonomous Corporations (**RACs**) .

- **Electricity Sector Transfers.** Companies which generate hydroelectric power and have an installed capacity of more than 10,000 kilowatts transfer 6% of gross electricity sales - 3% to the RACs and 3% to the towns where the hydrographic basins and the reservoir are situated. RAC funds should be allocated to protecting basins, while town funds should be used for improving the environment. In the case of thermo-electric plants, the sum transferred is 4%, which is distributed as follows: 2.5% for the RAC and 1.5% for the towns where the generating plant is situated.

- **National Royalties Fund (NRF).** Approximately one third of royalties from the exploitation of hydrocarbons, coal and other mineral resources is allocated to the NRF. This in turn allocates one third of its funds to financing environmental protection projects that are carried out by regional entities (towns and departments) under RAC supervision.

- **Charges Deriving from the 'Polluter Pays' Principle.** (i) Pollution and compensatory charges allocated to the RACs and the towns. (ii) Water usage and forest exploitation charges, allocated to the RACs.

- **Percentage of Stamp Tax on Motor Vehicles.** Towns should transfer up to 10% of sums collected for this tax to the RACs.

- **Percentage of Investment in Water-Related Projects.** 1% of the investment in every project which involves using water from natural sources should be allocated by the party executing the project to protecting the respective hydrographic basin, in the form of projects which are supervised by the RACs.

- **Percentage of Regional Entity Budgets.** Towns and departments should allocate 1% of their budgets for ten years from 1993 to purchasing land for protecting the hydrographic basins which stock town water supply systems.

- **Indemnities, Fines and Penalties.** 50% of the product of indemnities imposed in furtherance of actions by the people are allocated to the National Environmental Fund, and the remaining 50% to the RACs. 50% of the value of fines imposed by regional entities by way of penalties for breaking environmental rules or regulations are allocated to the RACs, and the remaining 50% to the regional entity which imposed the fine.

**National Environmental Fund.** This is a financial mechanism that is administered by the Ministry of the Environment and which supports the execution of environmental policy by financing both NES public entity and NGO projects. The sources of its funding include the following: external loans, administration of the Parks System, external debt exchange for environmental activities or projects, 50% of indemnities imposed and collected under Article 88 of the National Constitution with respect to damage caused to the environment, donations or funds received under any title from national or foreign individuals or legal persons, and items assigned under the national budget; also returns obtained on credits granted or on liquidity surpluses. The NEF includes the Amazon, Pro-Sierra Nevada de Santa Marta, and National Parks sub-accounts.

Source: Rodríguez, Uribe, Carrizosa, 1996.

## Recent 'plan verde' background

Colombia has no tradition in the carrying out of reforestation activities. Several factors have contributed to this absence of a “reforestation culture” in the country. The most important of these is the fact that the timber sector has found it more profitable to obtain permits and concessions for exploiting natural forests than to develop forest plantations. Another factor that has had a bearing is the high rate of illegal exploitation of natural forests where, since there are no controls or obligations and no felling rates have to be paid, these illicit activities are much more attractive and lucrative than developing plantations. Nor has commercial reforestation been adequately promoted and encouraged in the country, and the organisations that are responsible for forest administration have failed to allocate sufficient funds to protective reforestation.

Realising this, the environmental authorities have gradually been promoting a number of actions in recent years that seek to reverse the trends towards deforestation and increase reforestation figures in the country.

#### **4.1 The Micro-Basin Programme (IBRD-IDB Credit)**

Using funds from two multilateral bank credits (World Bank and the Inter-American Development Bank), the micro-basin programme got under way in Colombia in 1994; this seeks to protect and restore hydrographic basins through actions aimed at ordering and managing these ecosystems, with active community involvement. This programme is part of the process for reinforcing environmental activities that is established in the 1990-1994 Development Plan, which included amongst other measures the setting up of the Ministry of the Environment and the allocation of further funds to environmental activities.

The programme is now in the final execution phase, and seeks to encourage the sustainable use of forest resources, the soil and water resources so that the communities that live in the basins can benefit, and to restore critical areas that are either already damaged or in the process of becoming so. Micro-basin restoration management practices can be put into seven basic groups, namely: the establishment of protective-productive forests; the restoration of areas through bio-mechanical works; reforestation for dendro-energy purposes; reforestation using *Guadua angustifolia* and other types of bamboo; replanting along water courses; promoting agricultural forestry systems; and promoting woodland pasture systems.

One of the programme’s most significant achievements has been an investment of approximately USD30,000,000 in 341 micro-basins around the country between late 1994 and 31<sup>st</sup> December 1998. This investment has included the setting up and maintenance of 41,500 hectares of vegetation cover and the execution of bio-mechanical works which have directly benefited more than 50,000 hectares, and the technical assistance and community promotion work needed for executing the

sub-programme (MMA, 1999a; MMA, 1999b). It should be stressed that a precedent was set for the community guidance in this programme in the Integrated Basin Protection Programme (IBPP) which was carried out by the now-defunct National Institute for Natural Resources and the Environment (replaced by the Ministry of the Environment) between 1974 and 1992. Even though the coverage achieved by that programme was not significant, some of the successes recorded represent an important precedent.

#### **4.2 National Development Plans (1994-1998 and 1998-2002) and Forest Policy.**

The micro-basin programme, which was financed through the aforementioned international credits and the corresponding national contributions, was the product of a lengthy negotiation process with Multilateral Banks (set within the framework of the Forest Action Plan for Colombia) which culminated in 1993. A continuation of the programme was envisaged in the environmental policy which was incorporated into the 1994-1998 National Development Plan, where the need was recognised to promote actions that would counteract the high levels of deforestation and the pressure on the country's natural forests by drawing up and putting into practice a forestry policy. This policy set a reforestation target for the period of 160,000 hectares of protective-productive forest through a Forest Incentive Certificate, and at least 40,000 hectares of protective forest during the four years the policy would be in force (MMA,1995).

The first of these reforestation targets was not met by a very long way in the period in question, due to a lack of funding for the Forest Incentive Certificate. But progress was made during the period on carrying out work under the Multilateral Bank credit, with 41,500 hectares of reforestation being achieved, as already said. This latter fact caught the attention of the regional environmental authorities and the community and alerted them to the need to carry out urgent work on reforestation and the ecological restoration of strategic ecosystems in the country.

Following on from the guidelines set in environmental policy, the national government issued a forest policy in 1996, the general aim of which is to achieve a sustainable use of forests, to consolidate the incorporation of the forestry sector into the national economy, and to improve the quality of life of the community. It recognises the strategic role forest plantations will play in increasing production and employment in rural areas, and gives the Regional Autonomous Corporations the job of carrying out reforestation programmes, natural regeneration, replanting damaged areas and setting up agricultural forestry systems. As part of this policy, the **“Strategic Plan for the Restoration and Setting up of Forests in Colombia, the Green Plan (Plan Verde)”** was issued, and this was approved in mid-1998, right at the end of the previous government's term of office (MMA, 1998). The strategies established in this include one which seeks to restore

damaged ecosystems and to encourage protective reforestation in areas which generate environmental services for the community and are of special importance to the national economy.

The new government issued the 1998-2002 National Development Plan, which restates the fact that reforestation will be given priority in environmental policy. The programme for implementing 'Plan Verde' was issued in the middle of 1999, and in this a detailed set of strategies and actions is put forward for setting this in motion during the period between 1999 and 2002. It is a plan of action that represents an attempt to continue with the work done so far under the Micro-Basin Programme (MMA, 1999c)..

### **Main goals and features of the 'plan verde' action programme.**

The general aim of the plan of action is "to restore strategic ecosystems by means of ecological restoration actions and reforestation for protective and agricultural forestry purposes, so as to enable the supply of environmental goods and services to be improved, to offset the effects of degradation processes, and to help improve the quality of life of the community" (MMA, 1999c, page 17).

The Plan will be executed by the Regional Autonomous Corporations in conjunction with regional entities (departments and towns). Other bodies which can demonstrate that they have sufficient technical, financial and administrative skills to execute this kind of project may also take part. Detailed operating regulations have recently been issued, and the purpose of these is "to define the responsibilities of the different parties involved in executing the 'Plan Verde' programme, and to specify relations between the Ministry of the Environment, the other joint financing entities, and executing agencies. The policies, conditions and procedures which will govern execution and follow-up arrangements are also established". (MMA, 1999d).

Implementation of the plan, which will be executed over the period 1999-2002, envisages five basic components: ecological restoration, reforestation, research and monitoring, management and follow-up, and training (MMA, 1999c)..

### **5.1 Annual Targets<sup>1</sup>**

The plan will be executed over a period of four years, as shown in the following table (**SEE ANNEX 1**).

**Table 1. Annual Targets (1999 - 2002).**

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<sup>1</sup> Targets (tables 1 and 2) were re-scheduled (see annex 1)

ACTIVITY (Hectares)	YEAR				TOTAL
	1999	2000	2001	2002	
Protective- Productive Plantations and Restoration	16,000	48,000	48,000	48,000	<b>160,000</b>
<b>TOTAL</b>	<b>16,000</b>	<b>48,000</b>	<b>48,000</b>	<b>48,000</b>	<b>160,000</b>

Source: MMA, 1999c.

## 5.2 Ecological Restoration<sup>3</sup>

Ecological restoration is an approach which bases its central objective on the restoration of one or more ecological features of a natural ecosystem (diversity, structure and ecological processes), including the ecological services rendered. There are three main activities in the ecological restoration component: restoration of critical and strategic natural ecosystems, restoration of damaged mangrove swamps, and restoration of areas affected by forest fires.

Restoration of critical and strategic natural ecosystems starts from an acknowledgement of the fact that secondary forests which grow after human intervention has occurred can be managed in such a way that they will produce ecological and economic benefits that are similar to those attributed to primary forests.

Secondary forests are important from the ecological point of view, amongst other reasons because they quickly accumulate a high volume of biomass, which means they become carbon reservoirs, and also because of the role they play in protecting hydrographic basins, regulating water flows, preserving soils, reducing erosion processes, restoring productivity in the soil so it can be used for agricultural purposes, and maintaining biodiversity and habitats. The most important economic benefits of secondary forests are their high productivity levels and their great potential for the exploitation of both timber and non-timber products.

Despite the importance of the ecological restoration of secondary forests and the management of successive vegetation in them, the Plan recognises that there are factors in the country which limit the performing of these activities, due to research deficiencies in this field and the lack of experience.

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<sup>3</sup> Sections 5.1 to 5.6 are a summary of information contained in the "Strategic Plan....." (MMA, 1999c.

It is stressed that work has been done in Colombia on both the Pacific and Caribbean coasts in the field of restoring damaged mangrove swamps, and this has been aimed at guaranteeing that these ecosystems will be preserved and restored, with emphasis being placed on them recovering their biodiversity, genetic variability and natural productivity levels. Outstanding in this field has been the restoration programme for the 'Ciénaga Grande de Santa Marta', where 24,000 hectares of mangrove swamp died when the salt and fresh water flows became destabilised, mainly due to the construction of a highway which blocked the natural channels. Various kinds of civil works have been carried out since 1990, together with the social programmes that are needed for it to be restored and become sustainable. The source of financing for the first stage, which has now been completed with highly positive results, was an Inter-American Development Bank credit which, when added to the national contribution, totalled USD20,000,000, and a GTZ technical cooperation programme.

Finally, on the question of restoring areas affected by forest fires, work started in 1995 on building up a national forest fire protection organisation, and activities carried out to date have included coordination, institutional training, the setting up of Immediate Forest Fire Response Centres, the fitting out of forest fire prevention and control brigades, and community education.

### **5.3 Reforestation**

This component seeks to restore damaged ecosystems by establishing species which will help, amongst other things, protect and preserve soils, reduce risks of landslips and floods, and regulate the hydrological cycle, and the local community is brought in to assist with these activities. The main feature of this work is that much of it is done on land held by peasants and uses primarily labour from the communities which will ultimately benefit.

The different stages of the programme for establishing forest plantations are producing forest germ plasm and saplings, reforestation, maintenance, monitoring and evaluation.

Three activities are involved in the reforestation component: protective reforestation, protective-productive reforestation, and agricultural forestry. The main function of protective reforestation is to help protect the soil, induce the hydrological cycle regulation process, and reduce erosion processes to a minimum. Only secondary forest products may be exploited on these plantations.

Protective-productive reforestation seeks to establish multi-purpose forest species which perform some of the functions of natural forests, and at the same time provide income for the community that benefits from these forests. Forest exploitation on these plantations is conditional on the plantations being maintained or renewed.

Agricultural forestry can help restore ecosystems through the biophysical interactions between trees and crops on different time and space scales and the environment, in terms of water and soil nutrients. This activity includes both agricultural forestry systems and woodland pasture systems.

#### **5.4 Research and Monitoring**

In order to improve knowledge of the effects and impact of protective, protective-productive and ecological-restoration reforestation projects, and also so that the results of these can be validated, a series of research activities will be set up under the Ministry of the Environment and the Alexander von Humboldt Institute. Research lines will thus be defined, to orientate these activities and provide the necessary information so that decisions can be made on how activities should be performed.

In the first instance, research needs will be determined, together with the research potential at the different public and private institutions, on the basis of the functions and area of responsibility of each entity. Indicators will also be defined which will enable the results obtained from carrying out Plan activities to be known, and technological packages will be designed for quantifying the impact of the different actions performed.

'Plan Verde' establishes a number of strategic national and regional eco-regions for which a monitoring plan will be developed, to act as a guarantee for ensuring that the objectives of the programme are achieved. It is proposed that at least three representative areas should be chosen from each strategic eco-region; these should cover between 200 and 500 hectares and have protective and/or ecological-restoration reforestation projects. Detailed ecological zoning will be done in each of these areas, and a monitoring plan will be drawn up. Exhaustive follow-up will also be carried out in these areas in order to ascertain the impact of the project, on the basis of the selected social, economic and ecological indicators.

#### **5.5 Management and Follow-Up**

Management is understood as being the process whereby the necessary actions are set in motion for achieving the goals and targets by optimising the use of available resources, in line with the duties and functions of each organisation involved in the Plan.

Follow-up consists of the observation, recording and computerising of progress made on executing Plan activities in terms of the goals and targets agreed upon, the schedule and the resources used, and comparing these with what was initially

budgeted. Checks will also be made to see whether the technical aspects and legal requirements inherent in each project are being complied with, and to ensure that the project is in fact being carried out actively in conjunction with the community.

The information generated by the follow-up system will be used as a guide for any future adjustments which might be needed in order to guarantee that the goals and targets set in the Plan are achieved.

## **5.6 Training**

The purpose of this Plan component is to train officials from the Regional Autonomous Corporations, regional bodies and the community in issues connected with ecological restoration, reforestation and agricultural forestry. For this, the main requirements of those who need training will be identified, in terms of programme components which need developing, reinforcing or improving.

Training should provide the communities involved in Plan projects with tools that will enable them to take an active part in managing, preserving and exploiting natural resources and to commit themselves to carrying out the different components of the Plan.

### **'Plan verde' financing**

The total cost of 'Plan Verde', which covers 160,000 hectares, is USD207,816,000. Details are given Below of the sources of financing, and also the implementation strategy (MMA, 1999c).

## **6.1 Sources of Financing<sup>2</sup>**

Various sources of funds from public and private entities and civil society have been allocated to financing this Plan (MMA, 1999c).

- Ministry of the Environment (funds from IBRD-IDB external credits).
- Regional Autonomous Corporations (RACs).
- Río Grande de la Magdalena Corporation (CORMAGDALENA). This is an entity that was set up under the constitution and which is responsible for ensuring that the River Magdalena remains navigable and for protecting natural resources in 127 riverside towns; it is financed using funds from the National Royalties Fund (NRF).
- National Royalties Fund

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<sup>2</sup> Targets (tables 1 and 2) were re-scheduled (see annex 1)

- Fund for the Reconstruction and Social Development of the Coffee-Growing Region (FOREC). This fund was set up as an instrument for financing proposed rebuilding activities in the area that was devastated by the February 1999 earthquake.
- Plan Colombia. This is a programme initiated by the Presidency of the Republic which seeks to establish economic and social conditions that will help combat the social tensions that exist in areas which have been most seriously affected by violence.
- Forest Incentive Certificate - Preservation (FIC - Preservation). This is a direct cash payment by the state to the owners of land where woodland ecosystems which have been exploited only very little or not at all are preserved, with the view being taken that these give rise to environmental services which the community as a whole can benefit from.
- Mangrove Programme. This is carried out with funds from ITTO and the Ministry of the Environment.

**Table 2. Sources of Financing by Entity and Type of Fund. (In Millions of 1999 US Dollars).**

<b>ENTITY</b>	<b>TYPE OF FUND</b>	<b>TOTAL FOR PERIOD (1999 - 2002)</b>
<b>MMA</b>	<i>IBRD-IDB reforestation and research and monitoring</i>	<b>11.35</b>
	<i>IDB training</i>	<b>1.00</b>
<b>NRF</b>		<b>35.00</b>
<b>FEDECAFE</b>		<b>4.00</b>
<b>CORMAGDALENA</b>		<b>4.00</b>
<b>FOREC</b>		<b>4.00</b>
<b>PLAN COLOMBIA</b>		<b>5.00</b>
<b>RACs</b>	<i>National Budget</i>	<b>4.97</b>
<b>RACs</b>	<i>Own Funds</i>	<b>95.03</b>
<b>COMMUNITY</b>		<b>40.82</b>
<b><i>SUB-TOTAL</i></b>		<b>205.17</b>
<b>FIC (Preservation)</b>		<b>2.50</b>
<b>MANGROVE PROJECT</b>		<b>0.15</b>
<b>TOTAL</b>		<b>207.82</b>

Drawn up from Table 4 and other information contained in MMA, 1999c.

- National Coffee Growers Federation (FEDECAFE). This is the coffee producers' organisation, which amongst other things carries out social and environmental programmes in parts of the country where coffee is grown.

- Communities. These will participate by contributing part of the labour required for executing projects, which is estimated to represent 20% of the total cost.

Table 2 provides a breakdown of funds from each of the above sources.

As will be seen from the table, a large proportion of funding comes from the revenue of the RACs themselves (45%) and the National Royalties Fund (17%). We referred to the nature of these two sources in Section 3, "Sources of Financing for Environmental Management". The value of the community contribution in kind, which has been estimated to be worth USD40,800,000, represents approximately 20%. Although Ministry of the Environment involvement is only minor (5.5%), this allows it to influence execution of the Plan, which is thus reinforced because of the key role the Ministry plays in directing NRF monies, which are aimed at ensuring that the departments and towns which, as we have already said, are the beneficiaries of this Fund, actually participate. The Table shows details of funds for managing 6,500 hectares through the Mangrove Project and the FIC - Preservation, as a contribution to the overall target of 160,000 hectares.

## **6.2 Joint Financing Strategy**

Two strategies will be employed when funds obtained from the above sources are being used: a joint financing strategy which takes in all the above sources, and a joint financing strategy which only includes the RACs and the community (MMA, 1999c).

**Joint Financing Strategy Involving Three or More Entities.** USD110,130.00 has been assigned to this strategy, for the reforestation of 86,830 hectares. The involvement of the different entities and sources of funding quoted, except for those from the Mangrove Project and the FICs - Preservation, will result in a series of alliances where some or all of these are included. These alliances represent joint financing scenarios where the basic financing arrangement is the 50-30-20 system, since this is the most widely-accepted scheme and also the one that has given the best results in the micro-basin programme.

The basic features of this arrangement are as follows.

- \* 50% of funds will come mostly from sources like the Ministry of the Environment and the NRF, which will contribute either jointly or individually, and in certain cases in conjunction with FEDECAFE and CORMAGDALENA.
- \* 30% of project financing will come from the RACs in the majority of scenarios. These will also be responsible for project execution in the field, as they have traditionally been doing under the micro-basin programme.
- \* 20% of funds will be contributed in kind by the community.

**RAC - Community Strategy.** \$97,686,000 has been assigned to this strategy, for the reforestation of 66,670 hectares. Execution will be in the hands of the RACs, which will guarantee 80% of the financing through their own funds, while the remaining 20% will come from the community.

**Distribution of Funds** Plan funds will be assigned to reforestation and restoration, monitoring and evaluation, research and training, as shown in Table 3 (MMA, 1995c).

USD201,088,000 will be set aside for establishing, maintaining and restoring the 160,000 hectares. This figure includes expenses connected with monitoring and evaluation, which will be carried out by the organisations responsible for execution at regional level.

**Table 3. Distribution of funds.**

<b>ACTIVITY</b>	<b>COST (USD000)</b>	<b>PERCENTAGE (%)</b>
Reforestation, Restoration and Agricultural Forestry Systems	201,089	96.8
Follow-up and Monitoring	700	0.3
Research	5,027	2.4
Training	1,000	0.5
<b>TOTAL</b>	<b>\$207,816</b>	<b>100.0</b>

Source: MMA, 1999c.

A further sum of USD6,727,000 is also envisaged, which will be allocated to research activities; nation-wide follow-up and monitoring; and carrying out the training component (Table 3).

## **Expected impact and benefits**

The Plan is expected to bring with it both institutional benefits and benefits to the communities involved in the different projects. These include social, environmental, economic and institutional benefits<sup>4</sup>.

### **7.1 Social Benefits**

One of the main benefits of the Plan is that it will create direct employment, since one feature of the proposed reforestation projects is that they presuppose that the community will be involved in carrying them out, using its own labour.

Unskilled labour is required at both the plantation establishment and the plantation maintenance stages, while skilled labour is needed in the form of professionals and technicians who are forestry, farming and social specialists, to carry out advisory, training, technical assistance and follow-up activities. It is also expected that indirect employment will be created in connection with the production of raw materials of an industrial nature, such as fertilisers, tools, machinery, etc.

The Ministry of the Environment has estimated that the proposed establishment of 160,000 hectares of forest plantations “could create approximately 39,024 permanent unskilled jobs, 665 jobs for people with professional qualifications in the forestry and agriculture areas, 370 jobs for people with professional qualifications in the social field, and 1,240 jobs for agricultural and forestry technologists” (MMA, 1999c, page 48).

No statistics are available with respect to the number of jobs that could be created by the setting in motion of other Plan components, as this will depend on the type and magnitude of the work undertaken in the fields of restoration and agricultural forestry.

### **7.2 Environmental Benefits**

When the Plan is set in motion, it will result in a whole series of extremely diverse environmental benefits which will be difficult to measure and will vary, depending on the conditions and location of the different projects.

The main environmental benefits it is envisaged will be received include increased water flows at times of drought and regulating these over the course of the year. If

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<sup>4</sup> Sections 7.1 to 7.4 are a summary of information contained in the document “Strategic Plan .....” (MMA, 1999c).

flows are regulated, this also tends to reduce runoff peaks during the rainy season and areas liable to flooding are accordingly reduced.

Another expected effect is a reduction in the soil loss rate, and as a result in sediments transported in water flows. Reduced soil loss in turn has a bearing on reductions in the soil fertility loss rate, and therefore has a favourable effect on agricultural productivity.

Other favourable effects of the Plan components include improved biodiversity and habitat conditions for reproduction and sustaining flora and fauna diversity; landscape restoration or improvement; and CO<sub>2</sub> sequestration that contributes to maintaining the atmospheric balance. The possibility is also being studied of linking this final environmental benefit to long-term programme financing, in order to assure economic sustainability.

### **7.3 Economic Benefits**

Setting the Plan in motion will result in economic benefits of both a private and general interest nature. The private benefits will mainly be in the form of higher net income earned by those country people who own land on which projects are executed (or lower if negative) as a result of timber and non-timber forest products being exploited, depending on the type of reforestation or restoration carried out. Non-timber products include fruit, seeds, resins, latex and wildlife, and also carbon sequestration, access to and exploitation of genetic resources, and ecotourism. Neighbouring peoples will benefit in the form of income from the jobs created or ecotourism-related activities.

The Plan will also result in general economic benefits for the whole community, such as those deriving from the protection of basins which supply water to town waterworks, agricultural and industrial activities, and hydroelectric plants.

### **7.4 Institutional Benefits**

The setting in motion of the Plan presupposes the fact that an information exchange network will be set up between the different institutions involved in each component. These exchanges include the transferring of experiences from the more traditional entities to the newest ones. All this should help to reinforce entities in the National Environmental System (NES) and to increase the degree of specialisation in these institutions and their efficiency in handling projects of this kind.

## **Final considerations and conclusions**

'Plan Verde' is the result of a lengthy process dating back to the late eighties, and there is a precedent for it in the community reforestation programmes for protecting basins which the environmental authorities carried out over the period 1974 - 1992. More specifically, it was conceived when international credits were being negotiated with multi-lateral banks, and execution got under way in 1994. It is important to note that the essential elements of the plan have been incorporated into environmental policy in the last three development plans (1990 - 2002), and this continuity is one of its greatest strengths.

There are three factors which seem to have contributed to the ambitious targets which are included in 'Plan Verde' being set.

- Experience with the IDB-IBRD micro-basin reforestation programme seems to have encouraged the community, local authorities and the Regional Autonomous Corporations in this sense. The programme therefore seems to have arisen from the need that has been felt to restore or reforest protective basins which have been damaged or deforested as a result of human intervention in the most densely populated parts of the country. It is a need which at community level is stated particularly with respect to basins associated with water supplies to municipal distribution systems and farming activities. The RACs also direct part of their own funds to protecting basins associated with the hydroelectric system, since part of these funds, namely electricity sector transfers, are allocated specifically to this.
- The nature and origin of the funds, which could not only guarantee that the Plan will be carried through but could also enable it to continue in the future. Firstly, the Corporations have their own revenue available for this and have the power to use it as they think fit, and as has already been stressed, they are not subject to the whims of central government, nor are they dependent on the national budget. And secondly, the National Royalties Fund enables the towns and departments to obtain funds for environmental management purposes, while Ministry of the Environment involvement ensures that these funds are used more effectively.
- With its community involvement and job creation strategy, 'Plan Verde' has become an instrument which aims to create conditions that are conducive to peaceful coexistence and to reduce those social tensions which only serve to nourish the conflict that is going on today in Colombia. It is a Plan

which fits in well with the process of negotiating and creating conditions for achieving peace in Colombia after an armed conflict that has been going on for close on forty years.

Alongside these strengths, there are various weaknesses and risks in 'Plan Verde' which will have to be faced up to if it is to be executed successfully.

- Although the restoration concept is a highly innovative component of the Plan, the limited scientific and technical knowledge of the subject and the scant experience that are available mean that there will be restrictions and uncertainties when it comes to implementing it.
- Although there is wide experience in reforestation with native species, this has not been done in a very systematic manner, as is shown by the fact that scientific monitoring of this activity has been practically non-existent, including the recent IDB-IBRD Programme, and this renders the technical foundations for establishing the plantations weak from this point of view.
- The Plan envisages research and monitoring being one of its critical components, but as we have said, there is very little experience and 'tradition' in this field. One alternative that is being considered for overcoming this problem and building up national skills is inviting international organisations to take part in this process.
- The main sources of financing - the revenue of the RACs themselves and of the National Royalties Fund - have been quoted as one of the strengths of the Plan in view of their origin and nature. But the "shielding" these sources enjoy could alter, given the prevailing difficult economic situation in the country, which is the most serious one this century. This has resulted in a restructuring programme being arranged with the International Monetary Fund, and this in turn involves a drastic reduction being made in the fiscal deficit. The risk would exist during this process that the revenue of the RACs or National Royalties Fund allocations could be compromised in part.
- The problem of public order in the country could hinder introduction of the programme in certain areas, due to the difficulties the public environmental authorities are experiencing in doing field work. However, given the community nature of the Plan, this risk might not be so great.
- The 'politicisation' which permeates public administration and the corruption that abounds in it are two factors which could also have a harmful bearing on ensuring that the Plan is set in motion effectively. This problem could be reduced through external evaluation and citizen supervision processes.

What we have, therefore, is an ambitious reforestation and ecological restoration plan that has both strengths and weaknesses. Whether it will prove possible to overcome these latter will depend not only on how successfully it is executed but also on whether it is possible to create a 'tradition' in this field in Colombia.

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**Annex 1**  
**New targets (According to a re-scheduled done in March, 2000)**

**1. Target: 100.000 hectares**

**2. Sources of Financing by Entity (In Millions US Dollars, 2000).**

ENTITY	RESOURCE NATURE	TOTAL: 1999-2002	
		US Dollars (millions)	%
Ministry of the Environment	National	5.76	4.90
Regional Autonomous Corporations (RACs)	Regional	46.70	40.00
National Federation of Coffee Growers		3.80	3.30
Magdalena River Corporation	Regional	3.80	3.30
Community	Regional	23.50	20.00
Sub-total		83.56	71.50
National Royalty Fund	Regional	33.33	28.50
Total		116.89	100.0

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