



Implementation of the CBD in Brazil:

Issues on the Agenda of COP9



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Foreword

The Brazilian Ministry of the Environment has the mandate to coordinate the implementation in Brazil of the commitments made under the Convention on Biological Diversity (CBD). This responsibility falls with the Secretary of Biodiversity and Forests, established in 1999 to coordinate policies related to the conservation and sustainable use of biodiversity, forests, fisheries, agrobiodiversity and protected areas as well as the policies for the access to genetic resources and the associated traditional knowledge and the sharing of benefits derived from such access.

In 2003 the Coordinating Committee of the National Biological Diversity Program, established in 1994, was reformed and upgraded into the National Biodiversity Committee – CONABIO with an expanded mandate to coordinate the implementation of the CBD in Brazil and to coordinate the implementation of the principles and guidelines of the National Biodiversity Policy, established in 2002.

This committee, with representatives from 10 governmental sectors and from 10 sectors of the civil society, has since adopted the National Biodiversity Action Plan, the National Priority Areas for Biodiversity and the National Biodiversity Targets for 2010, among other policy decisions of relevance.

The Secretary of Biodiversity and Forests (SBF) operates in a matrix structure with a focus on major thematic agendas and on the major biomes of the country. It operates through four National Departments, the Department of Biodiversity Conservation (DCBIO), the Department of Forests (DFLOR), the

Department of Protected Areas (DAP) and the Department of Genetic Patrimony (DPG); four Biome-focused Sectors, the Nucleus on the Coastal and Marine Zone, the Nucleus on the Atlantic Forest and the Pampa, the Nucleus on the Cerrado and the Pantanal, the Nucleus on the Caatinga; as well as the Coordination Units of several national and regional programmes, projects and committees.

The Secretary of Biodiversity and Forests does not operate alone as it work in partnership with the other secretaries of the Ministry of the Environment - the Secretary of Climate Change and Environmental Quality, the Secretary of Water Resources and Urban Environment, the Secretary of Extractivism and Sustainable Rural Development, the Secretary of Institutional Coordination and Environmental Citizenship, and the Executive Secretary. The Biodiversity policies and programs are implemented mostly through the executive arms of the Ministry of the Environment: the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA), the Chico Mendes Institute of Biodiversity Conservation (ICMBIO), the Brazilian Forest Service (SFB), the Rio de Janeiro Botanical Garden Research Institute (JBRJ), the National Water Agency (ANA), and the National Environmental Fund (FNMA). Finally, a large network of partner institutions of federal agencies linked to other sectoral ministries, state governments, civil society organizations and donor foreign agencies cooperates with the Ministry of the Environment to implement the biodiversity policies, programs and projects.

Since the 8th Conference of the Parties held in Curitiba in March 2006, the Brazilian Ministry of the Environment has intensified its efforts to implement the broad agenda adopted under the CBD

and to achieve the 2010 Biodiversity Target and sub-targets agreed in COP decisions VII/30 and VIII/15 and in CONABIO Resolution 3/2006. This booklet provides an overview and update of the major initiatives taken by the Brazilian Government in relation to the major issues in the agenda of the 9th Conference of the Parties held in Bonn.

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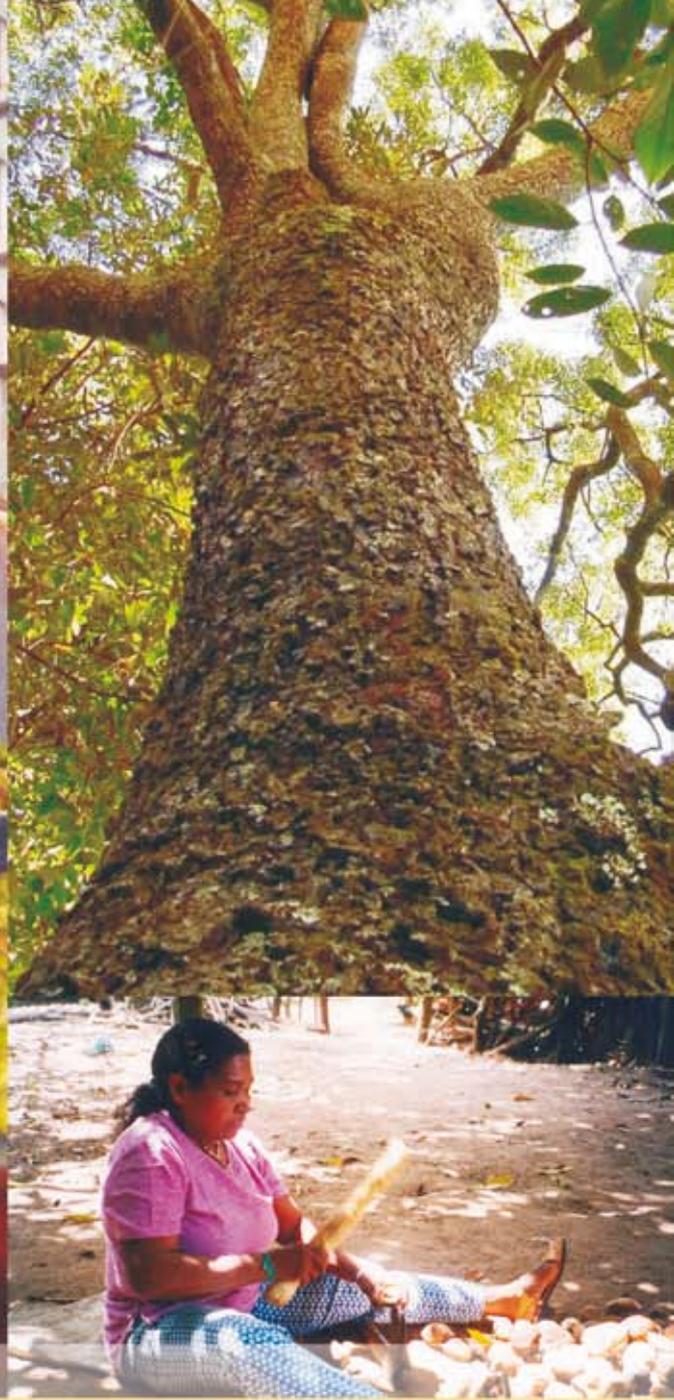






Thematic Programmes





Agricultural Biodiversity

Conservation and sustainable use of agrobiodiversity are strategic objectives that ensure the food and nutritional safety of urban populations, promote family agriculture, protect traditional peoples and communities and are essential components of the sustainable development and maintenance of the genetic diversity of species that are of current or potential social-economic importance to the country.

Over the last four years, many activities have been carried out including, for example, the creation of Outreach Centres for Agrobiodiversity Management (*Centros Irradiadores do Manejo da Agrobiodiversidade – CIMAS*), whose objective is the recovery, conservation and sustainable use of components of agrobiodiversity using agro-ecological processes and principles. Organization of seed exchange fairs, congresses and workshops have also been supported by the MMA. Another activity related to the matter was the effective participation of the MMA in the development of the National Policy on Medicinal and Phytotherapeutic Plants (*Política*

Nacional de Plantas Medicinais e Fitoterápicos).

In conjunction with other governmental bodies that also work with agrobiodiversity, the MMA led the creation of a more ample government program that was started in 2008. This program involves MMA activities, as well as those of the Ministry for Agrarian Development (*Ministério do Desenvolvimento Agrário – MDA*), Social Development (*Desenvolvimento Social – MDS*), and the Ministry of Agriculture, Livestock and Supply (*Ministério da Agricultura, Pecuária e Abastecimento – MAPA*). Other government bodies such as the Brazilian Agricultural Research Corporation and the National Supply Company (*Companhia Nacional de Abastecimento – CONAB*) are also part of the new program.

The Programme for the Conservation, Management and Sustainable Use of Agrobiodiversity strives to ensure conservation and sustainable use of agrobiodiversity components so as ensure food safety, employment and income

generation, retribution for environmental services. Activities foreseen include: a) identification of and research on fauna and flora species of economic importance; b) support to demonstrative projects aimed at establishing sustainable production systems; c) support to the management of natural resources in grasslands of the Amazon region; d) stimulate the establishment of community systems for the conservation and sustainable use of agrobiodiversity; e) establishment of territorial units of rural environmental management; f) support to technological innovation, conservation practices, use and management of agrobiodiversity developed by family producers, traditional peoples and communities; g) development of organic agriculture; h) strengthening and valuing of territorial initiatives for the management and sustainable use of agrobiodiversity; j) research, promote access and appropriation of technologies aimed at the sustainable management of agrobiodiversity with an agro-ecological focus; k) implementation of plans for expanding the pro-environment development sites at national scale and; l) monitoring the participation of food products from agrobiodiversity in the food acquisition program.

Pollinators

Pollination is one of the most relevant environmental services for the sustainability of agriculture. Recent studies show not only its economic value, estimated to be of several billion dollars at the global value, but also the existence of a global process of decreased pollinators resulting especially from deforestation, the excessive use of pesticides, and the predatory destruction of nests. A deficit of pollination in several agro-ecosystems is observed, and this leads to losses in the productivity and

quality of agricultural products. Due to the importance of the matter, the Conference of the Parties of the Convention on Biological Diversity approved the creation of an International Pollinators Initiative (IPI) (Decision V/5) in the scope of the Thematic Work Program on Agricultural Biological Diversity (instituted by Decision III/11), as well as a Plan of Action for its implementation (Decision VI/5).

Several countries have established measures to promote implementation of the IPI, and the initiatives of North America, Europe and Africa are highlighted. Brazil has been participating in these international discussions on IPI in the scope of the CBD, and has organized three international meetings on IPI.

With the objective of promoting the implementation of IPI in developing countries, the Food and Agriculture Organization (FAO) invited Brazil to take part in an international project entitled Conservation and Management of Pollinators for Sustainable Agriculture through an Ecosystem Approach, with South Africa, Kenya, Ghana, India, Pakistan and Nepal. This project includes four components: a) development of basic knowledge; b) extension and promotion of good practices in benefit of pollinators; c) capacity building and promotion of volunteer actions; d) sharing of experiences, dissemination of results and elaboration of public policies. This project counted on a preparatory assistance (PDF-B, which was approved in the end of 2003 by the Global Environment Facility (GEF). The project was approved by the GEF in May of 2007 to become part of the work program. Endorsement by the council and the signing of the donation agreement are expected to take place in the first semester of 2008.





Forest Biodiversity

(including Mountain Biodiversity)

Brazilian forests detain the largest biological biodiversity in the entire planet. They take on significant social-environmental importance and ensure the maintenance of 700 thousand direct jobs and 2 million indirect jobs.

Brazil is sub-divided into six biomes, the largest of which is the Amazon, whose preserved area totals 85%, followed by the Pantanal (88%), the Caatinga (62%), the Cerrado (60%) the Pampa (41%) and the Atlantic Forest (25%) (MMA, 2007). In light of its biomes and their associated ecosystems, Brazil is considered to be the first country in terms of biodiversity and presents great potential for using this wealth.

The Brazilian Federal Government's challenge is to conciliate conservation of the rich flora and fauna with the production and sustainable use of forest resources. The forestry sector within the federal public administration is comprised by four bodies:

- The Ministry for the Environment, by means for the Department of Forests

(*Departamento de Florestas – DFLOR*) is responsible for proposing policies and norms and for defining strategies;

- The Brazilian Forestry Service, which is responsible for the management of public forests;

- The Brazilian Institute for the Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis - IBAMA*), which is the federal agency responsible for executing the policies. Its Office for the Sustainable Use of Biodiversity and Forests is responsible for coordinating, controlling, supervising, normatizing, monitoring, guiding and assessing the execution of federal measures pertaining to the licenses and authorizations for access, management, commercialization and use of forest and flora resources;

- The Chico Mendes Institute for Biodiversity Conservation (*Instituto Chico Mendes de Conservação da Biodiversidade – ICMBio*), which is responsible for monitoring the public

use and economic exploitation of natural resources within protected area sites.

The Ministry for the Environment acknowledges the importance of social participation in elaborating the policies of the National Forest Program (*Programa Nacional de Florestas – PNF*), ensured by the National Forest Commission (*Comissão Nacional de Florestas – CONAFLO*R). This commission works within the scope of the MMA and its objectives are to provide guidelines for the implementation of PNF measures and to allow for the articulation and participation of several groups interested in the development of public policies within the Brazilian forestry sector. The CONAFLO is comprised by 39 members who are fairly distributed among government (20 members) and the organized civil society, which has 19 representatives.

Another space for society's participation is the National Social-Environmental Forum of the Sector for Planted Forests. This forum is of a consultative nature and strives to provide a space for debates, propositions, assessments and dissemination of information, projects and actions pertaining to the productive, educational and environmental sectors. It is comprised by teaching, research and continued education institutions, businesses, civil society organizations and public organizations from different states and that are related to the planted forests sector.

Within its attributions, the DFLOR develops several actions varying from the formulation and regulation of the forestry sector and the development of measures for the recovery of degraded areas to reforestation, forest certification and the development of national plants for the silviculture of non-forest products.

Restoration of Degraded Areas

Of a total of 2,494.8 million km² of deforested areas, approximately 30% is considered to be degraded and passive of recovery activities. To contain the advancing process, the Brazilian government established the protection of soil use and water resources and the conservation of biological resources as fundamental aspects of technical actions and policies. Therefore, measures that foster reforestation and maintenance of remaining forests are essential elements in consolidating these policies. In executing such policies, the following is expected:

- Recovery and protection of permanent preservation areas that are contiguous to springwaters, areas that share boundaries with water bodies and of water sources;
- Positive impacts on the quality and quantity of water;
- Increase to the process for forest and environmental adaptation of rural and urban properties.

In fulfilling governmental determination in which the São Francisco Hydrographic Basin is a priority when it comes to revitalization, the DFLOR has been working with the perspective of reverting the degradation of the São Francisco River. For this, it elaborated and is carrying out an integrated forest development plan, which calls for the mobilization, awareness and participation of local communities, business sectors and stakeholders.

Therefore, a diagnostic was made of the forestry problems of the São Francisco basin and culminated with the development of a plan for strategic action. As part of the strategy to implement the plan, capacity building courses on forest

protection, management and recovery were given and the Centers for the Recovery of Degraded Areas (*Centros de Recuperação de Áreas Degradadas*) were installed in four locations of the basin, and native species began to be planted.

National Plan for Silviculture with Native Species and Agro-Forestry Systems – PENSAF)

There are 2,494.8 km² of deforested areas in Brazil. Part of this area shows great potential for forest production. The availability of areas that are apt for forest production with native species allows for the generation of social-economic benefits to small and medium-sized rural producers of forest and agro-forest plantations.

The National Plan for Silviculture with Native Species (PENSAF) strives to create favourable conditions for the use of native forest species and agro-forestry system for the purpose of commercial production that yields increased availability of its products and results in significant social, economic and environmental benefits.

The PENSAF is structured upon eight components, which are divided as follows: (1) information system; (2) science and technology; (3) availability of inputs; (4) production of seeds and seedlings; (5) technical assistance and rural education; (6) credit; market and sales of forest products; (7) legislation; and (8) monitoring and control.

Seeds Network

Since 2001, the MMA has promoted the structuring of eight networks of native Brazilian Forest seeds distributed throughout the different Brazilian biomes. The seeds networks aim at fostering

the sales and improving the quality of seeds and seedlings of native forest species. After these local networks were formed, the Brazilian Network of Forest Seeds (*Rede Brasileira de Sementes Florestais – RBSF*) was created and includes the eight regional networks. The PNF structured the RBSF, which in turn elaborated the Strategic Plan for the Production of Seeds and Seedlings (*Plano Estratégico para Produção de Sementes e Mudras*). This Strategic Plan strives to recover 50 thousand hectares of degraded areas a year throughout Brazil. The networks are inter-connected with the National Plan for Silviculture with Native Species and Agro-Forestry Systems as they provide information on native species and make genetic-quality seeds and seedlings available.

Regulation of the Forestry Sector

Brazilian legislation is comprised by a set of norms that date back to the 1930's, and some that date back to the 19th Century. The current forestry code dates back to 1965 and since then has undergone modifications as well as the regulation of various of its articles.

The main characteristics of the Brazilian forestry code are: the establishment of permanent preservation areas, which are areas protected by law that are not necessarily covered by native vegetation; preservation of water resources, landscape, geological stability, biodiversity, genetic flow of fauna and flora; protection of the soil; and to ensure the well-being of human populations.

There are also legal reserves, which are areas established by law. These areas are established according to the percentages of rural property areas in which forests shall be preserved for the purpose of sustainable forest management. This

percentage varies between 20% and 80% of the rural properties.

Other institutes were slowly created, as for example the forest service areas (*áreas de servidão florestal*), which are areas created by land owners on a permanent or temporary basis who are entitled to suppress or exploit the native vegetation located outside the legal reserve areas or permanent protection areas, but have the advantage of being negotiated through a document of forest reserve quotas.

Other instruments are also present in the legal framework of forests, as for example the forest development plan, the environmental declaratory act, the plans for controlling and combating deforestation and forest fires, forest origin document, sustainable forest management plans, among others. A description of some of the instruments of the Brazilian forestry policies follows.

Sustainable Forest Management

Incentives to practices of sustainable forest management are very important in light of the awareness that it is only by valuing the standing forest that the deforestation process can be halted. With this, a review of the legal framework ruling this activity is being promoted so as to make it more competitive as regards the other means of using the soil. Due to the continental nature of the country and the biological diversity of each region, legislation for Sustainable Forest Management shall consider its applicability for each Brazilian biome.

The Caatinga and Amazon biomes have been contemplated with the normatization of technical procedures for the elaboration, presentation, execution and technical assessment of

the Sustainable Forest Management Plan (PMFS), and the rules for the Cerrado biome are being addressed.

Other measures supported by the Brazilian government include the discussion with the society on the participatory policies for incentivizing sustainable community forest management and to develop the production chains of social-biodiversity.

Sustainable Forest Management in the Caatinga Biome

Forest management in the Caatinga is considered to be a viable alternative to ally the region's economic development with the guarantee of preserving natural resources. The Caatinga biome has 360,000 Km² of remaining forest coverage, of only 0.26% are under forest management. In order to fulfil the current energetic demand, it would be necessary to place an area of 2.5 million hectares (equivalent to 7% of remaining forest coverage areas) under management. The DFLOR supports measures that foster forest management in the Caatinga for the following reasons:

- Forest management demonstrated the potential to fulfil the current and future demand for forest energy in a sustainable manner. Wood and vegetable coal supply one third of the industrial and commercial energy demands of the country's north-eastern region;
- It is a technical, economic and socially viable practice;
- Forest management is compatible with other traditional uses of soil, as ranching, apiculture and the obtainment of non-lumber forest products. This allows for another alternative for the productive use of areas with native vegetation and

thus increases employment and income opportunities for the rural population;

- Management technology is simple and is easily learned by producers and over the past 20 years it has been employed, tested and approved;
- Biodiversity conservation complements the role of protected area sites;
- It contributes to reduce the risks of desertification and decreases regional vulnerabilities to climate changes;
- It preserves the carbon stocks and produces renewable energy thus avoiding the emissions of greenhouse effect gases.

Technical Assistance and Forest Education to Family Producers in the Atlantic Forest, Caatinga, Cerrado and Amazon Biomes

Family agriculture is the main employment generator in the rural areas of Brazil. Even though such productions occupy only 30% of agricultural facilities in the country, they are responsible for 76.9% of persons working on the land. Technical assistance is usually rendered to these persons with the objective of increasing productive capacity, income generation and income improvement. Since 2004, the MMA has been supporting measures regarding the capacity building of family producers with the purpose of fostering sustainable rural development in the Atlantic Forest, Caatinga, Cerrado and Amazon biomes. The capacity building process involves training multiplying agents on appropriate management techniques for each biome, as well as on rendering technical assistance and forest education to family producers in elaborating and monitoring sustainable, multiple-use management projects, silviculture and agro-forestry systems.

The objective is to capacitate approximately 15,000 producers for forest practices so as to allow for value to be attributed to goods coming from silviculture, agro-forest or managed forest areas and thus yield direct benefits such as commercially viable goods, or indirect benefits such as the environmental roles played by forested areas.

Forest Certification

The Brazilian Program of Forest Certification (*Programa Brasileiro de Certificação Florestal – CERFLOR*) strives to foster sustainable forest management of forest resources and its objectives include providing support to small forest producers. The program was developed through a partnership between the National Institute of Metrology, Standardization and Industrial Quality (*Instituto Nacional de Normalização e Qualidade Industrial - INMETRO*), the Ministry for the Environment, the Brazilian Silviculture Society and the Brazilian Technical Standards Association (ABNT).

INMETRO is the Brazilian government's official accreditation organization. It is responsible for accrediting certification institutions in the country and operates the CERFLOR. This is a volunteer program and is open to the participation of interested parties in all steps from the process of establishing standards in the ABNT to the process of elaborating certification requirements, including the criteria for accrediting institutions within the scope of INMETRO. In Brazil, there are 835,716 hectares of forests accredited by the CERFLOR. Of these hectares, 91.3% have certified their principles, criteria and indicators for forest plantations and 8.7% for forest management (Facts and Numbers, 2007).

Atlantic Forest

The Atlantic Forest is one of the richest biomes in terms of biodiversity in the world and also the second most endangered of destruction. 70% of the Brazilian population, 110 million people, lives in its domain. Hence, to live in the Atlantic Forest is a great privilege, but also a big responsibility.

History, Threats and Outlook

The destruction of the Atlantic Forest started in 1500 with the arrival of the Europeans. All of the main economic cycles since the exploration of the brazilwood tree, gold and diamond mining, cattle raising, coffee and sugar plantations, industrialization, wood exportation and, more recently, soya and tobacco plantations have dislodged, step by step, the Atlantic Forest.

There are still many factors that impact and contribute to the degradation of the Atlantic Forest, like: the growth of unplanned cities, large scale projects, mining, advancement of agricultural and exotic tree monocultures planted without planning, predatory shrimp farming and animal trafficking.

Considering the critical situation faced by the Atlantic Forest, several laws were approved to protect, restore and promote the sustainable use of the biome. These laws, along with other initiatives, contributed to the reduction of deforestation levels by 70% in the last decade. Moreover, forest regeneration has begun in areas that were previously used for agriculture or cattle ranching.

Where the Forest is Located

The Federal Constitution of Brazil established the Atlantic Forest as a

National Heritage. The forest covers, totally or partially, 17 Brazilian states. Originally the Atlantic Forest covered approximately 15% of the Brazilian territory, an area equivalent to 1,300,000 Km², almost 4 times the area of Germany.

Recent mapping showed the existence of 27% of native vegetation cover in the Atlantic Forest, in relation to its original area, including all of the remaining forest areas and the vegetation of natural grasslands, coastal woodlands and mangroves. The well conserved forest remnants total close to 7% of the original area of the Atlantic Forest.

Currently, more than 110 million Brazilians are serviced by the waters that spring from the Atlantic Forest and that form diverse rivers that supply Brazilian cities and metropolises such as Rio de Janeiro and São Paulo. The high levels of biological diversity found in the Atlantic Forest make this biome extremely important in terms of ecosystem services. Safeguarding these services provides ecosystem sustainability and affords quality of life for human beings. Ecosystem services are benefits supplied to people by ecosystems, such as: water storage, rainfall generation, weather moderation, carbon fixation, soil conservation and the production of food, medicine and genetic resources.

The Atlantic Forest also shelters a great cultural diversity, composed of indigenous people, like the Guaranis, and non-indigenous traditional cultures, like the caçara and the caboclo ribeirinho (fishermen communities), quilombolas (runaway slave communities) and traditional subsistence farmers. The traditional communities depend on the natural resources of the Atlantic Forest and most of them have developed sustainable systems of land-use.

Biodiversity Records

The Atlantic Forest is a “hotspot”: a reservoir of high biodiversity, but at the same time, under serious threat of destruction. Many Atlantic Forest species are endemic and endangered. Endemic means that they cannot be found in any other place on the planet.

The Atlantic Forest still contains more than 20 thousand plant species, of which 8 thousand are endemic. To give you an idea of how incredible these numbers are, just compare them to the estimates of some continents: 17,000 species in North America, 12,500 in Europe. The Atlantic Forest in the south of Bahia holds the world record of diversity in tree species in a single hectare: 454 distinct species.

The preservation of remaining patches of Atlantic Forest is essential to safeguard the fauna. In total, the Atlantic Forest contains 849 bird species, 370 amphibian species, 200 reptiles, 270 mammals and close to 350 fish species. What is really impressive is the enormous amount of endemic species: 73 mammal species, among them 21 primate species.

Atlantic Forest Landscapes

The Atlantic Forest is composed of various different ecosystems, conferring a large variety of landscapes.

- Dense Rain Forest- Stretching from Ceará to Rio Grande do Sul, located mainly along the foothills of the Serra do Mar and of the Serra Geral mountain ranges and in islands located on the coast between the states of Paraná and Rio de Janeiro. It is marked by tall treetops that form a canopy.
- Mixed Rain Forest with Araucaria

angustifolia– Known as Araucaria Forest, since the Brazilian Pine (*Araucaria angustifolia*) constitutes the canopy, with a considerably dense understory. It survives in the plateaus of the states of Rio Grande do Sul, Santa Catarina and Paraná, and can be found in noncontiguous patches in the more elevated parts of the states of São Paulo, Rio de Janeiro and southern Minas Gerais.

- Open Rain Forest - The vegetation is more open, without the presence of a closed canopy. Located in regions where the climate presents a period of two to, at the most, four dry months, with median temperatures between 24° C and 25° C. It is located, for example, in the states of Minas Gerais, Espírito Santo and Alagoas.

- Semi-deciduous Seasonal Forest - Known as Interior Forests, located in the Brazilian plateau, in the states of São Paulo, Paraná, Minas Gerais, Mato Grosso do Sul, Santa Catarina and Rio Grande do Sul. Some enclaves occur in the Northeast, such as in the states of Bahia and Piauí.

- Deciduous Seasonal Forest - One of the most threatened, with few remaining areas in the states of Bahia, Minas Gerais, Espírito Santo, São Paulo and Rio de Janeiro. Its vegetation occurs in locations with two very well demarcated seasons: a rainy one, followed by a long dry period. More than 50% of the trees lose their leaves during the dry season. Some enclaves occur in the Northeast, such as in the state of Piauí.

- Natural Grasslands -Normally occur in elevations and on mountain ridgelines and peaks, in montane and high montane environments, associated or not to forest fragments. The characteristic vegetation is formed by grassland communities,

in certain places, interrupted by small moorlands. On the highest altitudes they are frequently found on the flat tops or rocky peaks of mountains, such as in the Itatiaia National Park (located along the states of Rio de Janeiro, São Paulo and Minas Gerais). In the south they cover areas in the states of Rio Grande do Sul, Santa Catarina and Paraná.

- Mangroves – Formation that occurs along estuaries, due to the brackish water formed when the river waters mix with the ocean. It is a very characteristic vegetation because it only has seven tree species, but harbours a diversity of micro algae at least ten times greater.
- Coastal Woodlands (restingas) - Occupy large coastal extensions, on sand dunes and coastal plains. The sandbank vegetation starts close to the beach, as grass and crawling vegetation, and gradually transforms into more varied and developed sandy-soil forest and scrub when it advances inland. The restinga forest can appear as enclaves with dense aquatic vegetation. Home to many cacti and orchids.

Saving the Atlantic Forest

In the last two decades Brazilian public authorities took heed, in a more effective and proactive way, of the critical situation facing the remaining forest formations and associated ecosystems and all of the rich biodiversity of the Atlantic Forest.

The approval of Law Nº 11,428 in 2006, known as the Atlantic Forest Law, after 14 years of moving through National Congress, is a decisive, historic step for the further advancement of legal, judicial milestones to promote conservation, protection, regeneration and sustainable utilization of native Atlantic Forest vegetation.

It is clear that the survival of the vast

diversity of animal and plant species depends on the conservation of what is left of the Atlantic Forest and on the restoration of degraded areas. Likewise, it is a worldwide consensus that protected areas represent the most effective way to conserve biodiversity in the long term.

In the case of the Atlantic Forest, only about 2% of its original area is protected in Strict Nature Reserves/Wilderness Areas, the so-called full protected areas, and another 4% in Managed Resource Protected Areas, known in Brazil as sustainable use protected areas. Today, one of the major gaps for the conservation of the biodiversity associated to the Atlantic Forest, in the long term, is this low percentage mainly of full protected areas. To aggravate the problem, these protected areas are not uniformly distributed among the diverse forest formations and associated ecosystems.

The goal is to fulfil the commitments that Brazil assumed with the international community and also internally, to protect at least 10% of the biome until 2010, attaining the goals established by the Convention on Biological Diversity (CBD) and by the National Commission on Biodiversity (CONABIO). In addition to broadening the system of protected areas, immediate measures to promote the restoration of degraded areas are necessary, principally to interlink the fragments and allow gene flow of fauna and flora.

The Atlantic Forest has 879 priority areas for conservation, sustainable use and benefit sharing of biodiversity, that total 428,409 km² of the biome. These areas will be considered for the means of creating protected areas, biodiversity research and inventory, use, restoration of degraded areas and of species exploited

or threatened of extinction and access to genetic resources, associated traditional knowledge and benefit sharing.

The Atlantic Forest boasts great potential with respect to biotechnology use and sustainable use of non-timber natural resources, such as leaves, oils, resins, biomass, fruits, seeds and medicinal plants. Dependent on standing forests, ecotourism and rural ecological tourism are other important opportunities for income generation in rural areas.

Concerning climate change, the necessary restoration of the Atlantic Forest can contribute to the global effort to reduce greenhouse gas emissions which cause global warming, by carbon fixation, placing the Atlantic Forest biome as a prime area for project realization under the carbon reduction market.





Dry and Sub-humid Lands Biodiversity

The Caatinga Biome

The Caatinga is an exclusively Brazilian biome. It covers 844,453 Km² or 11% of Brazil, and is the main biome of the north-eastern region. It is located in the semi-arid area where average annual temperatures vary between 25°C and 29° C, and extends over eight states of north-eastern Brazil and part of the north of Minas Gerais state, in the south-eastern region. The Caatinga is Brazil's least known biome; few surveys have been carried out. However the most recent data suggest a high degree of environmental and species richness: 932 woody plant, 148 mammal and 510 bird species, many of which are only found in the Caatinga.

Around 27 million people currently live in the original Caatinga area. Forty percent of the original ecosystems of the Caatinga has been completely altered, mainly by deforestation and burnings, in a land settlement process that began in the colonial period. The greater part of the population that lives in the Caatinga is poor and dependent on the biodiversity of the region for its survival. On the other

hand, these same resources, if conserved and used sustainably can be a driver for the development in the region.

Conserving the Caatinga is closely associated with combating desertification, a process of environmental degradation occurring arid, semi-arid and dry semi-humid areas. In Brazil, 62% of areas susceptible to desertification are located in areas originally covered by Caatinga, many of which have been substantially altered.

In the international context, the Caatinga is directly related to two of the three main environmental conventions within the scope of the United Nations -- the Convention on Biological Diversity and the Convention to Combat Desertification. This context can assist the conservation of this biome if there is a pooling of efforts on the part of those responsible for the national implementation of these conventions – the Secretariat for Biodiversity and Forests and the Secretariat for Extractivism and Sustainable Rural Development in the Ministry of the Environment and their partners in the governmental and non-

governmental spheres. The Caatinga is also indirectly related to the Convention on Climate Change, since climate change is increasing the aridity of this region.

Protected Areas

Less than 4% of the Caatinga is located within federal protected areas and less than 1% in strict-protection areas (such as Parks, Biological Reserves and Ecological Stations), which impose greater restrictions on human activities. Even so, these protected areas face serious problems of implementation. They need to address a series of problems to do with the protection of their biodiversity, such as hunting, fires, deforestation and wildlife trafficking. In addition it is worth mentioning that only half the federal protected areas in the Caatinga contain only this biome within their limits. A large number of Caatinga protected areas reveal basic problems, such as a lack of proper land titles, an absence of management plans and a lack of personnel. It is essential that new protected areas are created in order to increase the proportion of this biome under protection and to improve the management of existing areas. The Caatinga Biome Coordination Unit in close association with the Department of Protected Areas is working towards the identification and creation of new protected areas by updating the assessment of priority areas for conservation in the biome and the procedures for their creation.

Sustainable Use

The Caatinga has great potential for the sustainable use of its biodiversity. In fact, a large part of its resident population has long been using the biodiversity of the Caatinga for its livelihood. We can

highlight a number of species that have (i) **timber potential**, such as *Mimosa caesalpinifolia*; (ii) **forage potential**, such as *Caesalpinia ferrea* and *Zizyphus joazeiro*; and (iii) **medicinal potential**, such as *Muracrodouon urundeuva* (an astringent), *Annona crassiflora* (an anti-diarrheal), *Croton campestris* and *Croton sp.* (antipyretics). Most of the exploitation of the Caatinga is extractivist with little concern paid to its impacts, thus jeopardising the survival of the species exploited. However there are enterprises and communities that sustainably harvest products such as carob fibre (*Neoglaziovia variegata*) for handicrafts or food items such as juices and candies from countless fruit species such as the umbu (*Spondias tuberosa*).

Part of the mandate of the Caatinga Working Group established by the Ministry of the Environment and coordinated by the Caatinga Biome Coordination Unit, is to monitor the execution and assess the results of the “Demonstration of Integrated Management of Ecosystems and River Basins in the Caatinga Biome” project. The principal objective of this Ministry of the Environment project is to encourage the sustainable use of timber and non-timber products, by supporting a series of activities to manage the Caatinga for multiple purposes, including the marketing of the sustainable produce of Caatinga communities.

Caatinga Biome Coordination Unit - Objectives and Activities

The Caatinga Biome Coordination Unit is responsible within the Ministry of the Environment for defining policies and strategies for the conservation of this biome. The Unit’s priorities include disseminating and promoting the Caatinga within the country,

developing the legal framework for its conservation, increasing the area under protection within the biome, improving the implementation of these areas and monitoring deforestation within the Caatinga. Its specific objectives include:

- a) Updating the mapping of surviving areas and monitoring the vegetation coverage of the biome;
- b) Monitoring and supporting the work of the National Council for the Caatinga Biosphere Reserve;
- c) Integrating actions of existing projects for the conservation and sustainable use of biodiversity in the Caatinga;
- d) Monitoring the policies, programmes and projects being carried out by the Ministry of the Environment and other governmental activities at the municipal, state and federal levels, in particular those relating to the Conventions on Biological Diversity, Desertification Combat and Climate Change, and thereby constituting a key forum for dialogue with civil society;
- e) Effectively establishing the Caatinga Working Group.

The mandate the Caatinga Working Group is to propose public policies for the conservation and sustainable use of the Caatinga and programmes to this end. The working group comprises more than fifteen institutions, including representatives of federal and state governments, non-governmental organizations and representatives of the scientific, agricultural and industrial sectors.

The Cerrado Biome

The Cerrado is the second largest

biome of South America and occupies 2,036,448 Km² of land (22% of the entire Brazilian territory). Its continuous area extends into the states of Goiás, Tocantins, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Bahia, Maranhão, Piauí, Rondônia, Paraná, São Paulo and the Federal District, in addition to insertions in the states of Amapá, Roraima and Amazonas. The headsprings of South America's three largest hydrographic basins (Amazonas/Tocantins, São Francisco and Plata) area located in this territory, and thus yields elevated water potential and favors its biodiversity.

The Cerrado is considered to be one of the worldwide hotspots for biodiversity and presents a significant abundance of endemic species and suffers exceptional losses of habitat. From the point of view of biological diversity, the Brazilian Cerrado is known as the world's richest savannahs. It is home to over 6,500 species of already-catalogued plants, 44% of which are of endemic flora. There is a wide array of habitats, which determine a noteworthy alternance of species among different phytophysiognomies. Close to 199 mammal species are known and the rich avifauna includes approximately 837 species. The number of fish (1200 species), reptiles (180 species) and amphibians (150 species) is quite elevated. The number of endemic fish is not known, but the numbers are very high for amphibians and reptiles – 28% and 17%, respectively. According to recent estimates, the Cerrado is refuge to 13% of all of the tropic's butterflies, to 35% of all bees, and to 23% of all termites. In addition to the environmental aspects, the Cerrado has great social importance. Many traditional populations live off its natural resources, including indigenous ethnic groups, quilombas, geraizeiros,

river-side populations, babaçueiros, vazanteiros and quilombola communities that together are part of the historic and cultural heritage of Brazil and hold the traditional knowledge of its biodiversity. Over 220 species have medicinal uses and more than 416 can be used in the recovery of degraded soils, as wind barriers, protection against erosion or to create habitats for many natural predators to plagues. Over 10 types of edible fruits are regularly consumed by the local population and sold in urban centers. These fruits include the pequi (*Caryocar brasiliense*), buriti (*Mauritia flexuosa*), mangaba (*Hancornia speciosa*), cagaita (*Eugenia dysenterica*), bacupari (*Salacia crassifolia*), the cerrado cashew (*Anacardium humile*), araticum (*Annona crassifolia*) and the baru seeds (*Dipteryx alata*).

Nonetheless, innumerable plant and animal species are endangered. It is estimated that 20% of the native and endemic species are no longer present in the protected areas and that at least 137 animal species of the Cerrado are in danger of becoming extinct. After the Atlantic Forest, the Cerrado is the

Brazilian biome that most suffered changes due to human occupation. With the increasing pressure for opening new areas for incrementing beef and grain production for exports, and the recent demand for biofuels, there has been a progressive depletion of natural resources in the region. In the past three decades, the Cerrado has been degraded by the expansion of the Brazilian agricultural frontiers. Furthermore, the Cerrado biome suffers a highly predatory exploitation of its lumber for coal production.

Vegetation Coverage of the Cerrado Biome

Studies have demonstrated that this biome is currently facing serious threats. In a recent study launched by the Ministry for the Environment based on satellite images of 2002, it was concluded that 61% of Cerrado areas are still covered by the biome’s natural vegetation, which includes native pastures. Nonetheless, no assessment of the conservation status of these lands has been made. Based on 2002, the results found were as follows:

Grouped Phytoecological Region	Area (Km ²)	%
Native forest vegetation	751,943.49	36.73
Native non-forest vegetation	484,827.26	23.68
Anthropic areas	797,991.72	38.98
Water	12,383.88	0.6
Total	2,047,146.35	100.00

A review of the priority areas for the conservation, sustainable use and sharing of benefits of the Brazilian biodiversity of the Cerrado and Pantanal (Administrative Decree Number 09/2007 of the Ministry for the Environment), pointed to 431 priority areas of Cerrado, 181 of which are already protected (protected area sites and indigenous lands). For 237 areas (489,312 km²), extremely high biological importance was attributed.

The priority actions that were most frequently indicated were biological inventories. It was mentioned that despite an expressive volume of scientific knowledge regarding biodiversity in the Cerrado having been produced over the past years, investments and social-anthropologic studies are still necessary for this area. Also included in actions that were most indicated are the recovery of degraded areas, a response to the reduction of biodiversity in areas where there was a significant loss of habitat and environmental education.

Despite the acknowledgement of its biological importance, the Cerrado has the smallest percentage of full-protection areas among all of the world's hotspots.

6.77% of the biome's territory is legally protected by protected area sites. Of this total, 2.89% are full protection sites and 3.88% sustainable use sites.

In the Ministry of the Environment, actions for conserving the Cerrado biome are coordinated by the Secretariat for Biodiversity and Forests (SBF/MMA), whose priority mission is to conserve the Cerrado biome with the objective of halting environmental impacts, as well as the disrespect and marginalization of its traditional populations. For this, it has been working on the following measures:

- Creation of new protected area sites and implementation of existing ones;
- Establishment of a system for monitoring vegetation coverage of the Biome, and which is periodically updated;
- Implementation of the actions foreseen in the National Program for the Conservation and Sustainable Use of the Cerrado Biome, which was instituted by Presidential Decree 5577/2005.

Access the "Vegetation Coverage" and "Priority Areas for Conservation and Sustainable Use" maps of the Cerrado biome at www.mma.gov.br/portalbio.

Access the National Program for the Conservation and Sustainable Use of the Cerrado Biome, at http://www.mma.gov.br/estruturas/sbf/_aquivos/programa_bioma_cerrado.pdf

The Pampa biome

The Pampa biome is one of the six continental biomes of Brazil, along with the Amazon, Cerrado, Caatinga, Atlantic Forest and Pantanal. Grasslands predominate in the landscape of the Pampas, in which there are also isolated woodlands, riverine forests, shrubs, wetlands, palm groves, rocks and other formations.

In Brazil, the Pampa is restricted to the state of Rio Grande do Sul, where it occupies 176,496 km² of land, or the equivalent to 63% of the state's territory and 2.07% of Brazilian territory. In South America, the Pampas extend through the territories of Uruguay and Argentina, and occupy an area of approximately 700 thousand km².

The Pampa biome is hold to very rich

biological diversity which has still not been fully described by science. Recent estimates point to the existence of approximately 3000 species of plants with a noteworthy diversity of gramineae, which total about 450 species including the bahiagrass, broadleaf carpet grass, *flechillas*, Spanish moss, and carex. Some leguminous plants (150 species) in grassland areas and which include the aloe vera, native peanuts, native clover and the endemic characteristics of rocky outcrops.

The fauna is quite impressive. There are more than 400 bird species, including the great rhea (*Rhea Americana*), the tinamid (*Rynchotus rufescens*), the spotted nothura (**Nothura maculosa**), the southern lapwing (*Vanellus chilensis*), the correndera pipit (*Anthus correndera*), the rufus hornero (*Furnarius rufus*), the Chalk-browed Mockingbird (*Mimus saturninus*) and the campo flicker (*Colaptes campestris*). In addition, there are more than 90 species of land mammals, including the pampas deer (*Ozotoceros bezoarticus*), the pampas fox (*Pseudalopex gymnocercus*), the molina hog-nosed skunk (*Conepatus chinga*), the lesser grisson (*Galictis cuja*), the mulita armadillo (*Dasybus hybridus*), the domestic guinea pig (*Cavia aperea*) and various species of tuco-tucos (*Ctenomys sp.*).

Since the European colonization, extensive ranching over native grasslands has been the region's main economic activity. In addition to yielding satisfactory economic results, it has allowed for the conservation of the native grasslands and inserted development into a unique mixed culture that is of a transitional nature and is represented by the gaucho.

The progressive introduction and expansion of extensive monocultures

and pastures with exotic species has led to the rapid degradation and de-characterization of the Pampa's natural landscapes. Estimates on the loss of habitats state that between 1970 and 1996, 25% of the grassland areas were converted to other uses.

Recent mapping of the Pampa's vegetation coverage, which was fostered by the Ministry for the Environment and carried out by the Federal University of Rio Grande do Sul (UFRGS), Embrapa – Temperate Climate and Embrapa – Ranching South, detected that there is still 41.32% of native vegetation remaining. Of this percentage, 23.03% correspond to the grasslands, including extensive ranching areas, 5.19% to forests and 12.91% to mosaics of grasslands, shrubs and forests. The areas that are not considered as remains of native vegetation are equivalent to 58.68% of the biome. Of this percentage, 47.93% are of rural anthropic use, 0.77% of urban anthropic use and 9.9% of water bodies (mostly natural water bodies).

The loss of biological diversity hinders the potential for sustainable development in the region whether it is due to the loss of soil coverage, food, ornamental, or medicinal species or the result of risks to environmental services as the control of soil erosion, the sequestration of carbon that attenuates the greenhouse effect and is fostered by the vegetation of native grasslands.

The Priority Areas for the Conservation, Sustainable Use and Sharing of Benefits of Brazilian Biodiversity, updated by the Ministry for the Environment in 2007, led to the identification of 105 areas of the Pampa biome. Of these areas, 41 (a total of 34292 km²) were considered to be of extremely high biological importance.

These numbers contrast with the mere 0.46% of the biome that is protected in full-protection sites. There is a great gap in the representation of the native vegetation's main physiognomy and endangered fauna species (Brazilian red-bellied toad, yellow cardinal, sharp-tailed tyrant, chestnut seed-eater, marsh deer, colocolo pampas cat, and others) and flora species (red petunia, cacti, Brazilian edelweiss, Brazilian needle palm, *Tillandsia lorentzii*, and others).

The creation of protected area sites, the recovery of degraded areas and the creation of mosaics and environmental corridors were identified as the priority

measures for conservation, in conjunction with fiscalization and environmental education.

Support to sustainable use economic activities is another essential element to ensure conservation of the Pampa biome. The diversification of rural production and valuing of cattle ranching with extensive native grasslands management, jointly with regional planning and economic-ecological zoning and respect to ecosystemic limits comprise the path to ensure biodiversity preservation and sustainable economic and social development.





Inland Waters Biodiversity

The Pantanal Biome

The Mato Grosso Pantanal has one of the greatest flooded areas in the world and is located in the plains area of the Alto Rio Paraguai Basin. This biome spans through 138,183 Km² of the Brazilian territory. 35% of the biome is in the state of Mato Grosso and 65% in the state of Mato Grosso do Sul. It is an area of highly diversified biology and is thus of great importance for conservation. The Pantanal was declared to be a National Heritage by the Federal Constitution of 1988, and World Biosphere Reserve and Natural Human Heritage by UNESCO. Some specific areas were declared as Ramsar sites in the scope of the Ramsar Convention on Wetlands.

The Pantanal region is an alluvial plain influenced by rivers that drain the high Paraguay basin, and where there is an abundance of fauna and flora of rare beauty. It is especially influenced by the Cerrado, but also holds elements of the Amazon Forest, Chaco and Atlantic Forest. This characteristic, in addition to the different types of soil and inundation regimes, is responsible for the variety

of vegetation formations and for the heterogeneity of the landscape that is home to rich aquatic and land biota.

Six hundred sixty bird species were catalogued in the Pantanal. It is a mandatory stop for migratory birds that arrive in the region in search for fish when water levels begin to decrease. The region has over 260 fish species, 177 reptile species, 124 mammal species and 41 amphibian species. It is ideal for observing the fauna as its vegetation is scattered. In this region, there is a predominance of grassy vegetation and the tall vegetation is concentrated in slightly more elevated relief areas that make up the so-called “ridges” (*cordilheiras*), which are protected from the constant floods.

The Paraguai River and its tributaries run through the Pantanal and form extensive inundated areas that shelter many animals and fish, as for example the pintado, the gilded catfish, the pacu and others. This area is also home to mammals whose largest populations are found in the Pantanal, and which include the giant otter, spotted leopards

and marsh deer. Many species as the capybara, tuiuiu and alligator, which are endangered in other parts of Brazil, still have vigorous populations in the Pantanal region.

The status of vegetation conservation in the Pantanal is still good, and much of its area is still intact. Nonetheless, the situation is being aggravated, especially in some critical locations. Increasing deforestation has resulted from, above all, cultivated grazing areas, wood-derived coal-making and by human settlements in inappropriate areas, all of which are contributing to the loss of habitats. Deforestation yields severe erosive processes that cause deposition of sediments in land depressions and alter the water flow patterns and hydrological regimes. Furthermore, the reduction of forest areas implies the elimination of species that depend on such forests. Another factor that contributes to its devastation is predatory hunting, which is responsible for the reduction of important animal species such as the spotted leopard and the maned wolf.

Vegetation Coverage in the Pantanal Biome

The vegetation coverage map of the Pantanal was launched by the Ministry of the Environment and used 2002 data as basis and indicated that the biome is still very much preserved. The biome has 86.77% of native vegetation coverage and 11.54% of anthropic areas. There is, however, a strong tendency for the conversion of natural areas into planted pastures.

The savannah (*cerrado*) is predominant in 52.60% of the biome, followed by floristic contacts, which occur in 17.60% of the area. In regards to the anthropic area, it is observed that agriculture is inexpressive in the biome (0.26%) and allows room for extensive cattle ranching in planted pastures, which is equivalent to 10.92% of the biome’s areas and occupies 94.68% of anthropic areas.

The results observed were:

Grouped Phytoecological Region	Area (Km ²)	%
Native Forest Vegetation	7,662.00	5.07
Native Non-Forest Vegetation	123,527.00	81.70
Anthropic Areas	17,439.90	11.54
Water	2,557.30	1.69
Total	151,186.20	100.00

The review of priority areas for the conservation, sustainable use and sharing of benefits for Brazilian biodiversity of the Cerrado and Pantanal (MMA

Decree 09/2007), pointed to 50 priority areas in the Pantanal, 5 of which are already protected (protected area sites and indigenous lands). For 26 areas

(43,866 km²), extremely high biological importance was attributed.

The priority action that was most frequently proposed was biological inventories (56% of the areas). This points to the fact that despite expressive volumes of scientific knowledge having been produced on the biodiversity in the Pantanal, there is still the need for investments to be made to research on biodiversity, as well as social-anthropologic studies in the region.

There is an urgent need for the number of protected area sites in the Pantanal to be increased due to the advance of planted pastures in the region and the low number of existing protected area sites. The situation is even more serious if we take into account the inexistence of sustainable-use protected areas in the biome.

2.25% of the biome's territory is legally protected by protected area sites, all of which are full-protection sites. Of this total, 0.99% is of federal protected area sites and 1.26% are state sites.

In the Ministry of the Environment, measures for biodiversity conservation in the Pantanal biome are coordinated by the Secretariat for Biodiversity and Forests (SBF/MMA), which understands the conservation of this unique and fragile biome to be a priority. For this, it has been making efforts to create more protected area sites in addition to implementing a periodically updated system for monitoring Pantanal's vegetation coverage.

Access "Vegetation Coverage" and "Priority Areas for Conservation and Sustainable Use" maps of the Pantanal biome at www.mma.gov.br/portalbio





Marine and Coastal Biodiversity

The Coastal and Marine zones occupy approximately three million square kilometers of ocean that are under Brazilian jurisdiction, or in other words an area that is equivalent in size to almost half of our land. With its over 7,400 km between the mouths of the Oiapoque River in Amapá and the Chui River in Rio Grande do Sul, Brazil's coast line is one of the largest in the world.

The coastal environments of Brazil are extraordinarily diversified. In the southern and southeastern regions, the water is cold, whereas in the northern and northeastern regions it is quite warm. The coast line supports a series of ecosystems that include mangroves, coral reefs, dunes, coastal woodlands (*restingas*), sandy beaches, rocky coasts, lagoons, estuaries and *marismas*, all of which are home to a large number of flora and fauna species, many of which live only in our waters and some of which are endangered.

Two of these ecosystems stand out: the mangroves and the coral reefs. The mangroves are nurseries for various marine and fresh-water species and coral

reefs are known to be one of the most diverse habitats in the world.

Among the decisions made during the seventh Conference of the Parties (COP7) of the Convention on Biological Diversity, the work program on protected areas was approved with the main objective of establishing representative and effective systems of protected areas. The Brazilian government is aware of its responsibility and decided to elaborate and implement its National Plan for Protected Areas (*Plano Nacional de Areas Protegidas – PNAP*).

It is important to highlight that the National Plan for Protected Areas (PNAP) incorporated coastal and marine specificities. For the plan to be elaborated, a workgroup was formed by representatives from the different governmental segments that deal with coastal and marine zones, NGOs and specialists from different regions of the country. The group elaborated the principles, guidelines, strategies and specific actions for the coastal and marine zone. Among these is the guideline that states which marine areas

shall be created and managed with the objective of biodiversity conservation and the recovery of fish stocks. Regarding fish stocks, we recently published a set of Brazilian case studies demonstrating the efficacy of Marine Protected Areas (AMPs) as fishery management tools (this publication is available in English at http://www.mma.gov.br/estruturas/sbf/_arquivos/livro_areas_aquat_ing.pdf).

The workgroup gave rise to the principles, guidelines and strategies for coastal and marine protected areas and which include:

- Protected coastal and marine areas shall be created and managed not only for the purpose of biodiversity conservation, but also for the recovery of fish stocks;
- The system shall be representative;
- The final percentage of each coastal and marine ecosystem to be protected shall be defined after studies on the representativeness are carried out;
- The design of networks shall account for a gradient of pressures, threats and conflicts in the sense of the Exclusive Economic Zone, including a mapping of priorities.

A Representative System is understood as a network of protected areas according to the following components:

- Primary representative network of highly protected areas in which extractive use is excluded and other significant human pressures are removed or minimized for the maintenance of their integrity, structure and functioning of ecosystems to be preserved or recovered (full protection protected area sites or areas where fishing is excluded).

- Sustainable use protected areas network that fosters support to the primary network's objectives and where threats are controlled for the purpose of protecting biodiversity and sustainable use (extractivist activities are permitted); and

- A system of sustainable management practices in the coastal and marine zone is integrated with projects for the recovery of hydrographic basins.

The principles and guidelines of the National Plan for Protected Areas (PNAP) were acknowledged by Decree 5758 of April 13, 2006, and are translated into the increasing search for allying biodiversity conservation with social-economic demands, and thus demonstrate that for the desired results to be attained it is necessary that conservation mechanisms be established.

In addition to the principles for establishing a representative system, the PNAP also details the strategies with which to attain efficacy of the protected areas system.

Nonetheless, as regards numbers, the protected area sites represent a good parcel of the national territory in Brazil's coastal zone. In marine areas and given the enormous nature of our Economic-Ecologic Zoning (*Zoneamento Econômico Ecológico – ZEE*), we have only 0.4-08% of this protected area under some form of protected area site, including federal and state ones.

The need for these percentages to be increased is being recognized as a national priority, and as part of the national milestones for biodiversity. Resolution 03/2006 of the National Commission on Biodiversity (CONABIO) approved the need for this area to be increased to 10% of protected marine and coastal areas and 10% of full

protection areas and/or areas where fishing is excluded.

For the creation of new areas, we recently concluded a process to review and refine the priority areas for the conservation of Brazilian biodiversity with the objectives of designing a protected areas system in the various Brazilian biomes, including the coastal and marine zone. Six hundred eight areas in the coastal and marine zone were appointed after having met a representative system of protected areas.

With the conclusion of these studies it was possible to calculate the representativeness of coastal and marine ecosystems that are under protection.

As regards the implementation of coastal and marine protected area sites, it is worth highlighting the establishment of the Network of Coastal and Marine Areas Program (*Programa de Rede de Unidades Costeiras e Marinhas – RUMAR*). This program foresees the use of a large sum of resources resulting from environmental compensations to be specifically used for protected marine areas. The RUMAR was elaborated by the ICMBio Institute to direct the use of these resources to strengthen protected area sites and thus foster greater institutional presence in the seas and greater interaction of these areas with the Institute's specialized centers and with other governmental organizations and research institutions.

Other advances pertain to the implementation of specific conservation programs of the various and productive coastal and marine ecosystems: the mangroves and coral reefs. The GEF Mangrove project was approved with the main objective of strengthening the implementation and management of protected areas in mangroves as well as incorporating ecosystemic fisheries

management in these environments.

As regard the coral reefs, the Ministry of the Environment was able to map the shallow Brazilian reefs. This mapping subsidized the management plans and we started a monitoring program associated with the Global Coral Reef Monitoring Network (GCRMN), through which it was possible to insert the Brazilian data in world-wide systems. In over 6 years of the program, the monitoring inside and outside protected areas was conducted and through this it is now possible for us to demonstrate the effectiveness of these areas. Furthermore, capacity building has been developed and awareness-building measures were implemented through the Conscious Conduct in Reef Environments Campaign (*Campanha de Conduta Consciente em Ambientes Recifais*).



Island Biodiversity

A workshop entitled “Brazilian Ocean Islands – from Research to Management” was organized by the National Museum of Federal University of Rio de Janeiro, by Ibama, and by the Ministry of the Environment from 5 to 7 July 2005, with support from the National Scientific and Technological Research Council (CNPq) and the Ministry of the Environment. The findings were published as “Brazilian Oceanic Islands – from Research to Management”. The book is a groundbreaking publication as it consolidates existing knowledge on the research and management of Brazilian oceanic islands. It constitutes as a starting point for the study on and management of these important ecosystems. The results of the studies and projects described in the book’s chapters show that scientific knowledge of our oceanic islands is advancing and that the systematization of existing knowledge is fundamental in to the identification of new paths for future research that will allow for the preservation of these unique ecosystems.

The book has 298 pages and its chapters address the strategic importance of oceanic islands and our knowledge of their geology, soils, terrestrial flora, marine flora, sponges, molluscs, octopi, fish and biogeography, as well as an appendix containing summaries of the presentations. A second volume is ready for publication in 2008. The book is in Portuguese, with a preface in English. The first volume can be found at www.mma.gov.br/portalbio.

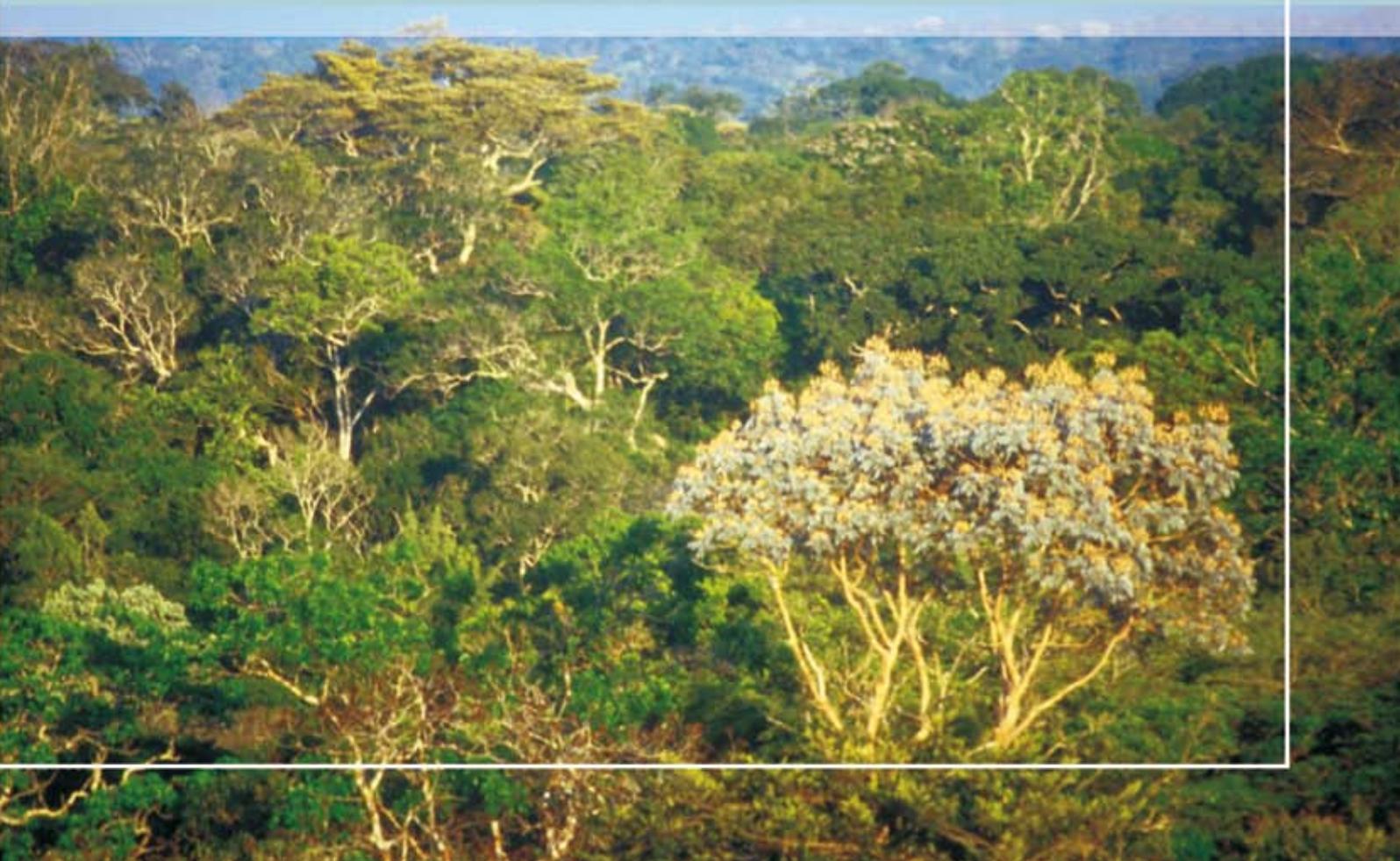








Cross-Cutting Initiatives





2010 Biodiversity Target (including Monitoring & Indicators)

The National Commission on Biodiversity (CONABIO) held its 20th meeting in the form of a Seminar for the Definition of National Biodiversity Targets for 2010, on October 24 and 25 of 2006. The CONABIO is a collegiate body of a deliberative and consultative nature and which coordinates the implementation of commitments made by the country in the scope of the Convention on Biological Diversity, as well as the principles and guidelines of the National Policy on Biodiversity.

To the seminar, specialists were invited to present the situation of Brazilian biodiversity, according to the United Nation's Pressure-State-Response model and by making the best use of studies and surveys funded by the Probio Project and other available studies. All Conabio members, as well as about 30 speakers, other specialists from academia and civil society, and technicians from different departments of the MMA and associated institutions were invited to participate.

This Seminar's main objective was to subsidize decision-making for the definition of national targets for the

reduction of rates on biodiversity losses, correlated to the global targets defined in the CBD's Strategic Plans for 2010 (Decisions VI/26, VII/30 and VIII/15).

Monitoring, Assessment and Indicators

Vegetation Cover Maps of the Brazilian Biomes

The vegetation is one of the most important biota components, since its conservation and connectivity status defines the existence of habitats for species, the maintenance of ecosystem services, or even the provision of goods that are essential for the survival of human communities. Sound knowledge on the current status of the vegetation cover in Brazil is therefore fundamental to establish environmental public policies in the country, such as the identification of conservation opportunities, the sustainable use of Brazilian biodiversity, and benefit sharing.

Due to changes in the occupation pattern of the Brazilian territory, primarily motivated by the strong inland focus of the last three decades, the existing

vegetation maps made up between 1970 and 1985 by RadamBrasil Project no longer reflected reality. To fill this knowledge gap, and to broaden existing knowledge on the Amazon and parts of the Atlantic Forest (which are already subject to vegetation monitoring), the Ministry of the Environment (MMA), through the Conservation and Sustainable Use of the Brazilian Biological Diversity Project (PROBIO), launched two public bids in 2004 for the selection of subprojects to map the country's vegetation cover according to the biome limits defined by the Brazilian Biomes Map (IBGE, 2004).

The six selected subprojects – one for each of the Brazilian continental biomes – had the objectives of mapping vegetation cover, diagnosing mapping initiatives, and filling existing knowledge gaps on this subject. Vegetation was mapped based on Landsat images generated primarily during 2002, provided to subprojects by MMA. The mapping methodology was defined by the executing institutions, and varied according to the particularities of each biome. The technical mapping and label standards for all subprojects were defined with the fundamental technical support provided by the Brazilian Institute of Geography and Statistics (IBGE). Some of these standards are: 1) minimum mapping unit (UMM) of 40ha, considering a 1:250,000 final scale; 2) verifiable digital data compatible, at least, with the 1:100,000 scale; 3) classification accuracy (thematic accuracy) with a minimum threshold of 85% correct; 4) output shape-files with topologic consistency (no overlapping polygons, no space between polygons, no zero-area polygons, no loops in arches, no polygon without classification, etc.); 5) classification of vegetation types according to the IBGE technical manual on vegetation.

It is important to note that, according to MMA determination, areas with predominant native vegetation, even if presenting a certain degree of human use, were accounted for and mapped as a native vegetation type. On the other hand, areas converted to planted pasture, with agricultural crops, reforestations, with mining activities, with urban occupation, and other similar uses in which the native vegetation is no longer dominant, were accounted for and classified as areas under human influence (anthropic areas). Another important basic criterion defined by MMA is that secondary vegetation in advanced development stage was accounted for and mapped as native vegetation. The following outputs were produced by the mapping subprojects:

Final Maps with the cutout and layout of IBGE 1:250,000 charts of the Brazilian territory. Format: paper (A0 size); electronic (SHP and PDF files).

Database with thematic bases in shape-files corresponding to the IBGE/DSG charts at the 1:250,000 scale. Format: electronic (SHP file).

Image charts of the chosen biome with the cutout of IBGE 1:250,000 charts. Format: electronic (GEOTIFF and PDF files).

Summary (biome mosaic) map. Format: paper (A0 size); electronic (SHP file).

Technical Report, according to specific standard.

All of these materials may be consulted and downloaded through the Brazilian Biodiversity Portal – PortalBio/MMA, at the following address: www.mma.gov.br/portalbio.

Priority Areas for Conservation, Sustainable Use and Sharing of Benefits from Brazilian Biodiversity: Update

One of the greatest challenges faced by stakeholders as regards the conservation of biodiversity is the establishing of local, regional and national policies that are essential for political decisions to be translated into concrete actions through the efficient employment of available financial resources.

For this reason, between 1998 and 2000, the Ministry of the Environment coordinated a project entitled “Assessment and Identification of Priority Areas for Conservation of Brazilian Biomes”. At the end of the process 900 were defined and established by Decree 5092 of May 24, 2004 and instituted by MMA Administrative Decree 126 of May 27, 2004. The decree states that these areas shall be periodically reviewed, in periods no longer than 10 years, in light of the advancing knowledge and environmental conditions.

The process for updating priority areas uses a methodology that incorporated the principles of Systematic Planning for Conservation and its basic criteria (representativity, persistence and vulnerability) and thus places priority on the participatory process for negotiating and reaching consensus. For such purpose, a greater number of sectors and groups related to environmental matters was involved and made the process even more legitimate as it considers various interests. This methodology was addressed during the workshop entitled “Priority Areas for Conservation, Sustainable Use and Sharing of Benefits of Brazilian Biodiversity – Targets and Instruments”, which was held in November of 2005 and later approved by

Conabio’s Deliberation 39 of December 14, 2005. Such methodology used the Map of Brazil’s Biomes (IBGE, 2004) as its base and used an approach that fosters greater objectivity and efficiency, creates a memory of the priority-identification process, fosters greater participation, and generates information that can allow for informed decisions and capacity for assessing opportunities.

The process for updating priority biodiversity areas and actions was simultaneously carried out in the scope of all Brazilian biomes and counted on the support from various institutions. The first stages of the process were the “Technical Meetings per Biome”, which took place between May and September of 2006. During these meetings the conservation targets were defined, as were the goals and relative importance of each target. During these meetings, a “Map of Areas of Importance for Biodiversity” was elaborated. These products subsidized the “Regional Seminars on the Biomes”, which took place between October and December of 2006. The results of the Regional Seminars on the Biomes were summarized in the map through the updating of priority areas for biodiversity, which was approved by Conabio Deliberation 46 of December 20, 2006.

Results produced include a map and a data base with 2684 priority areas having been indicated and approved by society. Of these priority areas, 1123 are already protected (as protected area sites or as indigenous lands), and another 1561 are areas that do not have a protection status. The Atlantic Forest and Amazon biomes aggregate 63% of all priority areas, with 880 and 824 areas respectively. Included in the updated map are the Cerrado’s 431 areas, the Caatinga’s 292, the Pampas 105, the Marine Zone’s 102, and the Pantanal’s 50.

When results of the two processes are compared, it can be seen that in terms of the number of areas, there was a significant increase from 900 areas in the 1998/2000 process to 2684 in the 2005/2006 process. It is believed that this increase results from the following factors: quantitative and qualitative improvement of data made available by researchers, research centers and by public institutions during the process for the definition of priority areas; the methodology used which counted on the decisive and important participation of a great number of specialists in defining the conservation targets and objectives through the use of software used in the decision-making process and that helped build the scenarios; and the participation of society as it was able to aggregate its empirical knowledge to the scientific knowledge of specialists in building this management instrument.

The priority areas were updated and formally acknowledged through MMA's Administrative Decree 9 of January 23, 2007, for the purpose of: formulating and implementing public policies, programs, projects and activities geared toward in situ biodiversity conservation; sustainable use of biodiversity components; sharing of benefits resulting from the access to genetic resources and associated traditional knowledge; research and inventories on biodiversity; recovery of degraded areas and species that are over-exploited or endangered and; economically valuing biodiversity.

National Target	National 2010 Biodiversity Targets	Framework of CBD goals, targets and indicators (decisions VI/30 and VII/15)	Global Strategy for Plant Conservation (GSPC) target (decision VI/9)
National Biodiversity Policy Component 1 – Knowledge of biodiversity – (GSPC Focal Area A)			
Target 1.1	An expanded and accessible list of formally described species of Brazilian plants and vertebrates, and of invertebrates and micro-organisms, these possibly selectively developed, in the form of permanent databases		Target 1
Target 1.2	National Taxonomy Programme established, aiming at a 50% increase in scientific records with an emphasis on new species descriptions		Target 15
Target 1.3	Virtual Brazilian Biodiversity Institute created and the expansion of the Biodiversity Research Programme (PPBio) from Amazonia and the Caatinga to the remaining biomes in order to increase availability of information on biodiversity		
National Biodiversity Policy Component 2 – Conservation of biodiversity (Focal areas 1 and 4 of the CBD framework of goals and targets)			
Objective 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes			
Target 2.1	At least 30% of the Amazon biome and 10% of the remaining biomes and the coastal and marine zone effectively conserved through protected areas within the National Conservation Area System (SNUC)	Target 1.1	Target 4
Target 2.2	Protection of biodiversity guaranteed in at least 2/3 of the Priority Areas for Biodiversity by means of SNUC Protected Area, Indigenous Lands and Quilombola Territories	Target 1.2	Target 5
Target 2.3	Temporary or permanent no-fishing zones, to protect fish stocks and integrated with protected areas, comprising 10% of the marine zone		
Objective 2. Promote the conservation of species diversity			
Target 2.4	All species officially recognized as threatened with extinction in Brazil the object of action plans and active advisory groups	Target 2.1	Target 3
Target 2.5	100% of threatened species effectively conserved in protected areas	Target 2.2	Target 7
Target 2.6	25% reduction in the annual rate of increase of threatened species of fauna on the National List and De-listing of 25% of species currently on the National List		
Target 2.7	A preliminary national-level assessment of the conservation status of all known plant and vertebrate species and a selective assessment of invertebrates		Target 2
Target 2.8	60% of threatened plant species conserved in ex situ collections and 10% of threatened plant species included in recovery and restoration programmes		Target 8
Target 2.9	60% of migratory species are the object of action plans and 30% of these have conservation programmes implemented		
Objective 3. Promote the conservation of genetic diversity			
Target 2.10	70% of the genetic diversity of socio-economically valuable cultivated or exploited wild plant species and associated indigenous and local knowledge maintained	Target 3.1	Target 9
Target 2.11	50% of priority species under the Plants for the Future Project conserved in situ and on-farm		
Target 2.12	60% of the genetic diversity of Brazilian wild relatives of cultivated plant species of the ten priority genera effectively conserved in situ and/or ex situ		
Objective 8. Maintain the capacity of ecosystems to deliver goods and services and support livelihoods			
Target 2.13	Capacity of ecosystems within Priority Areas for Biodiversity to deliver goods and services maintained or increased	Target 8.1	
Target 2.14	Significant increase in actions to support on-farm conservation of the components of agro-biodiversity that ensure maintenance of sustainable livelihoods, local food security and health care, especially for local communities and indigenous peoples.	Target 8.2	Target 8
National Biodiversity Policy Component 3 – Sustainable use of the components of biodiversity (CBD focal area 2)			
Objective 4. Promote sustainable use and consumption			
Target 3.1	30% of non-timber plant products obtained from sustainably managed sources	Target 4.1	Target 7
Target 3.2	Recovery of at least 30% of main fish stocks through participative management and capture control		
Target 3.3	40% of the area in Amazonia under forest management plans certified	Target 4.1	Target 6
Target 3.4	80% of Extractive Reserves and Sustainable Development Reserves benefit from sustainable management of fauna and flora species important for food or economically, with management plans prepared and implemented		
Target 3.5	80% reduction in unsustainable consumption of fauna and flora resources in sustainable development protected areas	Target 4.2	
Target 3.6	No species of wild fauna or flora endangered by international trade in accordance with CITES provisions	Target 4.3	Target 11
Target 3.7	Significant reduction in illegal trade in fauna and flora species within Brazil		
Target 3.8	80% increase in innovation and added value for new biodiversity-based products		
Target 3.9	80% increase in new sustainable uses of biodiversity in medicine and foods leading to marketable products		
Target 3.10	Significant increase in detection, control and repression of bio-piracy		
Target 3.11	Significant increase of investment in studies, projects and research on sustainable use of biodiversity		
Target 3.12			
Target 3.13	80% increase in the number of patents deriving from components of biodiversity. Support of the Commission for Coordination of Ecological and Economic Zoning for the preparation and conclusion of ecological and economic zoning plans for at least 50% of Brazilian states		

National Biodiversity Policy Component 4 – Monitoring, assessment, prevention and mitigation of impacts on biodiversity (CBD focal area 3)

Objective 5. Reduce pressures leading to loss of biodiversity, changes of use and land degradation and unsustainable use of waters

Target 4.1	100% reduction in the rate of deforestation in the Atlantic Forest biome, 75% in the Amazonian biome and 50% in remaining biomes	Target 5.1	
Target 4.2	Overall reduction of 25% in the number of fires (heat spots) in each biome		
Target 4.3	Creation and consolidation of a systematic and standardized nation-wide biodiversity monitoring network		

Objective 6. Control threats from alien invasive species

Target 4.4	Action plans for prevention and control prepared for all species listed under the National Assessment of Alien Invasive Species	Target 6.1	
Target 4.5	Management plans implemented for the control of at least 25 of the principal invasive exotic species that threaten ecosystems, habitats or species in Brazil	Target 6.2	Target 10

Objective 7. Address threats to biodiversity from climate change and pollution

Target 4.6	50% of sources of water and soil pollution and their impacts on biodiversity controlled	Target 7.2	
Target 4.7	Support to bio-geographic studies to include the predictability of species occurrence associated with potential climate changes using Geographic Information Systems		

National Biodiversity Policy Component 5 – Access to genetic resources, associated traditional knowledge and benefit sharing (CBD focal areas 5 and 6)

Objective 9. Maintain the socio-cultural diversity of indigenous and local communities

Target 5.1	All public policies relevant to traditional knowledge implemented in accordance with Article 8(j) of the CBD	Target 9.1	
Target 5.2	Knowledge, innovations and practices of indigenous peoples and traditional communities protected		
Target 5.3	100% of scientific and general publications deriving from access to traditional knowledge identify the origin of the traditional knowledge		
Target 5.4	100% of cases of access to traditional knowledge include prior informed consent, obligatory sharing of knowledge generated and sharing of benefits		

Objective 10. Ensure the fair and equitable sharing of the benefits deriving from the utilization of genetic resources

Target 5.5	Access and benefit sharing legislation, consistent with the CBD, approved by the National Congress and implemented and 100% of access and shipment activities conform to national legislation	Target 10.1	
Target 5.6	Benefits resulting from commercial utilization of genetic resources effectively shared fairly and equitably in support of biodiversity conservation	Target 10.2	
Target 5.7	100% of applications for patents on inventions of products or processes deriving from access to genetic resources and associated traditional knowledge include identification of origin and proof of authorized access		
Target 5.8	Sharing of benefits in accordance with the International Treaty on Plant Genetic Resources for Food and Agriculture implemented in Brazil		

National Biodiversity Policy Component 6 – Education, public awareness, information and outreach on biodiversity (GSPC focal area D)

Target 6.1	Inclusion of the importance of biological diversity and the need for its conservation, sustainable use and benefit sharing in communication, education and public awareness programmes		Target 14
Target 6.2	Increased access to high quality information on conservation, sustainable use and sharing of benefits of biodiversity		
Target 6.3	Establishment and strengthening of action networks for the conservation, sustainable use and sharing of benefits of biodiversity		Target 16

National Biodiversity Policy Component 7 – Increased legal and institutional capacity for biodiversity management (CBD focal area 7)

Objective 11. Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention

Target 7.1	New and additional financial resources, from public and private, domestic and international sources obtained and available for use in Brazil making possible the effective implementation of its commitments to the CBD programmes of work, in accordance with Article 20	Target 11.1	
Target 7.2	Implementation of initiatives that promote the transfer to Brazil of environmentally sustainable technologies developed in other countries for the effective implementation of the CBD programmes of work, in accordance with Article 20, paragraph 4 and Article 16		
Target 7.3	Promotion of the exchange and transfer of environmentally sustainable technologies between developing countries for the effective implementation of the CBD programmes of work, in accordance with Article 20, paragraph 4 and Article 16		





Global Strategy for Plant Conservation

Centre for the Conservation of the Brazilian Flora

The creation of the Centre for the Conservation of Brazilian Flora in the scope of the National Biodiversity Mainstreaming and Institutional Consolidation Project – PROBIO II will allow the Research Institute of the Botanic Garden of Rio de Janeiro, which is an associated agency of Ministry of the Environment, to work on the priority topics that internationally emanated from the CBD - the Global Taxonomy Initiative, the Global Strategy for the Conservation of Plants and the Strategy for Conservation in Botanic Gardens.

The main objectives of the Center for the Conservation of Brazilian Flora are to: a) generate knowledge on the diversity of Brazilian flora and facilitate the conservation measures for vegetation; b) bring together an ample variety of capabilities, specialties and resources so as to provide the basis for the conservation, management and sustainable use of Brazilian flora; c) enrich botanic collections of the Brazilian flora in the herbarium of the Rio de

Janeiro's Botanic Gardens; d) allow access to information on the Brazilian vegetation and on vegetation resources for research, management and public use; e) work on priority areas of the Brazilian biomes to ensure the conservation of biodiversity and endangered species.

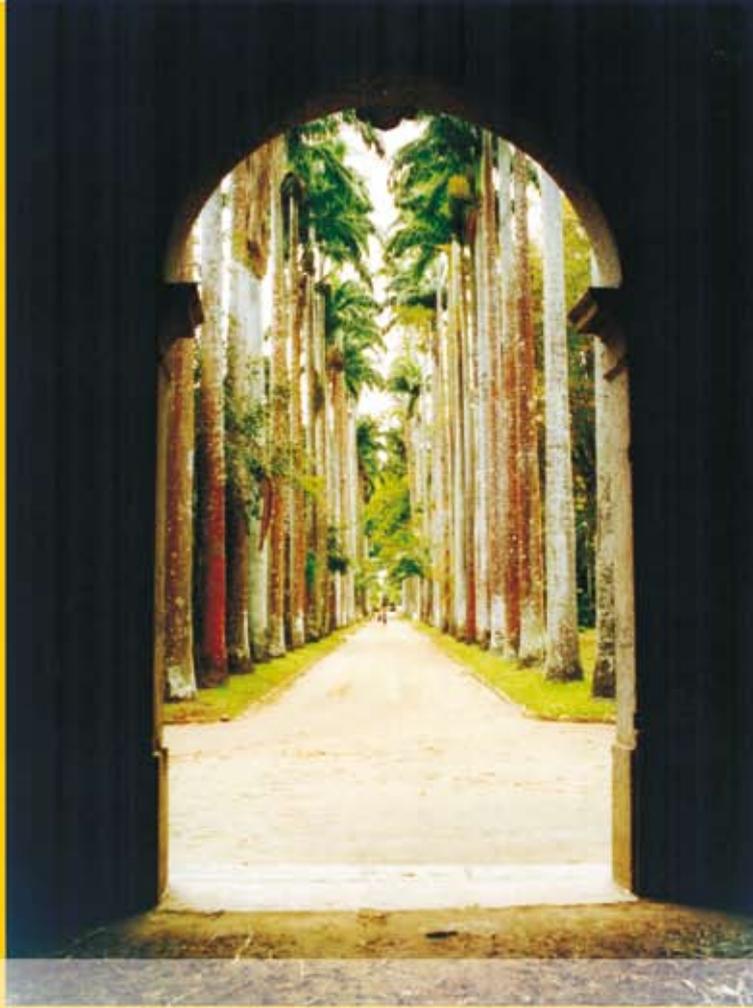
Botanic Gardens Network

The Brazilian Network of Botanical Gardens (Rede Brasileira de Jardins Botânicos – RBJB) was founded on January 23, 1991, when representatives from eight Brazilian botanic gardens came together during the 42nd National Botanical Congress in Goiás State. The representatives were from the botanical gardens of Rio de Janeiro, Brasília, Porto Alegre, São Paulo, Caxias do Sul, State University of Campinas – Unicamp, Emílio Goeldi Museum of Pará, the Horto Botânico from de Federal University of Rio de Janeiro that met to found a non-profit civil society with the objective of unifying and promoting the interests of botanical gardens in Brazil. The result of this work is reflected in numbers, as at the time the RBJB was created, no more than three hundred persons worked

with botanic gardens in Brazil, and now there are currently over three thousand professionals involved with this activity. The initial group of eight botanical gardens that joined in 1991 increased to 32, some of which came about through the stimulus and technical support provided by the RBJB. The network is open to new members and throughout the country the members are benefited by the synergy and constant exchange of information that the Network yields.

The Network's work is directed at the implementation of the Convention on Biological Diversity, and focus is placed on the Global Strategy for the Plant Conservation. In this sense, the following measures are highlighted: a) technical meetings aimed at strengthening botanic gardens; b) encourage to technical-scientific publications; c) disseminate and support the implementation of the Plan of Action of Brazilian Botanical Gardens; d) develop programs for the capacity building of technicians and managers; e) raise government awareness to the creation, consolidation and maintenance of botanical gardens; f) support discussions for the improvement of current legislation; g) incentives for integrated measures that aim at optimizing conservation of Brazilian flora; h) stimulate cooperation between botanic gardens, arboretums and related institutions that maintain scientific collections of live plants and preserved material, as well as among scientists and technicians from such institutions; i) encourage taxonomy studies of plants to the benefit of humanity and environmental education not only at all educational levels, but to the general public as well; j) encourage the study of correct practices with which to introduce plants in the scientific collections of botanic gardens and the like; k) foster exchange of documents, information

and specimen that are of mutual interest among botanic gardens, arboretums and similar institutions; l) foster and support conservation of rare and/or endangered species; m) increment the role of botanic gardens in the conservation of the Brazilian biological diversity, in close connection with other institutions and fostering collaboration between the RBJB and such institutions; n) stimulate the cultivation of plants that have current or potential economic interest; o) foster the creation of regional thematic collections in botanic gardens; p) provide consultancy services and support to the creation of new botanic gardens; q) stimulate the connection between botanic gardens and universities at the national and international scale, especially with universities that develop activities pertaining to plant sciences.





Access to Genetic Resources and Benefit-sharing (including Traditional Knowledge)

By enshrining the principle that states have the right to exploit their own resources, acknowledging national sovereignty over biodiversity and establishing as one of its objectives the fair and equal sharing of benefits derived from the use of genetic resources, the CBD establishes the basis for a new institutional framework concerning the use of genetic resources.

The Convention recognises that access to traditional knowledge relevant to the conservation and sustainable use of biodiversity, as well as access to the genetic resources of a country must be in accordance with its national legislation. In Brazil, articles 8j and 15 of the CBD have been implemented by means of Provisional Decree 2186-16/2001 (MP) and Decrees 3945/2001 and 4549/2005.

Genetic Heritage Management Council (CGEN)

Provisional Decree 2186/2001 established a collegiate body as the national competent authority for access

to genetic resources and associated traditional knowledge and benefit sharing: the Genetic Heritage Management Council.

The Council is both normative and deliberative and is presided by the Ministry of the Environment. It comprises nineteen federal bodies and agencies. Representatives of different civil society sectors take part as observers.

Genetic Heritage Department (DPG)

The Genetic Heritage Department was established by Decree 3945/2001 and is part of the Secretariat for Biodiversity and Forests of the Ministry of the Environment. Among its responsibilities is to act as the executive secretariat of the CGEN.

The main responsibilities of the DPG are to implement CGEN decisions; process applications to be submitted to CGEN for its deliberation; issue authorizations for access and shipment of samples of genetic resources in accordance with CGEN decisions and its invested

authority; issue authorizations to access associated traditional knowledge; and serve as depository for Contracts for the Use of Genetic Resources and Benefit Sharing following approval by the CGEN.

In addition to its responsibilities directly related to its role as the CGEN Secretariat, the DPG implements the System for Managing Access and Benefit Sharing through capacity building and training projects; supports monitoring and inspection activities; participates in the development of related public policies such as those on biotechnology, medicinal and phytotherapeutic plants, and socio-biodiversity production chains.

Benefit Sharing, Prior Informed Consent and Mutually Agreed Terms

Brazil's commitments to the implementation of Articles 15 (Access to Genetic Resources) and 8j (Traditional Knowledge) are being progressively met by means of the following initiatives: a) implementation of national legislation; b) strengthening of a national authority; and c) capacity building on access and benefit sharing.

A) National Legislation

Provisional decree 2186-16 of 23 August 2001 instituted a national system to regulate access to genetic resources and associated traditional knowledge, as well as the sharing of benefits resulting from their use. The legislation is complemented by Decrees 3945/01, 4946/03, 5459/05 and 6159/07, and also by specific technical guidelines, resolutions and decisions.

• Rules of the National System for Access and Benefit Sharing

The system establishes which activities aiming at some sort of application or

which have a commercial potential are dependent upon authorization:

Scientific Research

- Research using genetic resources and with economic purpose benefits from a system of facilitated access. In the majority of cases special authorization is granted to national academic institutions, valid for groups of projects.

- Research using associated traditional knowledge is authorized on a case-by-case basis, and requirements include the prior informed consent of the traditional communities.

Bioprospecting and/or Technological Development

- In addition to the prior informed consent of the providers, a Benefit Sharing Contract is also required prior to access being granted. In cases of bioprospecting, the contract can be waived or postponed by the competent authority in the providers so agree.

Share Benefits with Whom?

Benefits, monetary or not, are directly negotiated between the institution that will undertake the access and the owners (public or private) of areas where the genetic resources are located and/or with the communities that hold the associated traditional knowledge.

Shipment

The shipment of genetic resources to a foreign country requires authorization. The institution receiving the sample is required to first sign a material transfer agreement form (MTA).

Administrative Penalties

Penalties exists for cases of non-

compliance ranging from formal warnings to fines that vary according to the seriousness of the illicit act.

B) National Authority

The CGEN was established in April of 2002 and has met 56 times for the purpose of considering regulations that complement existing legislation and authorizations for access to and shipment of genetic resources and associated traditional knowledge.

Thematic working groups have been established to assist the work of the Council. These consider issues that need to be regulated and submit draft resolutions, decisions, technical guidelines and other instruments that promote application of the legislation for consideration by the CGEN.

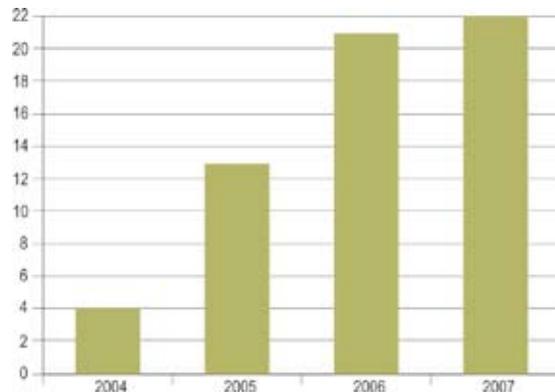
During its six years of work, the CGEN has approved over 200 decisions, 29 resolutions, 5 technical notes and other guidelines, as well as the submission of draft legislation to the Office of the President for the purpose of improving existing legislation.

In order to broaden the debate on the sharing of benefits when the associated traditional knowledge is held by more than one local community, in 2006 the CGEN launched a public consultation which lasted over a year and involved all sectors of society.

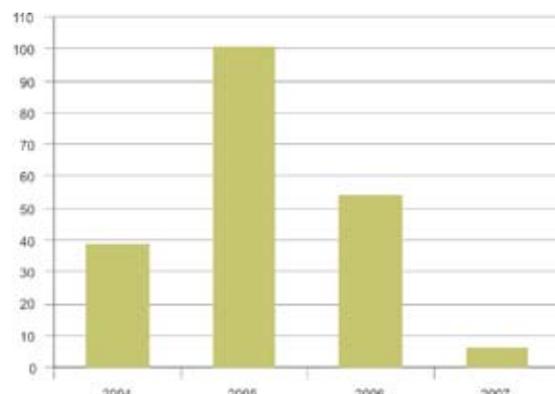
• Results Attained

The current number of authorizations for bioprospection and/or technological development that have been granted by the CGEN has greatly increased. This fact demonstrates the increasing level of legislation implementation. Due to a new norm to facilitate non-profit scientific research, CGEN Resolution 21 was

published in 2006. This resolution takes this type of research away from the scope of national legislation, and thus decreases the number of authorizations granted for the purpose of Scientific Research.



Bioprospecting and technological Development



Scientific Research

Trustee Institutions – 90 national public institutions that have ex. situ scientific collections are accredited to receive genetic resource samples -- a national legislation requirement.

New National Legislation

With the objective of improving the current system, a new bill of law on Access and Sharing of Benefits has already been elaborated by the Federal Government to be sent to the National Congress in 2008. In order for all actors involved to participate in the process, the text is available for public consultation until July of 2008.

C) Capacity Building and Sharing of Benefits

Genetic Heritage Department (DPG)

– The DPG is a multi-disciplinary team comprised of 23 professionals. It is associated with the Ministry for the Environment, manages the National System for Access and Sharing of Benefits and works as the CGEN's executive secretariat.

Training for Fiscalization Agents – In three years, over 120 law enforcement agents from the Ibama, Federal Police and the Intelligence Agency (ABIN) have received training on the legislation pertaining to access and benefit sharing and to the combat against biopiracy.

Activities for the Qualification of Indigenous and Local Communities

– Between 2005 and 2007, 33 workshops on access legislation, prior informed consent and sharing of benefits were provided to 1,300 persons.

System Dissemination – Between 2004 and 2007, the DPG team participated in over 165 events, including congresses, workshops and courses disseminating the CBD and national legislation on access and sharing of benefits. In addition, approximately 8 television programs addressing the issue were made.

Illegal Access and Biopiracy

Throughout history, the use of genetic resources and associated traditional knowledge has occurred in undue forms. The countries of origin of such resources and the indigenous and local communities who detain this knowledge were not even consulted by those who used such goods to obtain economic profits, nor did they ever receive any type of benefit.

This undue appropriation which is often at times aggravated by patents, has long taken place throughout Brazil's history. Some examples of undue appropriation include: use of the coloring properties of the brazilwood (*Caesalpinia echinata*) in Europe during the 16th Century; the traffic of rubber-tree (*Hevea brasiliensis*) seedlings to Malaysia, which economically destroyed its extractivism in the north of Brazil; and the use of pit-viper (*Bothrops*) venom used in manufacturing the world's highest selling antihypertensive medication, whose annual earnings are of 500 million dollars. In addition, requests for patents of biodiversity elements that are traditionally used by indigenous and local communities including the curare, ayahuasca, kambô and quinine are observed.

Even though the Convention on Biological Diversity was enacted 15 years ago, this situation has not changed. Recent analyses (2005) on patents granted to products or processes based on plant species of Brazil reveal the dimension of this problem as none of these processes included a request to access and use these genetic materials, as shown at the table next page.

This scenario points to the need for user countries to also adopt measures to ensure that laws governing access and sharing of benefits of countries of origin also be respected.

<i>Species</i>	<i>Number of Patents After the CDB *</i>
Cat's Claw (<i>Uncaria tomentosa</i>)	26
Copaiba (<i>Copaifera sp</i>)	09
Jaborandi (<i>Pilocarpus sp</i>)	22
Andiroba (<i>Carapa guianensis Aubl.</i>)	06

*User countries: USA, Japan, France, Germany, Switzerland, Poland, the Netherlands and Austria.

Associated Traditional Knowledge

Traditional knowledge associated to biodiversity elements have been researched and used as the faster means for attaining results for industry in their developing of commercial products. Researches state that the use of traditional knowledge (of indigenous and other communities) increases the efficiency of the process to select and investigate plants in search for their medicinal properties in 400%. Data reveals that of 119 medications derived from plants, 74% were developed from researches with drugs used in traditional medicine. Nonetheless, rarely are the economic benefits shared with the communities that provided such information.

Furthermore, the rights of communities that detain such knowledge are still not acknowledged. These communities are little valued and do not receive the attention that is necessary for their preservation. The Convention on Biological Diversity promoted an improvement to this situation, by acknowledging these communities' relevance to biodiversity conservation and by establishing guidelines for their maintenance, valuing and use.

In order for traditional knowledge to be effectively preserved, it is necessary that its natural and cultural environments also be preserved for its production and

reproduction. Registering documents is not enough. It is necessary that indigenous and local communities be ensured of their access to the land, biodiversity and to conditions in which they can maintain their culture.

Brazil realizes that associated traditional knowledge is part of the country's cultural heritage and establishes the rights of indigenous and local communities. Such rights include prohibiting non-authorized third parties from: using, disseminating or exploiting this knowledge; receiving benefits for its economic exploitation; requiring that indications are made to the source of access to this traditional knowledge on all publications, uses, explorations and disclosures. One of the greatest challenges of today is to ensure that indigenous and local communities can fully take advantage of these rights.

The Coastal and Marine zones occupy approximately three million square kilometers of ocean that are under Brazilian jurisdiction, or in other words an area that is equivalent in size to almost half of our land. With its over 7,400 km between the mouths of the Oiapoque River in Amapá and the Chui River in Rio Grande do Sul, Brazil's coast line is one of the largest in the world.



Protected Areas

The recent growth of the national system of protected areas

The Brazilian System of Protected Areas includes areas at both national and subnational levels, composed of 12 different categories divided into two groups: the Full Protection group, whose main purpose is to preserve nature with only indirect use of its natural resources; and the Sustainable Use group, whose aims basically is to balance nature conservation with the sustainable use of natural resources within its boundaries.

According to up-to-date information from the National Database of Protected Areas, coordinated by the Brazilian Ministry of the Environment, Brazil has currently 600 Federal and State Protected Areas officially recognized as part of the National System, totalizing 99,850,500 hectares distributed in all the Brazilian Biomes. When the recognition and recording of all the State Protected Areas is completed, the National Protected Areas System will boost a double of the area under State jurisdiction than

currently recognized – approximately an additional 30 million hectares. Added to the 575,000 hectares of current private reserves, the whole area represents 130,425,500 hectares of terrestrial and marine Protected Areas – an amount superior to the sum of the European territories of France, Germany, Italy and Portugal. Additionally many of the 5,564 Brazilian municipalities have established their own protected areas, which are recognized as part the National System of Protected Areas but are currently not yet registered in the National Database on Protected Areas.

New protected areas established at the 2004-2007 period

Between 2004 and 2007, a set of 54 new federal protected areas was established, and other 9 areas were expanded, reaching a total of 19.6 million hectares protected in the period. This represents an increase of about 40% to the size of the federal protected areas system existing in 2003.

New protected areas at the State level

From 2000 to 2005 the number of State Protected Areas increased 28.3%, with an addition of 11.8 million hectares, an increase in 64.7% in area. It must be said that this information comes from a universe of 308 State Protected Areas already recognized by the National System of Protected Areas. As additional existing State Protected Areas are included in the National System and in the National Database, this amount will increase. Their inclusion depends on submissions from State governments and their recognition by the Ministry of the Environment.

Financial Sustainability of Protected Areas

As a first initiative to establish a financial sustainability plan to the Brazilian protected areas, the Ministry of the Environment produced a solid study, with the participation of two dozens of specialists on financial sustainability, from governmental and non-governmental organizations. The process took around two years of investigation and research of the present situation of the National System of Protected Areas and how it can become more efficient, and mostly, financially sustainable.

The group started with a first big challenge, which was to understand the real dimension of the National System, the actual and potential financial resources, and the way it can be better managed to achieve the consolidation, maintenance and expansion of the National System of Protected Areas, and also Brazil's capacity of accomplishing the national and international targets.

The main result of this study was the

first comprehensive assessment of the financial needs for the establishment and management of the Brazilian System of Protected Areas. According to the study, the Brazilian system requires new structural investments in the order of US\$700 millions, and projected annual expenses of about US\$450 millions, the majority of it (US\$313 millions) in personnel expenses. The methodology used also make it possible to project the systems cost for the scenario of reaching the national goals on biodiversity protection (30% of the Amazon and 10% of each other biome on protected areas). In this scenario, an additional investment of US\$500 million will be necessary, with additional annual expenses around US\$150 million.

The study also briefly indicates potential mechanisms under the Brazilian law to help financing the system. Among others, the study presented the potential of environmental compensation, ecotourism and related private-public partnerships and the payment for ecosystem services.

Environmental Compensation - Financing the Protected Areas management

The size and complexity of the National System of Protected Areas impose a constant search for financial tools to guarantee the necessary resources for their management, in a way to achieve the protected area goals, especially the biodiversity conservation. Among the present tools, the most promising is the Environmental Compensation, which deals with financial resources from enterprises with significant environmental impacts.

Enterprises with significant environmental impacts are those which must elaborate, at the licensing process, an Environmental Impact Assessment (EIA).

The Environmental Compensation is mandatory for non-mitigating impacts - impacts that cannot be repaired. In these cases, the entrepreneur is obliged to pay at least 0.5% of all the enterprise cost to the management of protected areas, especially those of full protection category whose buffer zone is directly affected by the enterprise.

The Environmental Compensation resources can also be invested at Full Protection Protected Areas that are not directly affected by the enterprise, but in this case the protected area is preferably at the same Biome or River Basin of the enterprise.

The Environmental Compensation Chamber

The Environmental Compensation Chamber was created within the Chico Mendes Institute for Biodiversity Conservation, with the participation of the Brazilian Ministry of the Environment, the Brazilian Institute for the Environment and the Renewable Natural Resources and representatives of States and Municipalities, to improve the environmental compensation resources utilization.

From 1998 to 2004, the financial resources utilized from the Federal Environmental Compensation Mechanism was US\$ 8.5 million. Since 2004 until now, around US\$ 22.2 million have been applied, 50% in the last two years. In 2007, the total accumulated amount of environmental compensation resources potentially available was approximately of US\$ 227 million.

Environmental Compensation Fund

In 2006, to ensure efficacy to the application of environmental compensation resources, the

Environmental Compensation Fund – ECF was created, managed by the National Savings Bank (Caixa Econômica Federal). Now an enterprise/entrepreneur has two options to transfer the financial resources due to environment compensation obligations: executing it directly or by depositing at the ECF, which automatically designates ICMBio as the financial executor. The advantages to the entrepreneurs by joining the ECF is that they are not obliged to acquire goods and hire services and products that are not directly related to the enterprises' activities, such as management plans and land titling. In parallel, there are advantages for the government. Besides the ECF management, the national banking institution offers services to help the financial resources execution, providing ICMBio with more control over the financial activities, higher capacity at expenditure planning and financial resources execution.

ARPA: The Amazon Region Protected Area Program

Created in 2003 by the Brazilian government for the protection of a significant sample of the Amazonian biodiversity, the Amazon Region Protected Areas Program has among its goals the development of best practices at the management of Protected Areas in Brazil. The ARPA Program is coordinated by the Ministry of the Environment and implemented by a technical and financial partnership with Chico Mendes Institute for Biodiversity Conservation (IBAMA at first), state governments, the Brazilian Fund for Biodiversity (FUNBIO, in Portuguese) and donor institutions.

For the first 4 years, the Program has been provided with US\$ 81,5 million from the Global Environmental Facility/ World Bank, WWF-Brazil and KfW, along

with the Brazilian government (Brazilian government US\$ 18,1 million; GEF: US\$ 30 million; WWF: US\$ 16,5 milhões; and KfW: US\$ 14,4 million). In 10 years, the estimated investment at the Program is about US\$ 395 million.

ARPA Results until 2007

Creation of Protected Areas

The 2006 target of the program - to support the establishment of 18 million hectares of new protected areas - has gone beyond the expectations. Since the Program beginning, there are 41 new protected areas, totalling 22.5 million hectares. In 2007, the ARPA Program has supported studies to establish 10 million more hectares of new protected areas.

Protected Areas Implementation

More than 20 million hectares of new protected areas are under implementation by the Program - around 13 million hectares of Full Protection Protected Areas (15 sites) and 9 million hectares of Sustainable Use Protected Areas (27 sites), totalling a support to 42 sites.

Consolidation

More than 8 million hectares of Full Protection Protected Areas - 17 sites created before March 2000, that already existed before the beginning of the Program, are being consolidated.

Protected Areas Fund

Created in 2006, the Protected Areas Fund, until December 2007, had the sum of US\$ 17 million, from national and international sources.

Protected Areas Management Innovations

With the three tools listed below, in addition to the innovative financial and managerial arrangement, the ARPA Program aims constantly the efficiency and efficacy at the implementation of the National System of Amazon Region Protected Areas.

Evaluation Tool for Protected Areas Effectiveness

Although there were advances provided by the Tracking Tool - used at the ARPA Program in 2005 and 2006 - another tool was developed in 2007 - the Evaluation Tool for Protected Areas Effectiveness. This new tool has been used by 80 Protected Areas in the Program, including the participation of around 150 Protected Areas managers to participate.

Integrated System of Coordination and Management of ARPA Program (SisARPA)

This tool for the computerized management of protected areas systems allows the communication among the Ministry of the Environment, executive institutions and Program partners. The SisARPA links information from the ARPA Program, the National Database on Protected Areas (the Brazilian government database) and the Brazilian Fund for Biodiversity Financial System. Initially developed to guide the ARPA Program and its protected areas management, the SisARPA is now a model to be followed by the National System of Protected Areas.

This System - based on evaluation, planning and management processes - strengthens initiatives of organized

information about the protected areas and allows strategic decision-making on protected areas management.

Conservation and Investment Strategy

The investment priorities made on protected areas were guided by the Conservation and Investment Strategy (2006), developed by the Program Coordination Unit and supported by the ARPA Scientific Counselling Panel, consultants, and also the German technical cooperation. This strategy was elaborated on scientific criteria, focusing on biodiversity and its threats and the contribution each protected area can give to ARPA Program targets.

Second Phase of the ARPA Program

ARPA currently encompasses approximately 30 million hectares of protected areas in the Amazon region. Based on the lessons learned, ARPA negotiations have begun for the program's second phase to be implemented between 2009 and 2012.

New targets were established and the total size of areas to be protected by the program has increased from 50 to 60 million hectares.

Targets for the second phase:

- Create 20 million hectares of additional protected areas (10 sites of strict protection and 10 sites of sustainable use areas);
- Implement the protected areas that were created in the Program's first phase;
- Foster the consolidation of protected areas that were created in the Program's

first phase;

“ Consolidate another 5.5 million hectares of existing protected areas (created before 2000);

“ Implement complementary financial mechanisms that were identified during the Program's first phase.

The Ecological Corridors Project (Projeto Corredores Ecológicos – PCE)

Within the context of the project coordinated by the Ministry of the Environment and executed in partnership with the States of Espírito Santo, Bahia and Amazonas, ecological corridors are large areas located in the Amazon and Atlantic Forest biomes and include protected area sites under different types of management, as well as indigenous lands, and interstitial areas submitted to different forms of land use.

Priority was placed on two corridors as the Project's pilot so as to test different methodologies for implementing ecological corridors -- the Atlantic Forest's Central Corridor (*Corredor Central da Mata Atlântica – CCMA*) with its approximate 12.5 million hectares (almost the size of England), and the Amazon's Central Corridor (*Corredor Central da Amazônia – CCA*) and its nearly 52 million hectares (equivalent to one and a half the size of Germany). The program is part of the Pilot Project for the Protection of Tropical Forests in Brazil and counts on resources from donations of the KfW *Entwicklungsbank* (The German Development Bank), the Rain Forest Trust Fund through the World Bank, from the European Commission and from national and state counterparts.

For the Amazon's Central Corridor, the

strategy is to maintain a forest continuum by means of fiscalization measures, consolidation of existing protected area sites and through the implementation of procedures for the sustainable use of natural resources in interstitial areas. For the Atlantic Forest's Central Corridor, the priority is to ensure protection to the significant forest remains and to gradually increase the connection among protected area sites, indigenous lands and landscape fragments by controlling, protecting and recovering forest coverage in connection with work geared toward sustainable development in priority areas, 95% of which are located in private properties.

In the Project's structure, the corridors are organized into four sub-components or lines of action: (i) fiscalization, surveillance and monitoring; (ii) planning and management of conservation areas; (iii) interstitial areas; and in the specific case of the Amazon (iv) protection of biological diversity in indigenous lands. In this sense, the Project directly supports the commitments made by Brazil as regards implementing the national biodiversity milestones for 2010.

Law Enforcement, Surveillance and Monitoring

This sub-component focuses on the development of the corridor's management plan, the development and beginning of the surveillance strategy and enforcement of legislation, the development of the monitoring strategy, environmental information system and leading local capacity building toward

participatory management. Furthermore, this sub-component provides support to the administrative structure so as to facilitate and coordinate the implementation of corridors.

In the Amazon's Central Corridor to foster sustainable use and consumption (Objective 2 of the CBD) an 85% decrease of non-authorized fishing boats was detected in the Unini River. This decrease resulted from the law enforcement infrastructure work as for example the *Flutuantes*. In addition, three fishing agreements were signed¹ and contribute to the recovery of the main fishery stocks.

In the lower Rio Negro region, law enforcement measures carried out by the Ibama² within the PCE's Action and Surveillance, increase the apprehension of lumbered wood, turtles, fish fingerlings in areas surrounding the protected area sites. These missions were supported by Volunteer Environmental Agents who received training in courses offered by the PCE and who reside in the communities and are accredited by the Ibama to carry out fiscalization work on a solely volunteer basis. These persons work with the community as environmental educators and are not authorized to issue fines. They are, however, authorized to confiscate products and equipment from invaders and/or persons infringing the law within the reserve and its surrounding area and to register such facts with Ibama.

Within the Central Atlantic Forest Corridor, effort is made to reduce

¹ According to Normative Instruction 29/03 of Ibama, a Fishing Agreement is understood as "a set of specific measures resulting from consensual treaties among different users and the body responsible for managing fishery resources in a given area that is geographically defined."

² The Brazilian Institute for the Environment and Renewable Natural Resources is a federal organization that is responsible for executing national environmental guidelines.

pressures that lead to the loss of habitats and change in the use and degradation of land and non-sustainable use of water (Objective 2 of the CBD). This occurs by means of implementing of the “Corridor’s Surveillance and Monitoring System” through the best practices and experiences of governmental and non-governmental organizations. In this sense, we can highlight the Integrated Fiscalization Plan of the State of Espírito Santo, which through the signing of a Federative Pact has provided the state with a fiscalization and monitoring system that is integrated with environmental organizations. By removing the connection between fiscalization and denouncements made by the population, the system has optimized fiscalization of focal points and has allowed for denouncements to be verified so that pertinent attitudes can be taken (fines, embargos, interdictions, etc.)

Thus in 2005 bi-monthly over-flights totaling approximately 45 hours were made in the region. During these over-flights seven types of aggressions were observed, of which 60% correspond to deforestation (114 focal points) and burnings (92 focal points). In approximately 80 hours of over-flights made in 2006, 30% of the points identified corresponded to deforestation and burnings. With these results, it is possible to estimate that there was a reduction of these damages during the two years.

The measures taken were also successful in the State of Bahia. In addition, the partnership established with the Environmental Resources Center (*Centro de Recursos Ambientais – CRA*) and the Atlantic Forest Nucleus of the State’s Public Ministry (*Núcleo Mata Atlântica do Ministério Público Estadual*), with PCE support, resulted in the creation of the GEOBAHIA, a large bank of georeferenced data whose objective is to

systematize and integrate environmental and social-economic information on Bahia’s territory. This system will contain the main data on mapping and on PCE implementation and will be integrated with georeferenced information from state and federal institutions that carry out environmental work. It will allow for analyses that will ground environmental management and the public power’s decision-making process.

With the objective of fostering the efficiency and efficacy of the law enforcement and monitoring actions and in the scope of the CCMA, the Public Prosecutors’ Office of Bahia is working on structuring and operationalizing the “Environmental Basis”. This basis is part of the System for the Legal Protection of the Atlantic Forest (*Sistema de Proteção Legal da Mata Atlântica – SISPROT*) – Mata Atlântica 2020 Project, which aims at combating environmental law infringements. The main objectives are: diagnose illegal occupation of environmentally relevant areas; ensure implementation of the legal reserve and; combat the illegal commerce of wildlife. In addition, the following can be highlighted: the creation of regional State’s Public Prosecutors’ offices exclusively for environmental matters; publications such as the Penal Environmental Manual (*Manual Ambiental Penal*) and two volumes of the Environmental Notes (*Cadernos Ambientais*) series and; creation of the NUMA page within the Public Prosecutors Office’s website and which contributes through the continuous dissemination of better environmental practices in the scope of Bahia’s Public Prosecutors Office (*Ministério Público da Bahia*).

Planning and Management of Protected Area Sites

Amazon's Central Corridor has approximately 52 million hectares, of which 14 million are under different modalities of legal protection. This corresponds to about 3.5% of the Amazon biome is effectively conserved by Protected Area Sites of the National Protected Area Sites System (*Unidades de Conservação do Sistema Nacional de Unidades de Conservação*). The corridor contains a great variety of habitats and connections among protected areas, including ample spaces of almost-primitive forests. The foremost objective of this corridor is to maintain ecological integrity while preserving connectivity among the areas without hindering local populations. This sub-component aims at strengthening and implementing protected area sites by placing priority on integrating society in process. It also aims at developing community participation so conservation objectives can be attained and thus foster long-term viability of species.

Unlike with the Amazon's Central Corridor, the protected area sites of the Atlantic Forest consist of small fragments dispersed throughout areas of high environmental degradation, with large urban centers located in their buffer zones and considerable economic and extractivist pressures. Nonetheless, these areas constitute areas of biological wealth that are especially concentrated in the protected area sites, in which there is a great concentration of endangered and endemic species. Many protected area sites are not large enough to hold its biological characteristics. Of the CCMA's 12.5 million hectares, 8.5 million are of land and of these hectares, only 2% is under some sort of legal protection.

With the objective of helping consolidate Brazil's national protected areas system, the Project has invested in the elaboration and implementation of management plans for the protected area sites located in the two corridors. In the Amazon, the Project has allowed for the implementation of three sites and a review of the management plan – in addition, nine new sites are being elaborated. In the CCMA, four protected area sites are elaborating their management plans with Project support, and zoning is being reviewed for two other sites.

In addition, resources were invested in the capacity building of site managers of both corridors. This capacity-building addressed relevant themes with the objective of improving management within the protected area sites. In the CCA, of the nine councils that were instituted, three are in activity. In the CCMA three management councils were installed. Still in this corridor, a Protected Area Site Managers Network was formed and this innovative experience has been yielding practical results. In its six years of existence, the network has allowed for exchange of information among its members and due to the successful experiences of other sites, this exchange has been of great help in the decision making processes. The Network holds annual in-person meetings with all of its members and virtual meetings through an e-mail address list where other matters that are relevant for protected area sites are discussed. Themes such as environmental compensation, law enforcement, conflict resolution and results-oriented management have been discussed during meetings. During the annual meetings, capacity-building courses are offered to managers.

Ecological Corridor	Name of the Protected Area Site / Jurisdiction	Management Group	Area (hectares)
Amazon's Central Corridor (Amazonas)	Ecological Station Jutai-Solimões (federal)	Full protection	288,187
	Anavilhanas Ecological Station Ecological Station (federal)	Full protection	350,018
	Juami – Japurá Ecological Station(federal)	Full protection	745,830
	Jaú National Park (federal)	Full protection	2,272,000
	Uatumã Biological Reserve (federal)	Full protection	940,358
	Rio Negro Setor Sul State Park (state)	Full protection	157,807
	Rio Negro Setor Norte State Park (State)	Full protection	146,028
	Auti Paraná Extractivist Reserve (federal)	Sustainable use	146,960
	Unini River Extractivist Reserve (federal)	Sustainable use	833,352
	Jutai River Extractivist Reserve (federal)	Sustainable use	275,533
	Uatumã Sustainable Development Reserve (State)	Sustainable use	424,430
	Catuá Ipixuna Extractivist Reserve	Sustainable use	217,486
	Cujubim Sustainable Development Reserve (State)	Sustainable use	2,45,380
	Maroaga Cavern Environmental Protection Área (State)	Sustainable use	374,700
	Margem Esquerda do Rio Negro Setor Aturiá Environmental Protection Area Apuazinho (estadual)	Sustainable use	643,215
	Margem Esquerda do Rio Negro Setor Tarumã – Açu/Tarumã Mirim Environmental Protection Area (State)	Sustainable use	586,422
	Margem Direita do Rio Negro Paduari / Solimões Environmental Protection Area (estadual)	Sustainable use	56,793
	Javari-Buriti Area of Federal Ecological Interest (federal)	Sustainable use	15,000
	Tefé National Forest (federal)	Sustainable use	1,020,000
	Urubu River State Forest (estadual)	Sustainable use	45,692
Amanã Sustainable Development Reserve (State)	Sustainable use	2,350,000	
Tupé Sustainable Development Reserve (municipal)	Sustainable use	11,973	
Mamirauá Sustainable Development Reserve (State)	Sustainable use	1,124,000	
Médio Juruá Extractivist Reserve (federal)	Sustainable use	253,227	

Atlantic Forest's Central Corridor (Bahia and Espírito Santo)	Itaúnas - Espírito Santo State Park (State)	Full protection	3,674
	Pedra Azul State Park - Espírito Santo (State)	Full protection	1,240
	Conduru State Park – Bahia (estadual)	Full protection	9,275
	Forno Grande State Park	Full protection	730
	Pau Brasil State Park – Bahia (federal)	Full protection	11,590
	Descobrimento National Park – Bahia (federal)	Full protection	21,213
	Pratigi Environmental Protection Area – Bahia (State)	Sustainable use	85,700
	Itacaré Serra Grande Environmental Protection Area – Bahia (State)	Sustainable use	14,925
	Tinharé Boipeba Environmental Protection Area – Bahia (State)	Sustainable use	43,300
Total		13,470,903,308	

Sources: Ecological Corridors Project /MMA; Amazônia Brasileira 2007 - ISA e Arpa/MMA; IDAF-ES; Semarh-BA; IBAMA; IEMA.

Interstitial Areas

This sub-component aims at strengthening biodiversity conservation in interstitial areas of the corridor (outside protected area sites and indigenous lands) and at fostering conservation and sustainable development of land use. It is especially geared toward non-profit non-governmental institutions, community groups and local government.

Interstitial areas are of special importance as they occupy most parts of the corridors. In the specific case of the CCMA, they correspond to 95% of the territory and contain important remains of natural ecosystems. As a result, their conservation, enlargement and restoration will greatly contribute to the CCMA's connectivity. Considering that a large part of this corridor's remains is located in private properties, the participation of these lands' owners in *in situ* biodiversity

conservation is very important, as it will help fulfill the milestones of the Convention on Biological Diversity. In the case of the CCA, the interstitial area corresponds to 54% of the corridor and measures for the conservation and preservation of natural resources for maintaining connectivity are foreseen.

Thus, calls for proposals for subprojects in both corridors were launched. This strategy will allow for an increase to the scale of measures to be carried out and will thus be a response to the society that effectively participated in planning for the corridors.

The sub-projects supported by the PCE will be able to provide support to sustainable management, including the recovery of degraded ecosystems, extractivist and agro-forestry production, sales of products obtained through the sustainable management of natural

resources, environmental tourism, alternatives for fire control and deforestation, environmental education, promotion of conservation – especially in private reserves, legal reserves and permanent preservation areas, management of natural resources and income-generating incentives.

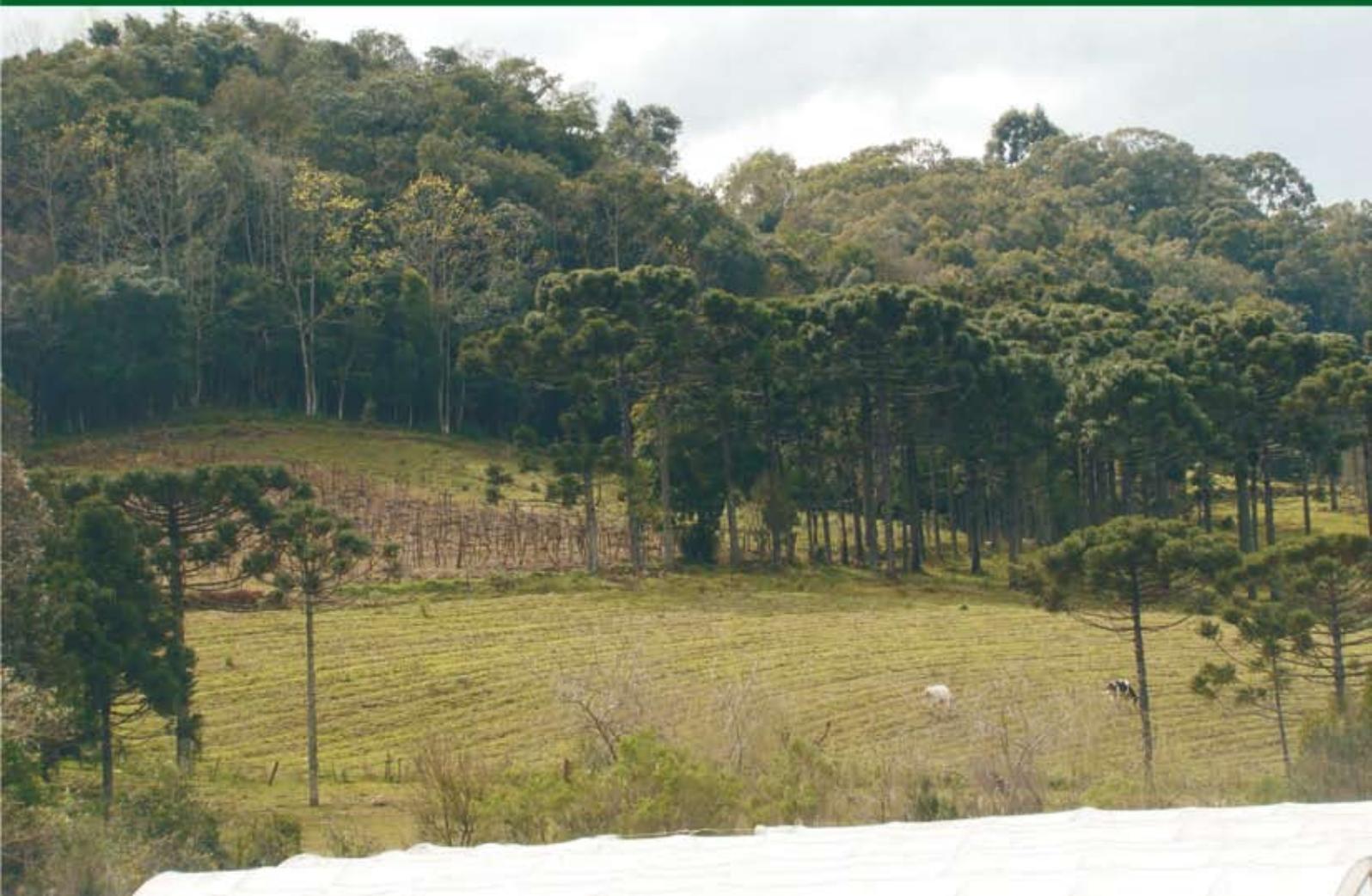
Another way of contributing to the connection of nucleus areas and to the formation of ecological corridors is by stimulating awareness of the Private Natural Heritage Reserves (*Reservas Particulares do Patrimônio Natural – RPPN*). The RPPN is an important tool to complement the efforts of the public power toward the conservation of native ecosystems and natural resources. In the scope of the National Protected Area System, the RPPN presents highly positive numbers in the cost-benefit ration both as regards the economic resources that are necessary for the creation and management of a protected area site, as well as the demand for technicians and acceleration of the process, due to its easy regulations. The system allows for the maintenance of connectivity among fragments, as well as the increased representation of priority conservation areas in regions that are not sufficiently-protected by the network of public protected area sites.

Protection of Biological Diversity on Indigenous Lands

There are 65 indigenous lands in the CCA, of which 37 are demarcated and 28 are legally established. These lands total more than 11,000,000 hectares (21.15% of the CCA) and are mainly distributed in greater numbers along the Amazonas River. The greatest coverage area, however, is in the region of the Negro and Uatumã Rivers. In the scope of this sub-component, the Demonstrative Program for Indigenous Peoples (Programa Demonstrativo dos Povos Indígenas – PDPI)³ it is responsible for the measures taken. The projects that are supported contribute to the effort to connect CCA areas by fostering protection to indigenous lands, valuation of culture and sustainable economic activities and thus ensure non-predatory exploitation of resources.

The challenge is to not only foster environmental management on indigenous lands so as to improve the quality of life of the populations that live on them, but instead to do this in an way that is integrated with the concept of ecological corridors and to valuing the cultures within.

³ Also part of the Pilot Program for the Protection of Brazil's Tropical Forests



Incentive Measures and Ecosystem Approach

Incentive Measures

National Biodiversity Mainstreaming and Institutional Consolidation Project – PROBIO II

The Biodiversity Mainstreaming and Institutional Consolidation Project – PROBIO II will promote incentive measures by implementing the component 1 (Mainstreaming Biodiversity into Select Public Sectors). This component of PROBIO II amounts US\$ 33.4 million, of which US\$ 8.4 million corresponds to a donation by the Global Environment Facility (GEF) and the remaining US\$ 25.0 million to resources provided by the Brazilian Government.

Under this component, the project will support preparation of sectoral plans that incorporate biodiversity management practices. It will seek strategies for incorporating the objective of biodiversity conservation and sustainable use into policies, programs, projects, and development plans throughout different levels of government activity. This component involves cooperation with a number of government agencies whose

sectors have a significant impact on, and use of, biodiversity, including agriculture, fisheries, forestry, water resources, health, and technology.

This component will be implemented through two subcomponents: (1.1) planning and refinement of public sectoral policies and policy instruments, and (1.2) sectoral activities incorporating biodiversity mainstreaming applied at a national level.

Activities financed under subcomponent 1.1 will include an assessment of bottlenecks and alternative solutions for biodiversity mainstreaming in the public sector; studies for biodiversity valuation; studies to develop and evaluate incentive measures for the adoption of biodiversity conservation and sustainable use as fundamental issues across the public sector, including, for example, carbon values; consensus building with stakeholders; and, development of sector plans with policy recommendations. These sector plans will outline the recommended portfolio of activities, instruments, and policies to be implemented by the project and other

initiatives, along with details pertaining to the expected costs, responsibilities, and timeline of each activity.

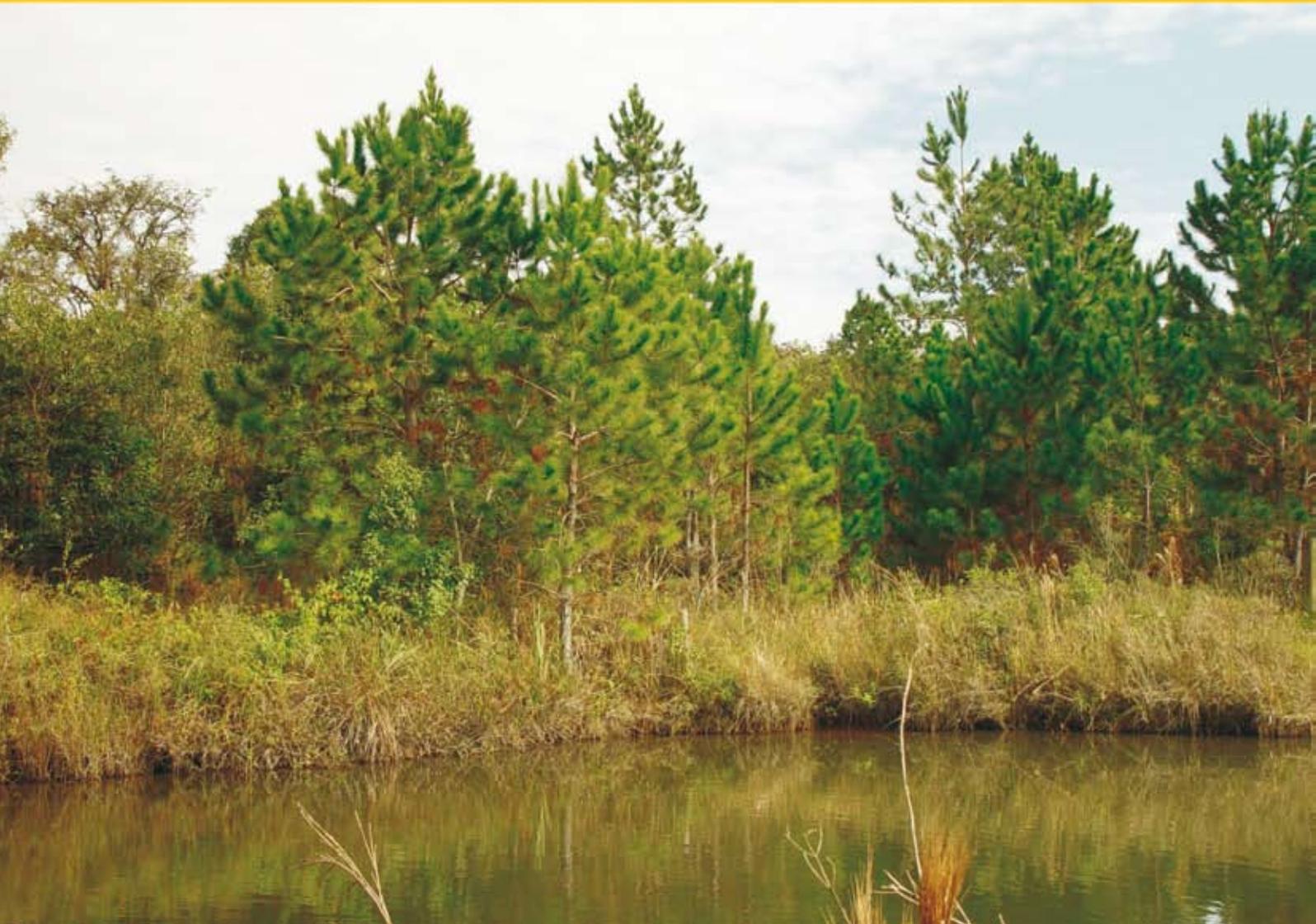
Activities financed under subcomponent 1.2 will be on-the-ground applications of recommendations adopted during the sector workshops detailed under subcomponent 1.1. Others are initiatives identified by the government as key to testing the practical application of biodiversity policy guidelines in specific sectors. Examples include incorporation of biodiversity-friendly techniques into livestock management practices, sustainable use of native species, sustainable agro-forestry development, and models to manage health risks for native wildlife. The expected result of this work will be a series of lessons learned from the practical application of a portfolio of mainstreaming tools that can then inform the future discussion of biodiversity mainstreaming in Brazil and elsewhere.

Ecosystem Approach

Within its principles and guidelines regarding the specific objectives of managing ecosystems, the National Policy for Biodiversity indicated the use of an ecosystem approach. This approach will also be used in the GEF's "Conservation and Management of Pollinators for Sustainable Agriculture through an Ecosystem Approach" project, which is nationally coordinated by the Ministry of the Environment and by FAO in international context.







Invasive Alien Species and Biosafety of GMOs

Alien Invasive Species

Brazil is known as one of the countries with the greatest biodiversity in the world. It is placed first on the list of megadiverse countries. Between 15 and 20% of all species are contained within Brazilian territory, in the continental platform, in the territorial oceans, and in the exclusive economic zone. All of this biodiversity is related to the great geographic and climate diversity, the size of the territory and the presence of the largest tropical forest coverage in the world.

There is, however, a series of factors that threaten the integrity and equilibrium of the several ecosystems in the Brazilian territory. Among these we highlight the biological invasions caused by invasive exotic species which are currently considered the second biggest cause for biodiversity loss, only losing to the destruction of habitats resulting from the direct conversion of land to human use and which involves deforestation and change to land use. Invasive exotic species have a high potential for dispersion, colonization and dominance over the invaded environments. As a

result, they generate much pressure on native species and sometimes lead to their extinction.

Increasing globalization, enlargement of roads and highways, increased international commerce and tourism, in addition to the climate changes resulting from the greenhouse effect, tend to significantly boost the opportunities for the introduction and expansion of invasive exotic species into various ecosystems of the Earth.

Given Brazil's continental dimension, which includes land frontiers with 10 countries, a coastal frontier with an extension of over 7000km and the rivers that enter the country, the entrance of exotic species that can become invasive is very easy. This ease of entrance directly impacts in the conservation of native and agricultural biodiversity, as well as on the economic and social impacts resulting from problems created for the agricultural, silvicultural and livestock production systems. The cost for the country reaches tens of billions of US dollars.

The MMA acknowledges the problems pertaining to biological invasions and is in close articulation with different segments of society. With this, it has been developing a series of measures focused on: (i) prevention of introduction; (ii) early detection; (iii) monitoring; (iv) control / management and; (v) eradication. These measures basically regard the: creation of norms, as for example the Conama (National Environmental Council) Resolutions; incentives to the creation of discussion forums in the scope of federal units; surveying registries of exotic species and biological invasion in the various ecosystems; facilitating research credit; supporting the elaboration and publication of official lists of national and state exotic invasive species and; supporting the adoption of measures for the eradication of exotic invasive species in protected area sites.

As regards the marine environment, Brazilian measures in this area began in 2000 with the Global Ballast Water Management Programme. This Programme involves various countries (Brazil, China, India, Iran, South Africa and Ukraine) and its focal point in Brazil was the Ministry of the Environment, which counted on support from the Program for the Integrated Management of the Coastal and Marine Environments (Gercom).

As regards land environments and continental waters, the Brazilian measures began in 2001 on the occasion of the Work Meeting on Invasive Exotic Species, held jointly by the Brazilian Ministry of the Environment and the Brazilian Agricultural Research Corporation. This meeting counted on the participation of representatives from Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela.

As a result of the meeting, the MMA through the Project on the Conservation and Sustainable Use of the Brazilian Biological Diversity (*Projeto de Conservação e Utilização Sustentável da Diversidade Biológica Brasileira - Probio*) and the National Fund for the Environment (*Fundo Nacional do Meio Ambiente – FNMA*), calls for proposals were launched and sub-projects for the management of plant and animal species considered to be invasive in the national territory were selected. Through Administrative Decree 494 of August 2003, the Minister for the Environment created the National Task Force for the Control of the *Limnoperna fortunei* (a freshwater mussel).

Still in 2003, in light of the precarious bibliographical references and research in Brazil pertaining to the matter, the MMA launched a public consultation for the first National Inform on Invasive Exotic Species. There were two diagnostics – one about current and potential invasive exotic species and another about the country's installed capacity to address the matter. The surveys address the species that affect land environments and continental waters and the coastal zone, as well as those that affect production systems and human health. This initiative was finalized in 2005 on the occasion of the meeting on which results and assessments of final reports were presented. Five hundred forty three species considered to be invasive exotic to the different Brazilian ecosystems were registered.

By means of the Brazilian Marine's Directory of Ports and Coasts Administrative Decree 52, of June 2005, the Maritime Authority's Norm for the Management of Ships Ballast Waters was issued. Ship ballast waters are one of the greatest vectors for the

dissemination of exotic organisms. This Normative (Norma 20) aims at internalizing the guidelines that are detailed in the International Convention for the Control and Management of Ships Ballast Waters and Sediments, which was approved in February of 2004 and is currently being ratified by the Brazilian Congress. In October of 2005, the MMA coordinated in Brasilia the First Brazilian Symposium on Invasive Exotic Species. The symposium counted with over 400 participants from seven countries. In May of 2006, during a commemorative solemnity for the International Day for Biological Diversity, the Memorandum of Agreement with the Global Invasive Species Programme (GISP) was signed by the Minister of the Environment, with the objective of fostering a more effective process in the country for monitoring and controlling invasive exotic species. In the scope of the National Commission on Biodiversity (CONABIO), in August of 2006 the Permanent Technical Chamber on Invasive Exotic Species was created. In 2007, the MMA started the measures to elaborate the National Strategy on Invasive Exotic Species and signed a Term of Cooperation between the Secretariat for Water Resources and the Secretariat for Biodiversity and Forests for surveying the invasive exotic species in the São Francisco River basin.

Finally, it is important to mention that out of the concern for protecting the aquatic fauna a review of Ibama Decree 145/98 was started in the scope of the National Council for the Environment. This decree deals with the introduction, re-introduction and translocation of live organisms into aquatic environments.

Biosafety

The biosafety of genetically modified organisms (GMO) includes various

activities, as for example the participation of MMA representatives in the National Technical Commission on Biosafety (*Comissão Técnica Nacional de Biosegurança – CTNBio*), the organization of courses, participation in the elaboration of regulations, participation in international negotiations of themes included in the Cartagena Protocol on Biosafety, and others.

By means of monthly CTNBio meetings, MMA representatives analyze and discuss processes pertaining to the concession of Certificates of Quality in Biosafety (*Certificados de Qualidade em Biosegurança – CQBs*), liberation of contained GMO for research (laboratories, bioterium, and vegetation houses); planned release of GMO into the environment for the purpose of experimentation and commerce, among others.

The MMA organized and carried out five capacity building courses on the biosafety of GMO and their byproducts. The first three courses were carried out in 2004, in the states of Santa Catarina, Paraná and Mato Grosso do Sul and counted on the participation of over three hundred professionals, including technicians, analysts and officers from the state and federal registry and law enforcement agencies, university professors and technicians from other institutions interested in the matter, as well as farmers, and rural technicians and leaderships. Each course was one-week long and addressed topics pertaining to obtaining GMO, methods for identification, risk assessment, trackability and legislation, among others.

The MMA also structured an internal Commission for the Biosafety of Genetically Modified Organisms and byproducts and their impact on the

environment. This commission has many obligations, but its foremost task is to provide technical advisory to MMA directors in their decision-making processes.

Furthermore, the MMA created a biosafety page on which important scientific articles on potential risks of GMS and on legal norms on the matter are made available. This page can be accessed at www.mma.gov.br/biosseguranca .





Carmen
Rocchio
Lida

1937

Sophronitis coccinea

Global Taxonomy Initiative and Scientific Cooperation

Global Taxonomy Initiative (GTI)

In 2005, the Brazilian government indicated the General Coordination of Biodiversity Policies and Programs of the Ministry of Science and Technology as the national focal point for GTI, and made it responsible for coordinating and implementing the GTI Workgroup in the country. This Coordination was instituted by Decree 4724 of June 10, 2003 and is responsible for: coordinating the Biodiversity Research Program (*Programa de Pesquisa em Biodiversidade – PPBio*); to promote the increase of the country's taxonomic capacity; other research management and development activities that contribute to the implementation of the National Policy on Biodiversity and of the Convention on Biological Diversity.

As the GTI's national focal point, the General Coordination of Biodiversity Policies established the following guidelines and strategies of action: a) dissemination of information on the country's installed taxonomy capacity; b) dissemination of capacity building opportunities in Brazil and abroad;

c) dissemination of national and international financing opportunities for taxonomy studies; d) increased possibilities for national and international cooperation and; e) dissemination of taxonomy demands resulting from the Convention on Biological Diversity.

Scientific and Technical Cooperation and the Clearing-House Mechanism

Communication problems between the scientific community and policymakers are frequently related to three fundamental differences in the nature of work of scientists and policymakers. These fundamental differences are: (i) their priorities; (ii) the fact that their actions operate on different time frames and; (iii) their languages.

Problems as these also occur at the Consultation Process on global level. For this reason the International Mechanism of Scientific Expertise on Biodiversity (IMoSEB) was created through an initiative of the French government.

Given the example of the IMoSEB, the

Brazilian Ministry of the Environment and the Brazilian Ministry for Science and Technology took the initiative of gathering representatives from the Brazilian academia to foster a discussion at the national level with the objective of increasing the relations between policymakers and the scientific sector, all of whom are responsible for producing information. This meeting aimed to identify mechanisms through which advice from the research segment could be better to political decision making relative to biological diversity and also to better foster scientific advisory to the Convention on Biological Diversity. The guidelines established by this Convention and the decisions resulting from each of the Conference for the Parties have become invaluable instruments for the Brazilian government to elaborate public policies.

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CAT T L E Y A L A B I A T A

var. albica

Simons, Flowering Plants -
C. C. Myzomela, vol. 6, p. 182, t. 107

Jan - 22 - 1877

This plant is flowering late
this year. The variety formerly
known as July is singular.

Flowers generally in pairs -
sometimes 3 or 4 together.

It is very delicate and early
but not so long lasting as
the variety formerly called
June in Jan. 1877.



For the
herbarium
1877

Simons
1877



Label
in
herbarium



Labellum

Herbarium
1877



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