



Biodiversity and Forests of Brazil

**Ministry of the Environment
Brazil 2002**

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Presentation

José Carlos Carvalho
Minister of the Environment

It feels like we have come to the end of a long journey. This seems to be the best moment to look back, ponder and, of course, evaluate the work in progress in order to make sure our society will get on the right track.

Therefore, it is a difficult task to address environmental issues with a view to permanently including them in the specific matters that comprise the approaches regarding the government's decision-making process. Quite often, we come across tasks that run into collective preventive opposition. We find ourselves at odds with behaviors based on misconceptions deeply rooted in artifices aimed at short term solutions. These are related to concerns to meet government obligations, which formerly revolved around short-term development models. Such haste ends up imposing other renewing initiatives, which are also inherently based on short-term development models. It is the perpetual driving force of trends that lead to irreversible environmental impacts by recklessly consuming natural resources and by allowing profuse and wasteful interventions for their restoration, when it is possible.

The first item in the government's agenda regarding the environment for President Fernando Henrique Cardoso's second term in office was to provide the Ministry of the Environment with a permanent and effective structure. This aimed at enabling the State to take an authoritative stance to handle every single environmental issue.

The purpose of this proposition was to arrange the Ministry's thematic approaches under specific agendas. In view of the activities they advanced, these approaches were meant to build a strategic framework of public policies to help the government better manage environmental issues in Brazil. The idea was to enable the different segments in society to have a thorough understanding of the need to harmonizing private interests with national-level development goals. Such was paramount understanding to make sure Brazil - a typically environment-oriented country - would be able to adopt a sustainable development model.

A new structure for the Ministry was then shaped,

which was an attempt at creating an opportunity to permanently including environmental issues in the government's policy-making process with a view to attaining regional and, consequently, national development. This certainly paved the road for the Brazilian Government to pay meticulous heed to both forest - Brazil has the largest area of the world's remaining forests - and biological diversity protection issues - Brazil is home to the largest share of biodiversity in the planet (15-20% of all species) and consequently must take good care of it. (This is so because of Brazil's inherent environmental awareness.) This is at the origin of a governmental initiative linked to a gigantic task, determined by the tremendous magnitude of its stated goals: the Ministry of the Environment's Secretariat for Biodiversity and Forests.

The Secretariat has been operational for three years, and it has faced a variety of challenges over this period. It has sought to address a myriad of everyday concerns by the Brazilian society. It has tackled strategic issues regarding national development. The Secretariat has supported sustainable development models based on its conceptions. Its initiatives comprise the various approaches designed to achieve the sustainable development goals in the foreseeable future.

First we considered enumerating them. Then we realized that such work required a modified degree of importance assigned to the activities developed by Brazil in order to protect the country's biodiversity. These initiatives include:

- The National System of Conservation Units - SNUC, was established by the Federal Law No. 9985/2000. New conservation units have been created in order to develop a cross-section of areas protected by Brazil's biome;
- We have developed the so-called National Programme for Protected Areas and have implemented a comprehensive training programme designed to enable personnel to manage these protected areas;
- The launching of the National Programmes for Biodiversity and Forests, along with the above-men-

tioned National Programme for Protected Areas, showed the society how the issue of biodiversity protection in Brazil will be dealt with. Its propositions are in accordance with what could be an outline of a National Strategy for the Preservation of Brazil's Biodiversity; Finally, the Ministry of the Environment is establishing a Biosphere Reserve and, at least one World Natural Heritage Site in each Brazilian biome.

We intended to go further and dwell on such actions, draw conclusions, encourage examination of its outcomes. Then we changed our minds. As a matter of fairness and respect, we decided to leave further consideration of the achievements from such actions for Secretary José Pedro de Oliveira Costa. Over the course of the past three years, it was up to Secretary Costa to coordinate its structuring and implementation. These are described in the following pages.

I should like to thank Secretary Costa and those who helped him achieve those goals. My sense of gratitude grew from the personal relationships the above activities made possible. I should also mention that my appreciation is now stronger due to the quality of the work we have developed and of the progresses Brazil has made thanks to the increased political importance gained by sustainable development within the framework of public policies in Brazil. Finally, and most importantly, I would like to express my appreciation of the high standards met by the Ministry regarding its technical approaches and the timing of political goals.





Introduction

José Pedro de Oliveira Costa
Secretary for Biodiversity and Forests

When I was invited to manage the Ministry of the Environment's Secretariat for Biodiversity and Forestry Affairs - SBF, early in 1999, I knew that I was before a challenging job. It would be no easy task to be in charge of the Biodiversity of the country with the richest genetic diversity in the world. This also applies to the country's forests, which make up the largest forest cover in the planet. The challenge turned out to be a huge one. While we have received support from many vital sources, the government is faced with countless obstacles that are difficult to be surmounted. In addition, reduced or even nonexistent resources required a great effort of imagination so that we could accomplish the largest possible number of tasks. Significant regional differences and Brazil's gigantic territorial extension were also obstacles to achieving our goals.

Despite such huge difficulties, it is with pleasure that we now make available this submission of accounts of the work we have developed. This is a summary of our main achievements. This is by no means intended to represent final results, and it is neither our intention to be proud of the completion of a task. This summary represents steps on a long path – an endless path, some would argue – that we had to tread. There is much yet to be done and, unfortunately, a great deal that cannot be done. We are glad, however, because in some cases we managed to make several strides - we managed to improve the status of some issues.

The support provided by Civil Household of the Presidency of the Republic and the resolution made by the National Congress helped us pass the Bill regarding the National Protected Areas System in the first half of 2000. This allowed us to establish a framework for the basic task of protecting our biodiversity. In this new environment we established, through a cooperation with IBAMA's Division of Protected Areas, 38 new protected areas – 15 Integral Protected Areas and 23 Sustainable Use Protected Areas. By 1998, the Integral Protected Areas covered 16,557,088 hectares, and now they cover 18,147,997 hectares – an 11.9% expansion. Likewise, the

Sustainable Use Protected Areas accounted for 18,337,656 hectares when we took office and now they cover 19,623,323 hectares – a 11,85% increase. Among the new protected areas, the following deserve special notice: Descobrimento National Park and Pau Brasil National Park, in the Atlantic Forest, Serra da Bodoquena Area, in Pantanal (Brazilian Central Swamps), and the Montanhas do Tumucumaque, in Amapa State. This latter one covers 3.8 million hectares and is the Largest National Park in Brazil. Its surface is the largest among all Tropical Forest Protected Areas in the world. We have also created, among others, the Baleia Franca and Planalto Central Protected Areas, and we completed the research of Mico-leão-dourado APA (Environmental Protection Area). We have established the Murici Ecological Station, in Alagoas, and the Serra Geral do Tocantins Ecological Station. Covering 716,306 hectares, Serra Geral do Tocantins Station is the largest protected area in its category. It is also the largest station containing a significant portion of our Cerrado (Central Brazilian Savannahs).

We have held one scientific workshop for each Brazilian biome and thus managed to identify priority areas for the conservation of all biomes, as can be seen from the specific chapter on this topic. This work not only helped create new protected areas, but also provided inputs for studies regarding the proposition and acknowledgement of an important network of Biosphere Reserves in UNESCO's "Man and the Biosphere" Programme, in the individual biomes, which indicate the overall protection path of the main Brazilian ecological corridors.

We were glad that 42 protected areas have been designated as World Natural Heritage Sites by UNESCO. They have been divided into six different groups, which help improve their protection. When we started this work back in 1999, only Iguazu National Park had this designation. However, it was considered to be one of the endangered heritage sites due to an unauthorized road that crossed its best protected spot. Thanks to IBAMA's Ecosystems Management and the Brazilian Federal Police, we managed to

close this road and remove Iguacu Park from the list of endangered world sites.

Many breakthroughs were achieved towards establishing a National-level Policy on Biodiversity thanks to an open and comprehensive process involving all Brazilian states and the civil society. During this current semester we shall submit its conclusions for a review by the National Environment Council and the Presidency of the Republic.

We have carried out an equally comprehensive task by creating the National Forest Programme - PNF. Its initial outcomes can be found in the relevant chapter below. We have developed specific programmes for the Atlantic Forest, Cerrado and Caatinga (Brazilian Semiarid North-east) areas. We have had an active participation in the turbulent discussion of the Brazilian Forest Code, which engaged the Brazilian society as a whole. Fortunately, we have been successful in implementing the most apt and modernizing ideas vis-a-vis such a huge and complex challenge. It should be stressed here that the engagement of the Society to support such positions was based on one of the main guaranteeing elements of this framework. It should also be pointed out that such an active involvement is an important victory.

Finally, we would simply like to thank the steady

support we have received from Ministers Sarney Filho and José Carlos Carvalho, both during President's Cardoso second term, as well as from Ministerial Executive Secretary Marcus Vinícius Caetano Pestana da Silva. Without their support, all the above achievements would not have materialized. The valuable help we have received from environmental divisions in the States we have worked with also deserve special notice. The Ministry of the Environment has partnered with a number of Non-Governmental Organizations to develop countless tasks and we are very grateful to them. We share with them the merits of our winnings. I would like to thank the Project's Department of History and Aesthetics of Sao Paulo University's College of Architecture and Urbanism, for having allowed me to work with the Ministry of the Environment during this period. I would also like to thank the Ministry of Foreign Affairs - Itamaraty for their great help at international level. Finally, I would like to express my deepest gratitude to SBF's Directors, Bráulio Ferreira de Souza Dias, Marco Antônio Ramos Caminha e Raimundo Deusdará Filho, to my Chief of Staff, Fredmar Corrêa, and to our staff for their consistent support, relevant opinions and responsiveness to all my demands. I would like to exhort them to keep focused on the task that brings us together. They are:

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1.1 - Biodiversity National Policy

World's concern with the preservation of biodiversity is rather recent. However, such concern grows to the same extent we see the advance of the planet's natural resources despoilment. A victim of the contemporaneous way of life, of the explosive populational growth, of the social and economic inequalities and, above all, of the environmental degradation, the biological diversity as well as an immeasurable source of life are more and more endangered each passing day.

The ensemble of biological and genetic resources that comprise the variety of life on earth – from microorganisms, plants and animals to the associated ecological processes known as biodiversity – is one of nature's paramount properties and the source of an immense potential regarding its economic use. They are the basis for agricultural, cattle-raising, fishery and forestry activities as well as the basis for the strategic biotechnological industry.

However the number of species does not exceed 1.7 million, it is estimated that the biological diversity reaches from 10 to 100 million species worldwide. A survey recently published in the Nature magazine establishes a potential value of US\$ 33 trillion per year for the services provided by the world biodiversity – almost the double of the world's GDP.

The Conference on Environment and Development – Rio-92, held in Rio de Janeiro in 1992, draw the attention for the need of preserving such immense potential through the Convention on Biological Diversity – CDB (*Convenção sobre Diversidade Biológica*), which was signed by 170 countries – being Brazil the first signatory of the convention.

Concerned with both the high rates of devastation of genetic resources and with the loss of biodiversity components, as well as especially interested in fostering the conservation efforts regarding biological resources, the signatory countries have consolidated a great effort in dealing with the issue.

In addition to foreseeing the different levels and ways of handling biological diversity (encompassing conser-

vation, biotechnology and sustainable use), the Convention also defines the following primary instruments to subsidize its use and management: access control over genetic resources, monitoring, impact evaluation and mitigation, biosafety and the sharing of the benefits arising out of its use and technology transfer.

Moreover, the Convention sets up three new paradigms in the scope of nations' affairs: recognition of national sovereignty on biodiversity components, including genetic resources; recognition of the need of returning genetic resources to their origin countries; and the principle of prorating biodiversity conservation costs with developing countries, under the commitment of assuming conservation and sustainable use's incremental costs in the developing countries.

Brazilian riches

As the country with the planet's greatest biological diversity, Brazil has a deep responsibility towards the Convention. The Country has 15% to 20% of the world's total classified species and the world's most diversified flora (over 55 thousand classified species – 22% of the world's total number). Some of the world's richest ecosystems (in number of species) are also located in the Brazilian territory: in the Amazon, Atlantic Forest and Cerrado. The Brazilian Amazon Forest, with over 30 thousand classified species, represents nearly 26% of the world's remaining tropical forests.

Besides the greatest richness of species, Brazil has also the greatest endemism rate (occurrence of particular species). There are 68 endemic species of mammals, 191 of birds, 172 of reptiles and 294 of amphibians, which correspond to approximately 10% of the amphibians and mammals and 17% of the birds classified in the world. The country has also 3 thousand species of fishes; three times over any other country.

Notwithstanding the contribution to the flora and fauna preservation, the great territorial extension and the diversity of the Brazilian biomes renders difficult the ac-

tions towards its preservation. In the recent years, the increase of human intervention on previously stable habitats has generated higher rates of biodiversity losses. Extensive areas covered with native vegetation were devastated in the Cerrado, Caatinga and Atlantic Forest.

Brazil's challenge and intention is to preserve such immense legacy. The first step is to be familiar with such biodiversity, according to the modern scientific knowledge's point of view, taking into consideration the user's interests. The second is to preserve it even though it may be unknown in its majority. The third – a more complex challenge for Brazil – is to create a model that integrates value-aggregation, the access to genetic heritage, and the sustainable use of components and benefit sharing.

Countries with such megadiversity, such as Brazil, have an important role regarding the collective commitment of relieving world concerns towards the decrease of biological diversity. A limited group of countries – Brazil, Colombia, Mexico, Equator, Peru, China, India, Indonesia, Malaysia, Zaire, Madagascar and Australia – is home to 70% of the world's biodiversity.

Strong pressures frequently target these nations due to global standards of production and consumption. The Convention on Biological Diversity foresees some mechanisms to recover the adverse aspects of this process. Industrialized countries – greatest users of biological resources in global scale – shall also be accountable for promoting conservation and sustainable use of biodiversity, particularly through technology transfer financial resources.

National Strategy for Biodiversity

In accordance with the general principles of the Convention on Biological Diversity as well as in compliance with other international commitments undertaken by Brazil and with environmental Laws in force in the country, the Ministry of the Environment launched a wide searching process towards national awareness to be accomplished in May 2002, during the definition of the Biodiversity National Strategy.

In this way, Brazil is accomplishing an important step concerning the Convention on Biological Diversity's guidelines for signatory countries and maintains the pur-

poses foreseen in the Convention as follows: conservation of biological diversity; sustainable use of its components; fair and equitable sharing of the benefits from the use of genetic resources by means of suitable access to such resources; technology transfer; and financing.

The inquiry

The Ministry of the Environment has opted for a participative method for the definition of the *Biodiversity National Policy* – which was carried out through a project focused on a comprehensive inquiry into sectors of the society that are, or shall be, involved on the theme.

The idea is to have the outcome of this work providing guidelines for incorporating the sustainable use into the planning and carrying-out of the respective activities. In this event, the format of the inquiry provides the project with an additional benefit by increasing the awareness degree of those who are interested in the importance of biodiversity conservation.

The process was elaborated to be developed in three steps. The first one foresaw the survey and announcement of basic information related to the Brazilian biological diversity.

This step represented an important contribution to the knowledge of subjects related to the scope of our biodiversity, the existing mechanisms for its conservation, the sustainable use and benefit sharing as well.

The information obtained were gathered in four studies that revised the main articles of the Convention on Biological Diversity, which resulted in ten documents that supported the preparation of the national inquiry proposals.

In addition, two works specifically aimed at subsidizing national inquiry on the preferences and priorities regarding conservation, sustainable use and benefit sharing have been produced. The inquiry – purpose of the project's second step – aimed at both identifying and defining the guidelines, purposes and goals to be deployed at the national level. In this step, State governments, leaderships of the organized civil society and the entrepreneurial sector had been involved.

At the third step, a group of researchers from the University of São Paulo (USP) compiled the hundreds of

proposals, forwarded to the Ministry of the Environment, and the works carried out by consultants of the project's thematic groups. Subsequently, the material was forwarded to specialists on different themes who formulated proposals for the **Biodiversity National Policy** and related areas.

The proposals were analyzed in seminars held in

the Country with the participation of all those who have collaborated in the entire process. The final document was then further discussed in the National Council for the Environment (Conama) and finally forwarded to the approval of the Presidency of the Republic.

This policy, based on strategic macro-objectives, principles and general guidelines, is detailed as follows:

Strategic macroobjectives:

- To conserve the biodiversity of natural and anthropic ecosystems by preserving the ability of biodiversity components to adapt to climatic, environmental and economic changes
- To preserve and restore the essential ecological processes and to preserve the diversity and integrity of the country's genetic heritage
- To conserve biodiversity in order to maintain the environmental services that it generates, including: contention of slope erosion, city flooding and rivers, lakes and reservoirs silting up; water recycling through evapotranspiration; contention of the greenhouse effect through carbon absorption; and the sustainability of agriculture through biological nitrogen fixation
- To conserve enough samples, *as a strategic reserve for future usufruct*, of the entire biodiversity, national genetic heritage and Brazilian fauna and flora
- To define, in all federation's units, the territorial spaces and components to be especially protected
- To reduce current and future rates of biodiversity loss (loss of unique ecosystems, extinction of species and genetic erosion of populations) back to their historic levels, that is, previous to the country's Discovery
- To promote social, economic and environmental sustainable use of biodiversity components aiming at value-aggregation, the improvement of life-quality and at the increasing of income and employment levels in the country
- To deploy rational tools and measures to foster the conservation and sustainable use of biodiversity's components
- To search for the balance between conservation and sustainable use as regards the management of ecosystems
- To promote the access and sharing of genetic resources in order to meet the world population's needs for food, health and food safety
- To respect, preserve and maintain local and traditional indigenous population's practices and innovations that are relevant to the conservation and sustainable use as well as to foster their application
- To share the benefits from traditional knowledge use between local communities and traditional indigenous populations in a fair and equitable way
- To promote fair and equitable access to both the benefits generated by the biodiversity functions on ecosystems and the use of its components

- To be familiar with the Brazilian biodiversity, its distribution, its determining factors, its value, its ecological functions and the potential of its economic use

Guiding principles

- Nations have sovereignty over their biological resources, are responsible for the conservation of their biodiversity and shall ensure that the activities under their jurisdiction cause no damages towards other States' biodiversity
- As regards the division of responsibilities concerning the world biodiversity conservation, the developed countries shall provide new and additional financial resources as well as facilitate the proper access to pertinent technologies in order to meet developing countries' necessities
- The Public Authority and the collectivity shall defend and preserve the ecologically balanced environment, which is essential to life quality and a common welfare
- It is up to the society to choose the purposes of soil, water and biological resources management
- The maintenance of biological diversity is essential for the evolution of the biosphere's vital systems
- Man is part of nature and is present in the different Brazilian ecosystems for over 10 thousand years
- Traditional populations have a fundamental role in the conservation and sustainable use of the Brazilian biodiversity
- Biodiversity's value is determined by cultural values, including direct and indirect use value, non-use and future use value and also the intrinsic value man attributes to it. It also includes ecological, genetic, social, economic, scientific, educational, cultural, leisure and aesthetic values
- Biodiversity conservation and sustainable use shall contribute to economic and social development as well as to poverty eradication
- Either the consumer or the polluter shall bear the cost of restoring either the damaged resource or affected service. Hazardous conducts towards the environment subject the violators to penal and administrative sanctions
- Ex situ research, conservation and value-addition on the Brazilian biodiversity's components shall be preferentially carried out in the country
- An environmental impact study shall precede those activities that may potentially cause environmental degradation

National guidelines

- The policy herein is applicable to the national territory, continental shelf and exclusive economic zone
- The country shall cooperate with other nations in issues related to the areas beyond national jurisdiction, frontier areas, the Antarctic Continent and migratory species
- The national effort shall be integrated in accordance with plans, programmes and pertinent sectorial policies in a complementary and harmonic way

- Substantial investments are necessary to conserve the biodiversity, generating environmental, economic and social benefits
- The causes of biological diversity loss shall be fought in its very origin
- Sustainability shall be determined according to economic, social and environmental features
- The management of ecosystems shall be decentralized and have long-term objectives.

By outlining a biodiversity national policy – in compliance with both international agreements and concerns on the subject – Brazil undertakes a series of commitments arising directly out of its role in the conservation's global context.

The sovereignty on biological and genetic resources brings about the responsibility for their conservation, which shall meet the interests of all mankind. Accordingly, developed countries shall take on part of conservation's financial and technological costs in developing countries – megadiversity greatest holders – such as Brazil.

International cooperation is more than just a possibility. Indeed, it becomes itself a commitment when deal-

ing with areas, processes and species that involve mutual interests. Not only governments should be involved in such cooperation, but also NGOs from a number of countries.

In order to achieve the purposes of the biodiversity national policy, the country shall also commit itself to the cultural diversity that guarantees the plurality of values in the society. Hence, the need of having local and indigenous populations involved in this effort.

When defending environment's ecological balance, the Public Authority and the collectivity shall bear in mind this is a common welfare, which is essential to current and future generations' life quality. More than just a principle, it is everyone's commitment to the conservation of the planet's biological diversity.

1.2 - Access to Genetic Resources

The biological diversity can be expressed in three levels: genetic, species and ecosystems. Although we are not thoroughly familiarized with its ecological functions, we believe they are responsible for the natural processes and the products provided by the ecosystems as well as for the species that support other forms of life, and modify the biosphere by making it suitable and safe for life.

The Convention on Biological Diversity, launched during the Rio-92 Conference, reflects signatory countries' concern with both the high rates of genetic resources registered throughout the planet as well as with the loss of biodiversity components. As a conservation instrument, CDB foresees the access control to genetic resources, impact evaluation and mitigation, biosafety and sharing of the benefits from technology use and transfer. Furthermore, there is an extremely important paradigm provided by the Convention regarding the relation among nations – the recognition of national sovereignty over biodiversity components, including genetic resources.

In compliance with the principles and guidelines of such international commitment – being Brazil its first signatory – the Federal Government issued, on June 29th, 2000, the Provisional Act number 2,052 – which was updated as the Provisional Act number 2186-16, August 23rd, 2001. This Act establishes the access to genetic heritage, the protection of, and access to, the associated traditional knowledge, the sharing of benefits and the access and transfer of technology regarding its use and conservation.

With this Act, Brazil has harmonized its legislation with the Convention on Biological Diversity and, simultaneously, reaffirmed its national sovereignty over the Brazilian genetic heritage and created legal guaranteeing instruments.

This Provisional Act provides that the access to such heritage shall only be possible upon Union's due authorization and that its use, for whatever purposes, shall be submitted to the supervision of the Public Authority. It also clarifies the terms and conditions of benefit sharing.

The Ministry of the Environment is in charge of housing and presiding over the Genetic Heritage Management Council – created to enforce the government's deci-

sions. The Council is a deliberative and normative agency comprised of representatives of organisms and entities of the federal public administration with competence over the subject.

On September 28th, 2001, through Decree number 3,945, the government specified the composition of the Council and created, early in the year 2002, the Genetic Heritage Department at the Ministry of the Environment, which in charge of the Council's Executive Secretariat.

The Decree number 3,945 provides the guidelines so that public and private national institutions performing researches and developing activities in biological and related areas obtain permission to access, as well as to forwarding, samples of components of the genetic heritage and associated traditional knowledge. Furthermore, the Decree creates the legal basis that makes way for the decentralization of governmental actions by defining the guidelines for the institutions entitled to issuing the required authorizations to be accredited by the Management Council.

Such legal measures ensue from a work started with the creation, by the Civil Household of the Presidency of the Republic, of the Interministerial Group of Access to Genetic Resources. This Group has been instituted to appraise the bill by Senator Marina Silva (PT-AC) on instruments for controlling the access to the Brazilian genetic resources, passed as a substitute motion at the Senate's Social Affair Commission. The measures also aim at providing the Executive Power with scientific elements so that it can establish its position in the international context. The works of the Group were coordinated by the Ministry of the Environment.

We are not acquainted with the entirety of the Brazilian biodiversity, and maybe we will never be because of its magnitude and complexity. However, it is known that the occurrence rate is high for the majority of living beings, which makes us believe that the number of still unidentified species, both terrestrial and marines, may reach tens of millions.

Notwithstanding the richness of species, the majority of our economic activities are based on exotic species. We

use genetic materials from different regions of the world such as: sugarcane from New Guinea, coffee from Ethiopia, rice from the Philippines, soybean and orange from China, cocoa bean from Mexico and wheat from Asia Minor.

The national silviculture depends on Australia's eucalyptuses and Central America's pines. Regarding livestock we have the bovines from India and equines from Central Asia and the African grass; in pisciculture, the carps from China and the tilapias from East Africa. Even our apiculture is based on varieties of bees from Europe and Tropical Africa.

This is why these reasons are paramount in order for Brazil to intensify the researches on its genetic heritage so that it may add value to biological materials with the purpose of finding the best way of using the Brazilian biodiversity – an important tool to be used in favor of the Country's economy. The agro-industry is accountable for approximately 40% of the Brazilian GDP and the forestry and fishery sectors for 4% and 1% respectively. Biodiversity products are accountable for 31% of our exports, among which soybean, orange and coffee shall be stressed.

Fishery and forestry extractivism employ over 3 million people. Native and planted forests' biomass (firewood and charcoal) accounts for 30% of the national energetic matrix – over 50% of Northeastern region's industrial and residential energetic demand. Most of the Brazilian population uses medicinal plants to treat simple health problems.

By providing products and inputs for the transformation industry, the biodiversity, with its indirect use services, constitutes one of the natural resources' characteristics. Definitely, the decrease of the diversity of biological species, genes and ecosystems jeopardizes the quality of the environment and, mainly, the availability of environmental resources.

The potential of biodiversity use is the result of the combination of three factors: availability of raw material, technology and market. A good example is the experience obtained from wheat culture – genes obtained from a sylvan resistant-to-disease relative were used in the improvement of commercial varieties. US\$ 50 million yearly is the gain from such combination in the U.S.

In the U.S., 25% of all pharmaceutical prescriptions contain active principles from plants. Over three thou-

sand antibiotics are produced from microorganisms. In Brazil, the pharmacological exploitation of the biodiversity is still incipient. When considering other countries' results, however, we are bound to believe that Brazil has an extremely wide room for the production of phytotherapeutic products, as well as for the intelligent exploitation of a wide genetic heritage that is still hidden away in the Brazilian megadiversity.

Brazil is taking important steps towards the implementation of a national policy for the conservation and sustainable use of biological resources. It has a vast system of protected areas with over 500 federal conservation units covering an area of approximately 55 million hectares, hundreds of genetic databanks (with over 200 thousand samples), 15 botanic gardens and 40 zoos.

In the past 10 years, a set of legal measures in conjunction with advanced monitoring technologies resulted in a considerable decrease of the country's gross deforestation rate. Important initiatives have also been taken by the private sector. In 1998, there was already over 30 medium and big-sized NGOs acting in Brazil at the local and national levels.

State governments and private proprietors, especially in the Southeastern region, are actively participating in the protection of biological diversity. The Brazilian entrepreneurial sector has broadened its activities in the environmental area, aiming at mitigating adverse impacts on the environment, as well as requested to both the government and private groups to develop environmental methodology certification for their products. Some private companies are already commercializing environmental-friendly products, which are the result of the sustainable processes of production.

Of course, there are some short-comings to be dealt with in the years to come. Public and private efforts do not yet represent a thorough and coordinated national policy for the conservation and use of the Brazilian biodiversity. We still have to delve into outstanding issues.

The unbalanced efforts towards the conservation of the main Brazilian biomes; the access to, and the generation of, the information on biodiversity; the strengthening of partnerships between public and private sectors; and a deeper involvement of local communities and NGOs in governmental projects are among the above-mentioned issues.

1.3 - Fishery Resources

There was a gap concerning official information on fishery activities in Brazil in the last decade by virtue of the interruption in the publication of the *Instituto Brasileiro de Geografia e Estatística* (Brazilian Institute of Geography and Statistics) – IBGE's Fishery Statistics – an annual bulletin with data from all Brazilian States that has compromised the decision-making processes on fishery ruling, conservation and development.

In 1995, the Brazilian Institute for the Environment and Renewable Natural Resources – Ibama developed a system for consolidating the national fishery statistics through the addition of important data generation programmes. Yet, the monitoring of fishery activities is still incipient in some states.

According to the Ibama's *Report* on the topic, published in May/2001, it is paramount to develop a statistic national project related to the activity in order to properly implement the management of the sustainable use of fishery resources.

One of such document's recommendation (elaborated during a technical meeting occurred in Tamandaré, Pernambuco State) is the elaboration of a national fishery statistic project to be coordinated by the Ministry of Environment/Ibama, the Ministry of Agriculture and Supply and IBGE.

Nevertheless, the current governmental structure for the fishery sector, which assigns management responsibilities between these two ministries, is one of the primary challenges faced by the Ministry of the Environment's Fishery Resources Management Project.

Such Management is in charge of the articulation between Federal and State public agencies, concerning the promotion of fishery resources sustainable use, through the conciliation of commercial exploitation interests with conservation needs.

However, only those exploited, or endangered by overexploitation, resources are managed by the Ministry of the Environment – MMA. The Ministry of Agriculture is in charge of unexploited and underexploited resources and species presenting high migratory levels.

The creation of the Fishery Resources Management

in the scope of the Ministry of the Environment is such a breakthrough when compared to the former management model that considered these resources solely through their economic aspect – that is, as a farming and cattle-raising product. Currently, fishery resources are treated in the broader context of the Brazilian biodiversity.

In the meantime, the Fishery Resources Management has turned into a concrete space to house the negotiation with the society and, consequently, solved the problem regarding the lack of a specific structure for the dialogue with the fishery sector's economic agents.

Since 1999, the Fishery Resources Management has been devoted to redefining the conceptual and operational basis for the National System of Fishery Resources Management. Such measure is deemed necessary due to the recent verification that the previously adopted managing models had been mostly responsible for the crisis the sector had undergone, both in the national and international levels.

The focus of the action, as regards the debate with the society, is the construction of a co-management-based model for replacing the current state-focused one. The formation of management committees according to resources, ecosystems or hydrographic basins in conjunction with the productive sector (entrepreneurs and fishermen), NGOs and the public sector is under discussion.

Moreover, we are working to generating knowledge and mechanisms that break the traditional management system, which is exclusively based on command and controlling measures. The idea is to incorporate economic and fiscal instruments and to use those areas that are especially protected as management instruments for fishery resources.

With the purpose of upholding the establishment of such co-management model, the Ministry of the Environment is investing in the creation of a fishery information system that is able to consolidate the knowledge produced by research institutions, fishery statistics, information on resource status and oceanographic conditions, among others.

Results can already be perceived in the co-management processes (informal for the time being) adopted in shrimp-fishing (Northern coast) and sardine-fishing in the Southeastern/Southern regions. The elaboration of

lobster and trawl-fishing management plans in the South-eastern/Southern regions is under discussion. With regard to trawl-fishing, there is a strong tendency to surpass the management per species approach towards an ecosystem management process.

As regards international commitments, the actions are focused on two fronts: (i) the achievement of capacity-building towards the formulation of both the Combat Plan against Non-Controlled, Non-Reported and Illegal Fishing and the Fishery Capacity Management Plan; and (ii) the active participation in the formulation of Brazilian stands regarding the negotiations on tuna fishing and similar promoted by *Comissão Internacional para Conservação do Atum do Atlântico – ICCAT* (International Commission for the Atlantic's Tuna Conservation).

One of the Ministry of the Environment's efforts towards the integration of this sector's actions is the success it has achieved in including the Sustainable Fishery

Resources Programme in the Pluriannual Investment Plan (PPA 2000-2003) as well as keeping it under its responsibility. This Programme includes actions that are being developed by the Fishery Resources Management, Ibama and the Ministries of Labor and Defense.

Furthermore, the Ministry of the Environment has provided political and financial support to the *Programa Nacional de Desenvolvimento da Pesca Amadora – PNDPA* (National Programme for the Development of Amateur Fishing), which is the result of a technical cooperation among the Ministry of the Environment, the Ministry of Sports and Tourism, Embratur (Brazilian Tourism Company) and Ibama. This Programme is carried out by the two latter ones.

(*) To exploit: literal translation from the Portuguese's 'explorar', which means to take economic advantage of a specific area, especially of its natural resources.

1.4 - Primary Areas for Conservation

Creating and consolidating a net of protected areas in the magnitude of the Brazilian territory is one of the most important steps for the preservation of our megadiversity, which encompasses one-fifth of the total species of the planet. However, the spaces designated to the *in situ* preservation of our overwhelming biological wealth cannot be created at random. These spaces should be delimited with the necessary accuracy in order to compose a coherent and efficient set to pursue what they were created for.

The Ministry of the Environment has adopted scientific criteria to identify the primary areas for the preservation of the Brazilian biodiversity. Following the lead of the Convention on Biological Diversity, (launched in the Rio Summit, in 1992, having Brazil as its first signatory member), the Ministry launched the Great Brazilian Biomes Primary Areas Programme, especially structured to draft regional preservation strategies for the main ecosystems of the country.

A participating approach was adopted in order to engage the society in the process. Initially, the then diffused information about the major Brazilian biomes was gathered and arranged. This set of information was the object of studies of researchers and experts for months, and the result was the identification of 901 primary areas

for preservation throughout the country.

The areas were arranged according to their level of priority, in the following way: 511 areas of extremely high priority; 214 areas of very high priority; 77 areas of high priority; and 99 insufficiently known areas. The latter must be registered to provide information about the fauna, flora and other data of its biodiversity. The Ministry of the Environment selects the institutions that will proceed with the registration of these areas by means of a tender notice.

The studies that identified the primary preservation areas for each of the Brazilian biomes – particularly for the Amazon Forest, Caatinga, Cerrado and Pantanal, Atlantic Forest and The Brazilian Southern fields, and the Coastal and Marine Zones - contemplated the biological diversity and also the socioeconomic conditions for their utilization.

Besides offering solutions for some of the unbalanced situations noticed, the studies are significant for the elaboration of the National Biodiversity Policy. They are the result of a set of regional projects and consultation seminars carried out by the National Biological Diversity Programme (Pronabio), whose main goal is to subsidize the elaboration of the National Biodiversity Strategy.

Next, there is a summary of each of the studies and their results.

Cerrado and Pantanal

The complex formed by Cerrado and Pantanal was the first region addressed by the programme. In 1998, from March 23 to 27, a workshop assembled 200 experts of several fields in Brasilia, with the presence of representatives of Funatura, Conservation International, University of Brasilia and Biodiversitas Foundation. The work led to the designation of 88 primary preservation areas, whose information was consolidated in the Primary Areas Map: 48 of those were appointed as being of extremely high priority, 16 as very high priority, 12 as high priority,

and 12 as insufficiently known.

Each of those areas was assigned specific guidelines for preservation. General recommendations were made about the use of the biodiversity for the region, with benefit-sharing models and sustainable use of the natural resources.

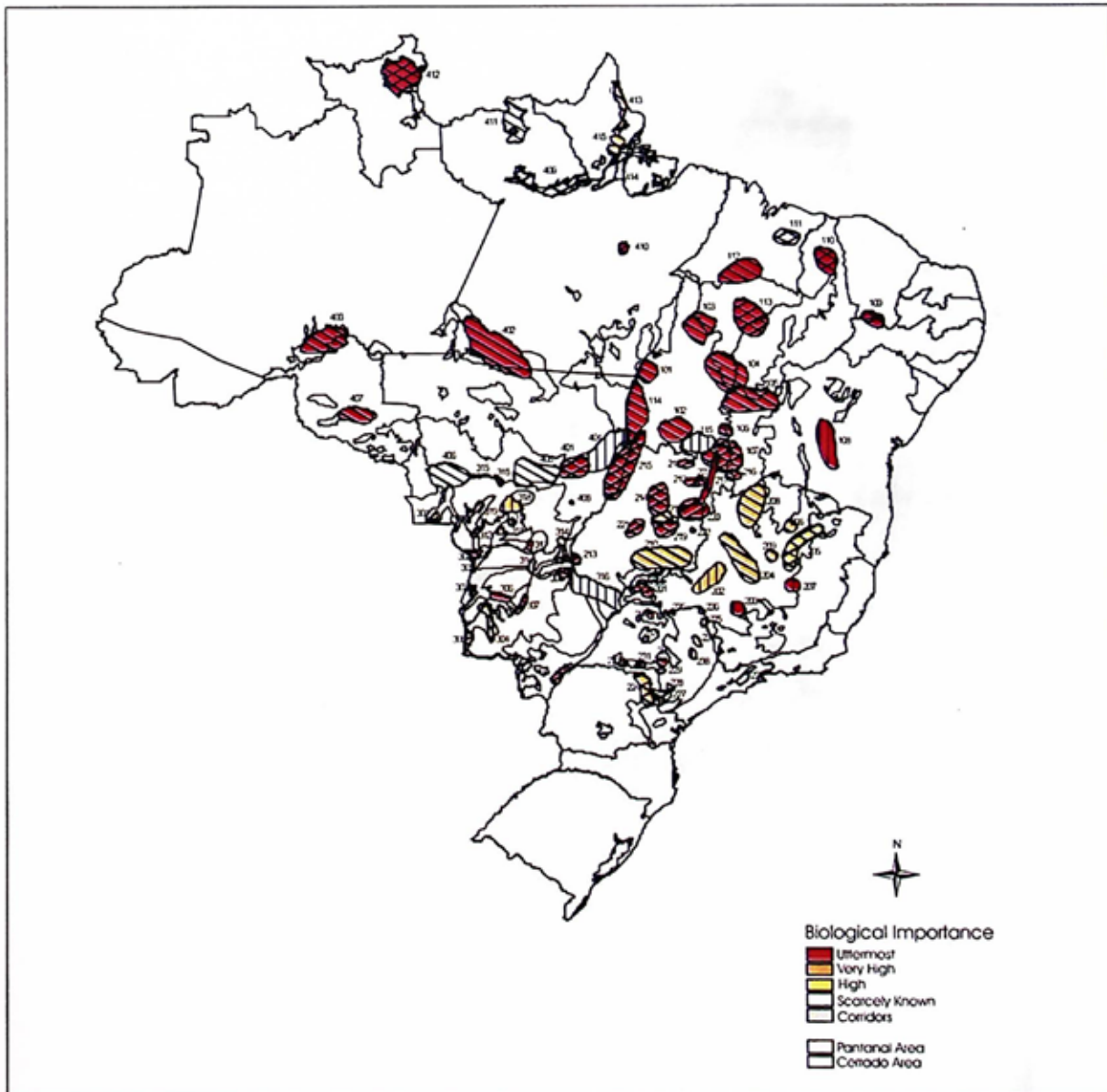
Cerrado was regarded in its integrity, including the open formations of mid-west Brazil (prairies, *cerradão*, and rupestral fields) and the characteristic forest formations (*veredas*, gallery and mesophytic forests). The pe-

ripheral cerrado region in São Paulo and Paraná were included in this project, as well as the Amazon savannas in Pará, Amazonas, Roraima and Amapá.

Pantanal was included in this research because its springs are located within a savanna area, and also because its land biota is similar to Cerrado's. However, the peculiarities of Pantanal – prevalence of flooding areas and the socioeconomic dynamics of that biome – have granted it a different treatment in the process of elaborating preservation strategies.

The study was responsible for the creation of a workgroup for Cerrado and Pantanal, which was coordinated by the Biodiversity and Forest Secretariat. This group presented a range of recommendations that are being implemented in the activities of the Ministry of the Environment. The creation of a number of new protected areas and the acknowledgement of the Biosphere Reserves of Cerrado and Pantanal by the UNESCO Man and the Biosphere Programme are amongst the groups chief conquests.

Synthesized Map of the Workshop on the Evaluation of Priority Actions for the Conservation, Use and Sharing of the Benefits from the Cerrado and Pantanal's Biomes

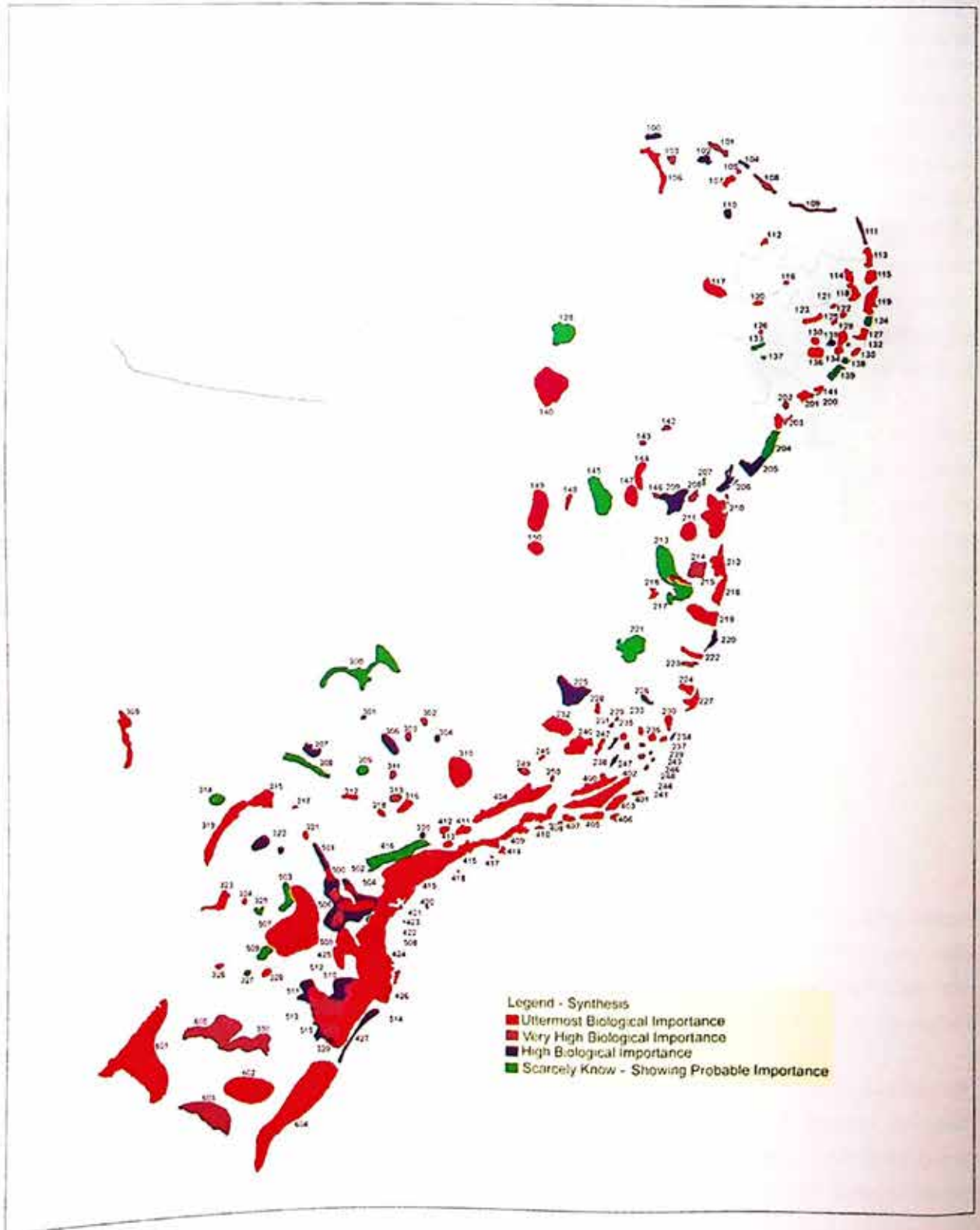


Atlantic Forest and Brazilian Southern Field

Reduced to less than 8% of its original cover, the Atlantic Forest is among the 25 richest and most endangered regions of the planet – the so-called *world hotspots*.

Keeping its high levels of biodiversity and endemism is an extraordinary challenge, since the region encompasses 70% of the Brazilian population, the largest cities, and the

Synthesized Map of the Workshop on the Evaluation of Priority Actions for the Conservation, Use and Sharing of the Benefits from the Atlantic Forest and Southern Fields Biomes Biodiversity



greatest industrial states of the country. Likewise, the Brazilian Southern fields, which go from the south of São Paulo state to Rio Grande do Sul state, are under intense anthropic pressure, what imposes a critical situation of alteration of their natural ecosystems.

A workshop for this biome was carried out in the city of Atibaia (SP), in 1999. The process that resulted in the zoning of Primary Areas for Preservation - Atlantic Forest and The Brazilian Southern fields engaged 198 experts of several fields, among which representatives of 80 governmental and non-governmental agencies, education and research companies and centers.

182 areas were labeled as primary biological interest: 99 of extremely high importance, 35 of very high importance, 26 of high importance and 22 insufficiently known. Out of the 17 areas more often pointed out among the theme groups, 12 are located in the Northeast region. The region of Mucici (AL) stands out as one of the greatest remainder of the Atlantic Forest in the northern part of the São Francisco river, which is characterized by the presence of reptiles and amphibians as well as by the high concentration of endangered endemic bird species. The region has received the designation of Ecological Station.

The areas between Valença and Ilhéus, and between Una and Canavieiras, both in the south of the state of Bahia also stand out, not only for the presence of endangered and endemic species, but also for presenting one of the highest rates of ligneous plants in the world.

In the Southeast region, Serra dos Órgãos, in the state of Rio de Janeiro, sticks out with its continuous walkway of mountain and Upper Mountain forest. The area is extremely rich with regards to the presence of invertebrates, endemism, and endangered species of mammals, amphibians, and reptiles.

Serra do Mar, in its entirety, has also been qualified as having extreme biological importance, for it is the greatest continuous Atlantic Forest walkway, keeping a high level of environmental integrity. The region is pretty heterogeneous with respect to ecosystems and confluence of the largest Atlantic forest formations. It encompasses endemic species, which show abundant biotic opulence.

In the Brazilian Southern fields, two areas of extreme priority are worthy of notice: Campanha Gaúcha and the Coastal Plan. The first shows an abounding diver-

sity of habitats (marshes, wetlands, riparian forests, and sandbanks), characteristic flora, and fauna samples coming from Uruguay and Argentina.

The Coastal Plan, in turn, occupies extensive sand bar vegetation area, with saline marshes in the Laguna dos Patos – singular environments in Brazil - besides numerous populations of aquatic and migratory birds. These areas are influenced by the progress of the urbanization process, and by the rice plantations, which drain the marshes and the wetlands.

Brazilian Amazon

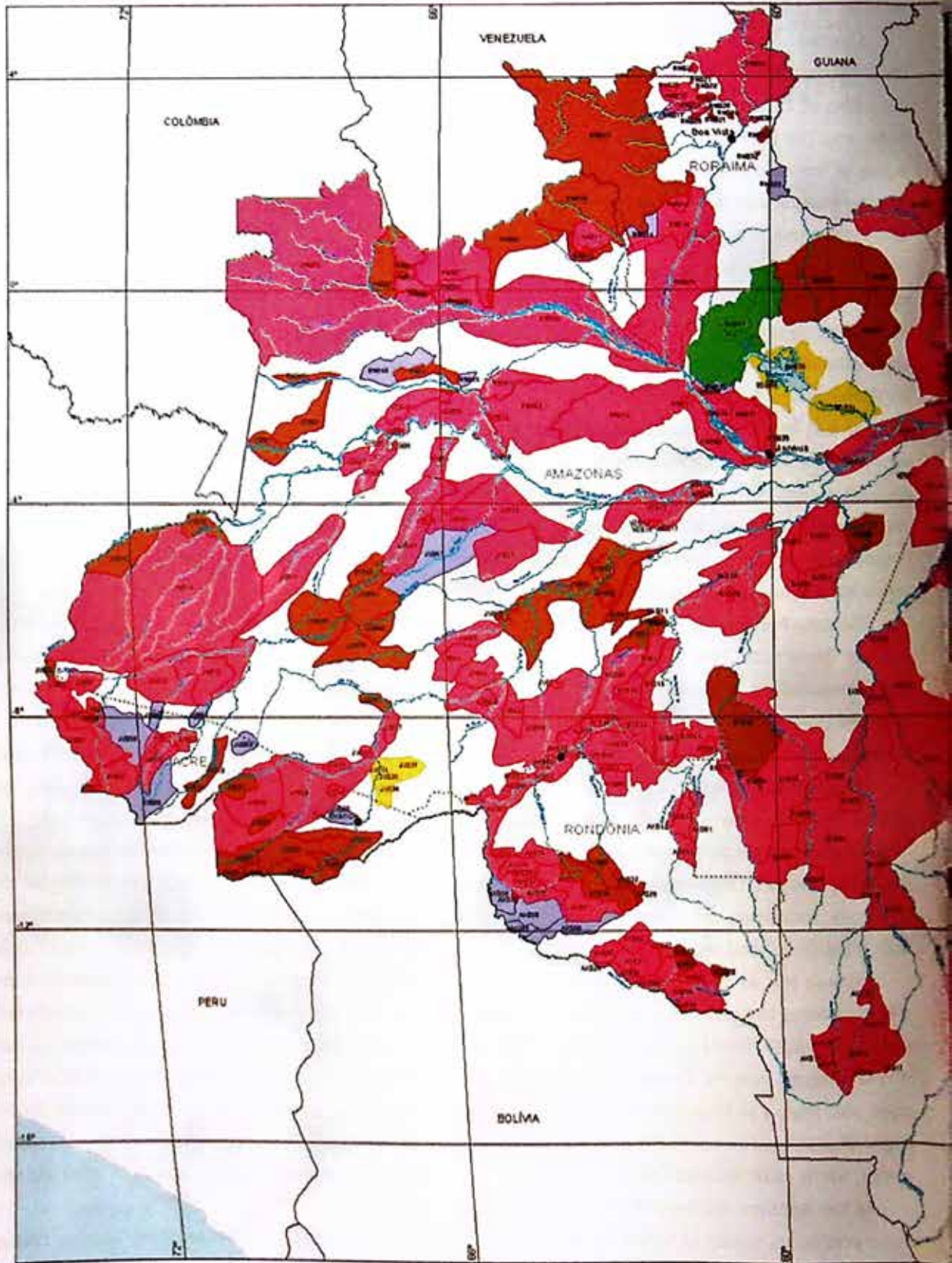
Throughout 18 months of work, the information about the Legal Amazon, stored in tens of public agencies and private institutions, was collected, organized and rendered compatible. Over two hundred researchers and experts, gathered in Macapá (AP), from September 21 to 25, 1999, set themselves to examine this database thoroughly, and come up with a future guideline from it.

The result was the identification and specification of 385 primary areas for the biodiversity of the Legal Amazon: 247 of extreme priority, 107 of very high priority, 8 of high priority, and 23 insufficiently known. Biological data and relevant information (such as development programmes, population data, economic activity, deforestation, and fire risk, among others) were added to the description of each area. Hence, it was possible to determine the level of instability of each area and further state short, medium and long term measures for them.

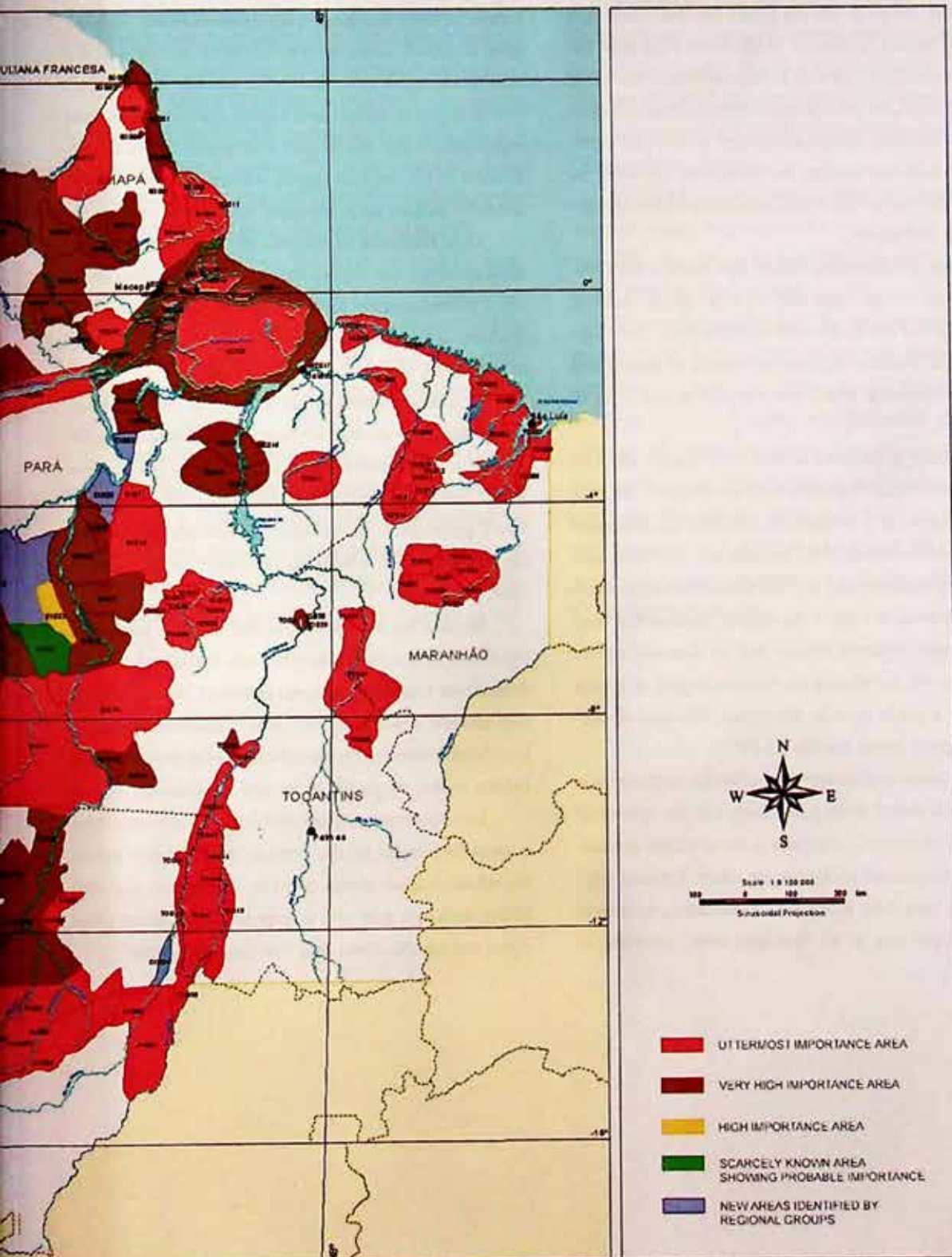
Important improvements have been attained so far. The primary areas identified were fully incorporated into the project of enlarging the protected areas of the Amazon, forwarded to the Global Environment Fund (GEF) by the Brazilian Government. The project's information has also benefited the Ministry of the Environment's programme of amplification and consolidation of a National and State Forest network. Moreover, the publication of the potential impacts of the *Avança Brasil* programme on the primary areas allowed for the Federal Government to request a strategic environmental assessment to refine the proposal.

The project Evaluation and Identification of Primary Areas for Preservation, Sustainable Use, and Sharing of

Synthesized Map of the Workshop on the Evaluation of Priority Actions for the



Use and Sharing of the Benefits from the Brazilian Amazon Biome's Biodiversity



Biodiversity

the Brazilian Amazon Biodiversity Benefits is a vital tool for the strategic planning of the Amazon region. Degradation threats grow in a fast pace.

Official data point at the increase of deforestation in the region, which is already pretty intense. About 570 thousand square kilometers of the forest have been cut out up to this time – an area as large as France. According to IBAMA-INPE, the annual deforestation average has been of 17.6 thousand square kilometers in the past seven years. Should this average be maintained, in about 30 years, deforestation will reach twice as much the area degraded in 500 years.

There is a distinctive feature that worsens the situation: official surveys attest only the areas where the forest was totally root out by the clear-felling system. These surveys do not consider degradation caused by logging and slash and burning, which are everyday occurrences in the region.

In order to present a view of these factors' effect on the environmental degradation of the Amazon, the year 1998 will serve as a benchmark. Officially, the deforested area placed on IBAMA-INPE records was 17,383 square kilometers. Nevertheless, 11,730 square kilometers of forest were burned in a fire in the state of Roraima that year. Furthermore, estimates foresee that 15 thousand square kilometers will be affected by selective logging of quality timber at a yearly basis in the region. The sum of non-official figures excels the IBAMA-INPE's.

The advance of the agricultural border in the Cerrado and Amazon Forest areas, particularly with the advance of soya bean plantations, also pose a threat unless environmental arrangement measures are taken. Between 1997 and 2000, soya bean production in Rondônia went from 4.5 thousand tons to 45 thousand tons, spreading to

neighboring states such as Roraima.

The Amazon region amasses the great majority of tropical forests in Brazil, the country with the largest cover of the like in the world. Out of the 6 million square kilometers territory occupied by the Amazon Forest, 60% belong to Brazil. Considering that most of the world's biodiversity is still to be discovered, and that Brazil comes first in terms of animal and vegetal species, the general expectation is that the advance of research in Brazil, particularly in the Amazon region, will significantly rise the country's position up in the world biological diversity rank.

Over hundreds of trillions of carbon tons are located in the Amazon region. Its vegetal mass releases about seven trillions of water for the atmosphere yearly. Its rivers discharge around 20% of all fresh water discharged in the oceans of the planet.

In a time marked by the advance of biotechnology and genetic engineering, the Amazon is a fantastic border for science and technology. Its importance in the economic field goes beyond the products provided by the forest. Agribusiness, for example – responsible for 40% of the Brazilian GDP – benefits directly from the genetic asset.

Besides the natural wealth, the Amazon harbors a significant set of indigenous tribes and traditional populations. Since rubber-tappers, nut gatherers, babaçu collectors, riverine populations, and other communities whose knowledge allows for the identification of active principles hidden in the complexity of tropical ecosystems.

The information possessed by such communities is absolutely useful for the growing biotechnology industry, whose market moves between 470 billion and 780 billion dollars a year and is dependable of active principles and genetic codes that run through nature.

Coastal and Marine Zones

The Brazilian Coastal Zone passes by 17 states and comprises over 400 municipalities, from the equatorial north to the temperate south of the country. It touches two biomes with high biodiversity, the Amazon and the Atlantic Forest – with a significant territorial overlapping.

It is a region of ecological transition, functioning both as a link and a place for genetic exchanges between land and marine ecosystems. That is the reason why these ecosystems are complex and diversified environments, which are essential for the maintenance of sea life.

They are also regions that figure amongst the most endangered in the planet, for they enclose intense urban and touristic occupation, as well as ports connecting Brazil and its trade partners, and also give room to the predatory and disorderly exploration of natural resources, fish, and other living beings.

The Marine Zone, which stretches through 200 miles beyond the Brazilian coast, constitutes the Exclusive Economic Zone. It provides a great quantity of foodstuff for human consumption and answers for several mineral resources, being oil the chief resource. Although the marine biodiversity is poorly known, there are some well-

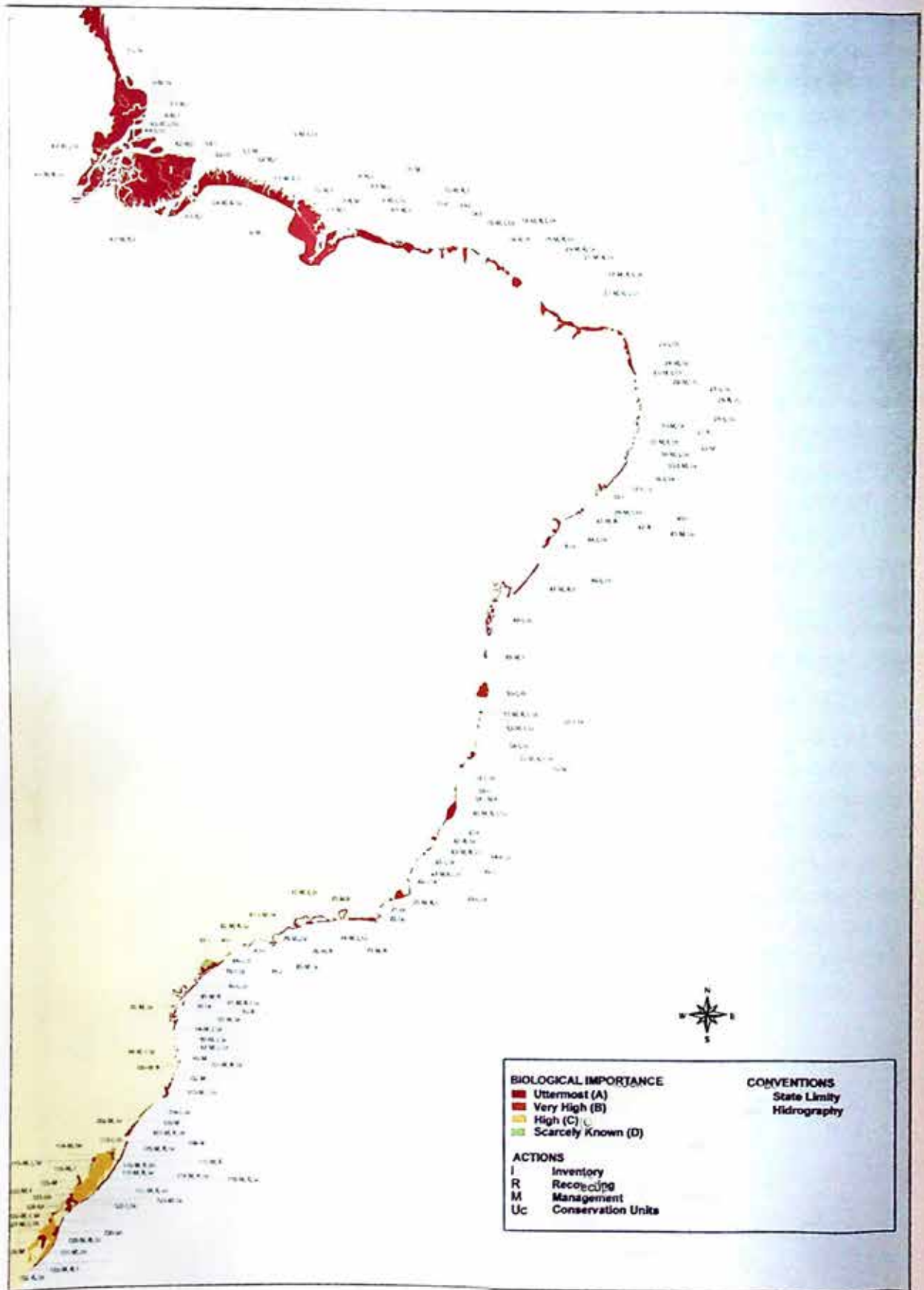
known endangered species, such as the marine turtle and a number of whale species.

Overfishing also represents a threat to marine biodiversity, but in terms of potential deleterious power, nothing compares to the constant environmental accidents involving chemical and petrochemical products, which are menacing not only for the Marine Zone, but also for coastal areas.

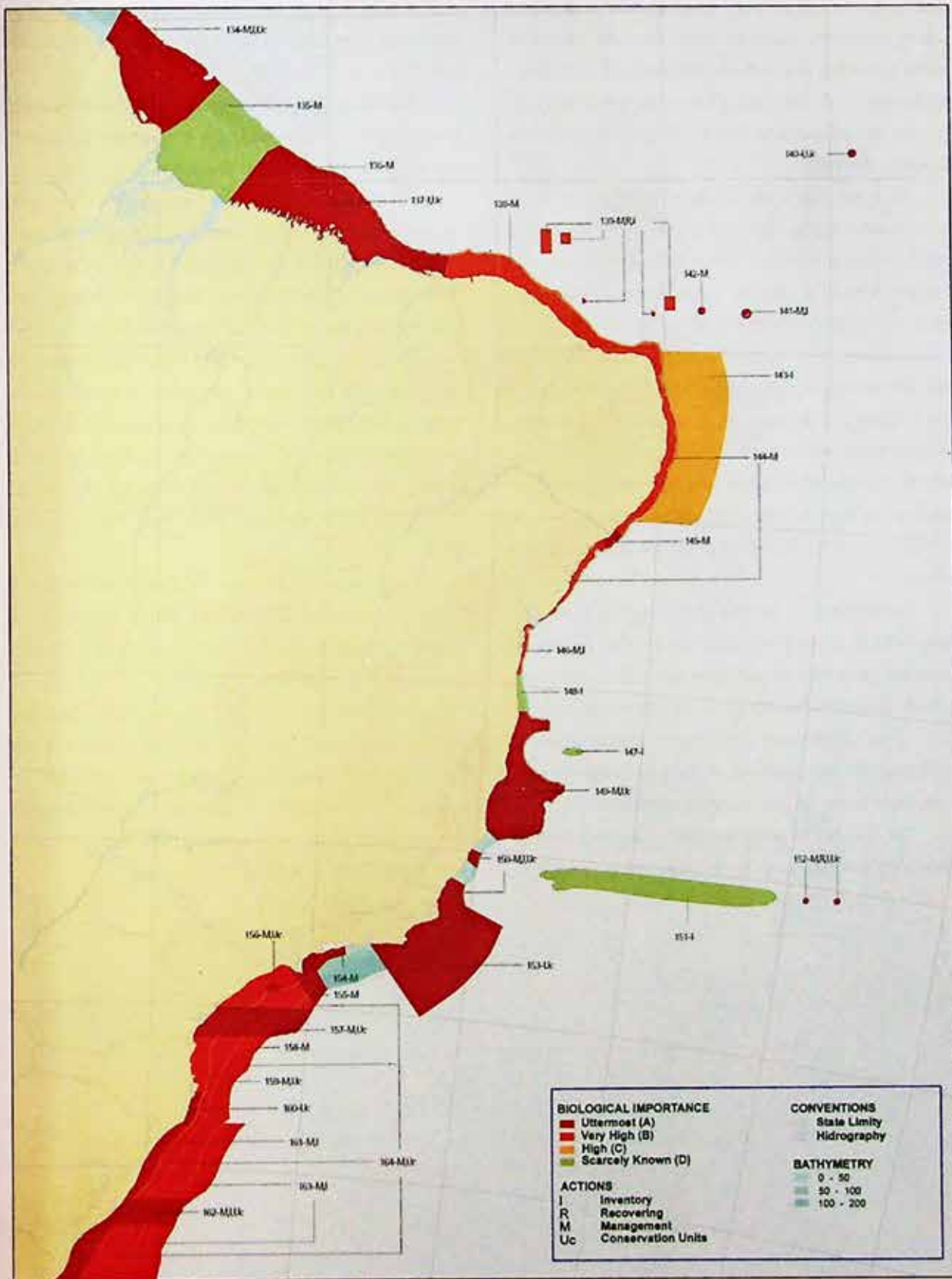
The Coastal Zone stands out for its extension and variety of species and ecosystems. It goes along 8.5 thousand kilometers, its continental platform ranging from 20 to 160 nautical miles in width.

The *workshop* that laid the foundations for the Primary Areas Map for the Coastal and Marine Zones assembled 179 experts in Porto Seguro (BA), from October 25 to 29, 1999, including representatives of the government and non-governmental organizations, social movements, research institutes, entrepreneurs, and researchers. 164 primary areas were listed for preservation, among which 90 were considered as extremely important, 44 very important, 13 of high priority, and 17 insufficiently known.

**Synthesized Map of the Workshop on the Evaluation of Priority Actions
for the Conservation, Use and Sharing of the Benefits from the Coastal Zone
Biome's Biodiversity**



**Synthesized Map of the Workshop on the Evaluation of Priority Actions
for the Conservation, Use and Sharing of the Benefits from the Marine Zone
Biome's Biodiversity**



Caatinga

Caatinga is an exclusively Brazilian biome. A great deal of the biological asset found in its 734 thousand square kilometers cannot be traced anywhere around the world, pertaining only to the Northeast region of the country. In spite of all that, Caatinga has always been taken for granted when it come to policies designed to protect the Brazilian diversity.

In a way, this is due to the creation and perseverance of some myths about the region's biodiversity. The most common are: the biome is homogeneous; the Caatinga's biota is poor in terms of species and endemism; Caatinga is still very much preserved.

However, these myths fell apart. Today, it is a fact that the Caatinga is remarkably heterogeneous, comprising hundreds of different kinds of unique landscapes. Despite being poorly explored, its biota is much more diverse than any other biome's biota exposed to the same weather and soil conditions. And, against what most people thought, Caatinga is indeed amid the most degraded biomes.

Nevertheless, an analysis of the Caatinga shows that this is the Brazilian biome with the smaller quantity of integrally protected preservation units. Regional plans seldom consider Caatinga as an environmental component. Thus, consecutive government actions aimed at improving the life standards of the population wreaked even more havoc on the biological resources.

The duo lack of protection and continuous waste of biological resources leads to the extinction of virtually all

Caatinga species. The extinction of the blue macaw, at the end of 2000, is only one example in a million similar events that have taken place in the region in the last few centuries.

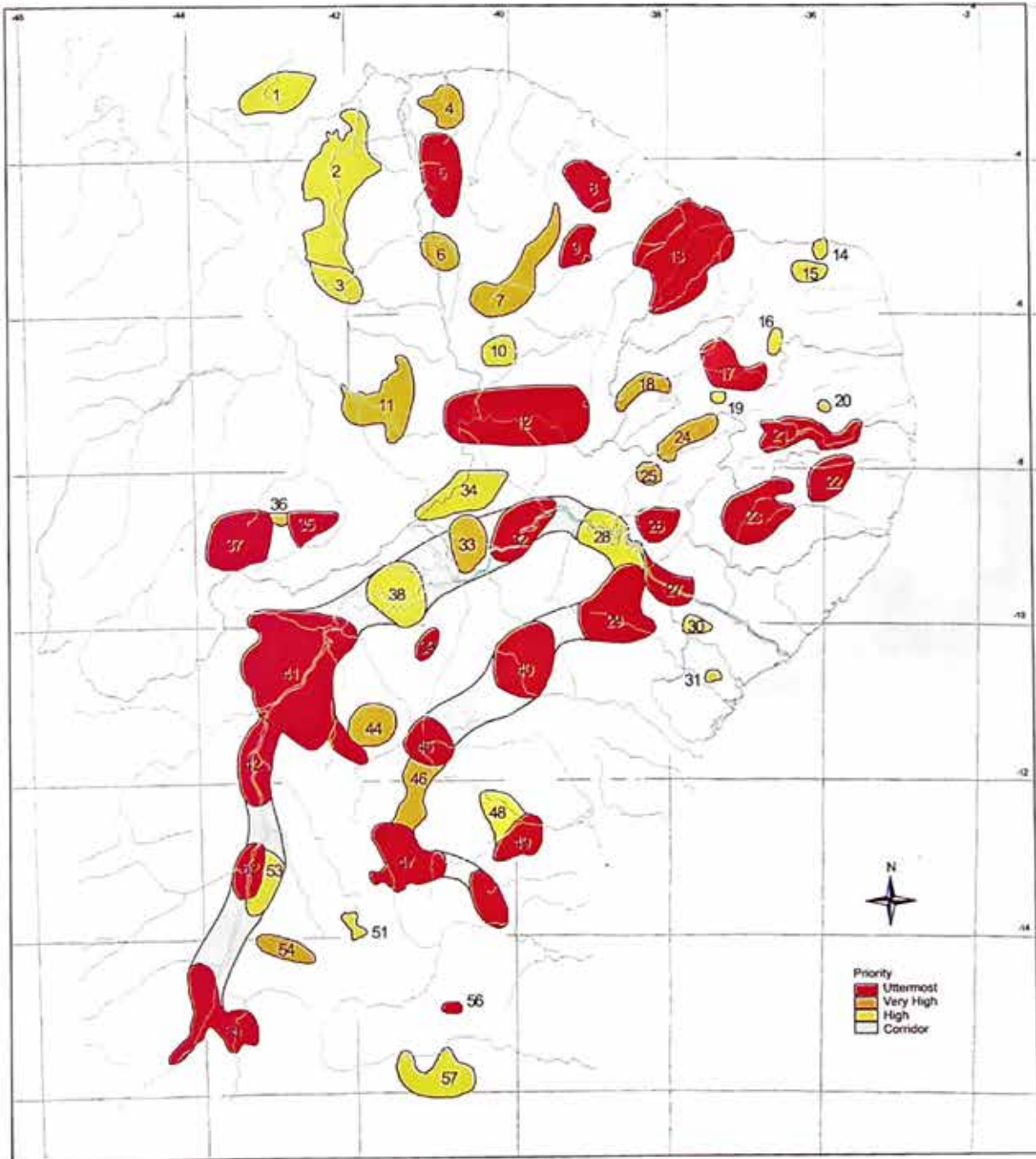
Identifying the primary areas and measures for the preservation of biodiversity is a very important tool in managing the Caatinga, for this is the first region to be taken into account. Hence, a region's examination, even an incomplete one, can be carried out to guide the environmental policies in the region and to speed the implementation of crucial measures in order to assure long term preservation of the Caatinga's biodiversity.

This project was carried into effect by a consortium coordinated by the Federal University of Pernambuco, engaging 140 experts on behalf of governmental and non-governmental agencies, educational institutes, research centers, and enterprises. The workshop for this biome was carried out in Petrolina (PE), from May 21 to 26, 2000.

The Primary Areas Map for Preservation of the Caatinga is composed of 82 areas, out of which 27 are regarded as extreme priority, 12 very high priority, 18 high priority, and 25 insufficiently known.

Also noteworthy is the fact that among the Brazilian biomes, the Caatinga is the one with the greater number of supposedly biologically relevant areas about which there is little or no knowledge – 25 areas, totaling 99. It exceeds the magnitude of the Amazon region, where only 23 areas were pointed out as insufficiently known.

Synthesized Map of the Workshop on the Evaluation of Priority Actions for the Conservation, Use and Sharing of the Benefits from the Caatinga Biome's Biodiversity



List of endangered species

The Public Authority has the constitutional responsibility to protect the Brazilian fauna and flora by combating practices that jeopardize their ecological function, lead to the endangerment of species or submit animals to cruelty. Therefore, the first step is to know the species that, due to any sort of endangerment, need special protection.

In order to be in compliance with Article 225 of the Federal Constitution, the Ministry of the Environment started a thorough revision of the official list of Brazilian species – both endangered animals and plants. The environmental degradation makes the periodical revision of these lists a requirement for the survival of species.

The destruction of habitats is the primary agent responsible for the risks towards the preservation of most species of our fauna. By provoking environmental modifications, the degradation brings about direct effect on species. This should be taken into consideration when appraising and planning the execution of conservation actions.

Lists of endangered species are tools internationally deployed in guiding governmental actions focused on their preservation, as well as on halting the traffic and illegal trade of animals and plants.

Such lists are elaborated through a methodology developed and adopted by a number of users. In most of the cases, the “Methodological Directions for the Elaboration of Endangered Species Lists”, published by Biodiversitas Foundation, is the choicest one.

The criteria are based on the definition of endangered categories provided in the International Union for Conservation of Nature and Natural Resources – IUCN. They are: those that are presumably extinct, those extinct in nature and those that are endangered. This latter category is subdivided in three different situations: critically endangered, endangered and vulnerable.

In addition to revising the official lists of the endangered Brazilian fauna and flora, two other lists

are being created. The first one will gather elements of fauna and flora, which, despite presenting traces of endangerment, little information for defining their conservation status is available. The second list will provide the Extra-Amazon's endangered species.

Afterwards, the intention is to create lists of endangered species for each of the Brazilian biomes and states. Hence, information on fauna and flora situation, which will provide subsidies for the works to come, at state and regional levels, are already being collected in this current step.

During the revision of the Official Lists of the Endangered Brazilian Fauna and Flora Species, elaborated through a covenant between the Ministry of the Environment – MMA and the Biodiversitas Foundation, the MMA has counted upon the partnership from Zoological and Botanic Societies, committees and work groups with scientists specialized in the different groups of animals and plants.

The process is developed in four steps. Firstly, a previous list of species to be enrolled in the official list is elaborated. Then, this list is imparted to a great number of specialists in order to achieve a broad consultation process – the suggestions gathered during this consultation step are analyzed by the subgroups.

The third step gathers the specialists in workshops in order to appraise the proposals and define new lists of endangered fauna and flora. The process is considered finished when the lists are published through the publication of an administrative act by the Brazilian Institute for the Environment and Renewable Natural Resources – IBAMA.

The project's general coordination, which is responsible for conducting the works, is comprised of representatives from the Ministry of the Environment, Ibama, Biodiversitas Foundation for the Biological Diversity Conservation, Brazilian Society of Zoology and Brazilian Botanic Society. The Executive and Administrative Management is carried out by the Biodiversitas Foundation.

Invasive exotic species

The invasion of natural ecosystems by exotic species is a major cause of losses to biodiversity. In addition, it provokes significant economic losses, especially in the agricultural sector. In Brazil, the diffusion of species harmful to agriculture raises more concerns than it does in other countries because in Brazil agriculture and cattle raising activities account for 40% of the Gross Domestic Product (GDP).

Agriculture was the first segment to feel the impact of the invasion by such species, mostly insects, pests, diseases, and weeds. Such species destroy a large proportion of the output and in some regions they even make it impossible to grow certain crops. For this reason, this sector was the first to take steps to fend off invasive species. These steps include prevention, eradication, and control actions; and the development of legal frameworks, border controls, human resources education and strategies for pest integrated management and biological control.

In natural ecosystems, the impact caused by the invasion of such species is more subtle and less apparent. Island ecosystems are an exception. Over the past few centuries, hundreds of different vertebrate species indigenous to islands have died out because of invasive exotic species. In Brazil, Trindade Island - a thousand kilometers away from the coast - is a typical example. In that island, the introduction of rats, goats and pigs inflicted serious damages to the local biodiversity.

The exchanging of exotic species - and its expansion towards forest areas - is supported by the intensification of trade in horticultural products between North and South America, and also by climatic changes provoked by the greenhouse effect. Many exotic plants have the ability to quickly invade degraded areas, and they often benefit from the management style used. This is the case of extensive pasture areas covering the Brazilian Cerrado, where the natural vegetation is replaced by African grass.

The Convention on Biological Diversity has re-

cently started to tackle this issue. During the 5th Conference of Parties, held in 2000, a decision containing guidelines for the prevention, eradication, and control of invasive exotic species that pose a threat to biodiversity was passed. This problem - which is the second most important cause of extinction and therefore is one of the main sources of reduction of global biodiversity - will be among the three major topics of the Convention on Biological Diversity's 6th Conference of Parties, to be held in April of 2002 in The Hague - Netherlands.

In the developing world, however, awareness about the problem is still very low and the issue requires a focused approach for the development of clear strategies. Important weapons in this war against the adverse effects caused by invasive exotic species are exchange of information and cooperation among neighboring countries and between the environmental and agricultural sectors.

With a view to identifying opportunities of cooperation among South American countries to prevent and restrain invasive exotic species, in October of 2001 Brazil hosted the **Work Meeting on Invasive Exotic Species: Promoting Cooperation in South America**. The event was sponsored by the Ministry of the Environment, which worked together with the Brazilian Agricultural Research Corporation - Embrapa, the American Government and the Global Invasive Species Programme. The meeting was attended by representatives of Argentina, Bolivia, Chile, Colombia, Ecuador, Guyana, French Guyana, Peru, Uruguay, Paraguay, Suriname, Venezuela, Canada, United States, Mexico, France and New Zealand.

The meeting's final report was approved by all countries in the event, and it contains some relevant findings and recommendations. The first finding is that despite recent developments for the prevention and control of invasive exotic species affecting agriculture, the prevention and monitoring of the impacts caused by such species on natural ecosystems

and on the region's rich biodiversity deserves increased attention.

The countries attending the meeting realized that it is important to fully implement the Convention on Biological Diversity's 5th Conference of Parties' Decision V/8 in the region, which lays out guidelines for the prevention and control of invasive exotic species that menace ecosystems, habitats and other species.

In addition, general agreement on the need to enhance the exchange of information was reached. Initial actions in this regard include the development of national-level problem assessments, research, technical training, capacity building, public awareness campaigns, joint actions and harmonization of laws.

Notwithstanding other issues identified by the national-level assessments, all countries also realized that the introduction of invasive exotic species into the region's several drainage basins and cross-border ecosystems deserves immediate attention.

The countries also identified a need to improve coordination and cooperation among segments dealing with agriculture, forestry, fishery and environment in Brazil. Potential improvements include the establishment of national committees on invasive exotic species and the participation of related sectors, such as healthcare, tourism, transportation and commerce, including the private sector.

Hence, pursuant to the meetings' final report, it is exceedingly important to seek enhanced cooperation among the countries in the region for the prevention and control of a shared enemy; it is also

crucial to develop a strategy for the South-American region regarding invasive exotic species. This cooperation must be led by FAO, CDB and GISP and it must include all other countries in the American continent so that it can be part of a global effort to solve a common problem.

The countries realized during the event, however, that the general population's awareness of the issue is low and this makes it easier for invasive exotic species to be accidentally introduced. Effective prevention and control of such harmful species in South America requires adequate financial and technical support.

According to the meeting, the next steps towards the establishment of a cooperation on the prevention and management of exotic species in South America involve the creation of linkages between such areas as Environment, Agriculture and Healthcare in the individual countries. National-level meetings should be held.

Another important step will be the establishment of a mechanism for on-line data exchange so that field experts and government specialists can exchange experiences and discuss ideas, strategies and proposed programmes.

The Global Invasive Species Programme (GISP) is to seek resources from the United Nations Programme for the Environment and from the Global Environment Fund (GEF) in order to create national committees and the South American network on invasive species. Also, an event to be attended by countries from all the Americas is supposed to be held.

Brazilian Primate Center

According to figures regarding the Brazilian participation in the global ensemble of animal species, Brazil has a privileged territory in terms of biological diversity aspects. However, there is an important detail deserving special attention. Brazil has 85 primate species out of the 280 primate species classified worldwide and 75% of the 110 Neotropical species occurring from the Southern region of Mexico to the Northern region of Argentina – 46 endemic ones occurring exclusively in Brazil, being five recently classified (four years only).

However being ranked as Man's closest animals, in Nature's genealogical tree, the primates are among those animals that are affected the most by environmental degradation. Primates represent 50% of all mammals enrolled in the endangered Brazilian species.

Until quite recently, Ibama's most elaborated project dedicated to wild populations of primates was the Guariba Project (established in 1990 in Cabedelo, Paraíba State). However, on September 18, 2001, Ibama, through its Administrative Act number 14, created the *Centro de Proteção de Primatas Brasileiros – CPB* (Brazilian Primates Protection Center), which is also located in Cabedelo – jointly with the Guariba Project. The creation of this Project was an initiative of the Secretariat for Biodiversity and Forests and Ibama's technicians.

The Center was created with the mission of managing projects and providing technical support to institutional actions focused on the conservation and handling of the Brazilian primate populations. Notwithstanding being headquartered in the City of

Cabedelo, the Center will coordinate the Northeastern/Middle-Eastern, Southeastern/Southern and Northern regions.

The protection of primates is one of the most important tasks for those who work with biodiversity. Only 2% of primates' genetic code differ them from Man. Nevertheless, some species are extremely endangered such as the golden lion tamarin (*Leontopithecus rosalia*), symbol of the Atlantic Forest – a victim of this biome's reduction to less than 8% of its original covering. There is also a great concern over the golden-rumped lion tamarin (*Leontopithecus chrysopygus*), the golden-headed lion tamarin (*Leontopithecus chrysomelas*) and the black-faced lion tamarin (*Leontopithecus caissara*).

Some species of Brazilian primates are enrolled in the endangered mammal list, but only six ones are undergoing some sort of studies or are the focus of specific conservation actions. These actions are mostly developed by NGOs and independent research institutes. An important organization is the Rio de Janeiro Primatology Center, whose main focus is to both strengthen and integrate all the already existing efforts.

The work shall begin with the identification of the primary actions aimed at guaranteeing the survival of the Brazilian primate species. One of this Center's primary actions shall be the mapping-out of the geographical distribution of primate species, the elaboration of their populations' growth and the carrying-out of a thorough research of their behavior. In this way, it will also be possible to point out areas and actions that shall be given priority towards the conservation of all Brazilian primate species.

Endemic species in Brazil

(source: Rylands *et al*, 1996/97 e Rylands *et al*, 2000)

Callitrichidae Family

- 01 *Mico argentatus* (*Sagui-prateado*)
- 02 *Mico leucippe* (*Sagüi-branco*)
- 03 *Mico melanurus* (*Sagui-de-cauda-preta*)
- 04 *Mico intermedius* (*Sagüi-de-aripuanã*)
- 05 *Mico emiliae*
- 06 *Mico nigriceps* (*Sagui-de-cabeça-preta*)
- 07 *Mico marcai*
- 08 *Mico humeralifer* (*Sagüi-de-santarém*)
- 09 *Mico chrysoleucus* (*Sagüi-de-santarém*)
- 10 *Mico mauesi*
- 11 *Mico humilis*
- 12 *Mico saterei* (*Sagui-de-sateré*)
- 13 *Mico manicorensis* (*Sagui-de-manicoré*)
- 14 *Mico acariensis* (*Sagui-do-rio-acari*)
- 15 *Callithrix jacchus* (*Sagui comum, sagui-de-tufos brancos*)
- 16 *Callithrix penicillata* (*Sagui-de-tufos-pretos*)
- 17 *Callithrix kuhlii* (*Sagui-de-tufos-pretos*)
- 18 *Callithrix geoffroyi*
- 19 *Callithrix flaviceps* (*Sagui-da-serra*)
- 20 *Callithrix aurita* (*Sagui-da-serra-escuro*)
- 21 *Saguinus niger* (*Sagui-de-mãos-pretas*)
- 22 *Saguinus bicolor* (*Sagüi-de-coleira*)
- 23 *Saguinus martinsi*
- 24 *Leontopithecus rosalia* (*Mico-leão-dourado*)
- 25 *Leontopithecus chrysomelas* (*Mico-leão-da-cara-dourada*)
- 26 *Leontopithecus chrysopygus* (*Mico-leão-preto*)
- 27 *Leontopithecus caissara* (*Mico-leão-de-cara-preta*)

Cebidae Family

- 28 *Saimiri vanzolinii* (*Macaco-de-cheiro*)
- 29 *Saimiri ustus* (*Macaco-de-cheiro*)
- 30 *Cebus xanthosternus* (*Macaco-prego-do-peito-amarelo*)

Pitheciidae Family

- 31 *Callicebus cinerascens*
- 32 *Callicebus hoffmannsi*
- 33 *Callicebus baptista*
- 34 *Callicebus moloch*
- 35 *Callicebus personatus* (*Guigó, sauá*)
- 36 *Callicebus nigrifrons* (*Guigó-de-cara-preta*)
- 37 *Callicebus melanochir* (*Guigó*)
- 38 *Callicebus barbarabrownae* (*Guigó*)
- 39 *Callicebus coimbrai* (*Guigó*)
- 40 *Pithecia albicans* (*Parauacu-branco*)
- 41 *Chiropotes albinasus* (*Cuxiú-de-nariz-branco*)

Atelidae Family

- 42 *Alouatta belzebul* (*Guariba-preto, guariba-de-mãos-ruivas*)
- 43 *Alouatta nigerrima* (*Guariba-preto*)
- 44 *Ateles marginatus* (*Macaco-aranha, coatá*)
- 45 *Brachyteles arachnoides* (*Mono-carvoeiro, muriqui*)
- 46 *Brachyteles hypoxanthus* (*Muriqui*)

National Network for Fighting Against Wild Animals Traffic – RENTAS

Throughout the biennium 2000 – 2001, Brazil experienced a historical fact: the government (represented by the Ministry of the Environment – MMA, and by IBAMA) and the civil society (represented RENTAS – National Network for Fighting Against Wild Animals Traffic), jointed their efforts to effectively curb one of the main threats to our biodiversity: the illegal trade of wild animals.

Despite the fact that this illegal activity occurs in the country since its discovery, never had an efficient programme to eradicate it been implemented. In its 500 years of existence, Brazil has watched the extinction of several wild species due to indiscriminate hunting almost apathetically.

In an unprecedented partnership, the Minister of the Environment, José Sarney Filho, has made the chief government structures available to support the actions developed by RENTAS. Relying on some 580 affiliated institutions, RENTAS has received the contribution of government technicians to draft common strategies in combating the illegal trade of wild animals. Various actions were created, and municipal agencies and bodies were mobilized.

During this period, RENTAS launched the *National Campaign to Combat the Traffic of Wild Animals*, which hit an audience of about 60 million people, and published the *1 National Report on Wild Fauna Trade*. Both actions had the participation and support of the Brazilian government through data providing and support by IBAMA technicians.

Now, this partnership gets ready for one of its most ambitious projects: launching the *International Campaign to Combat the Traffic of Wild Animals*. This action means to sensitize and mobilize governments as well as the international community about the problem, and also to show that our problems would be on a smaller scale without the demand generated by the international consumption of our fauna.

BRAZILIANS WANTED



Each year millions of animals are poached from Brazilian forests. Illegal traders are supplying the international wild animal market carry them away. This illegal trade is one of the main factors endangering the species of the rich Brazilian fauna. Do not purchase wild animals illegally.

Inform against animal traffic.
www.rentas.org.br


RENTAS
 National Network for Fighting Against Wild Animals Traffic

Participation:   

Sponsorship:  

Support:  

Protected Areas



2.1 - National System of Conservation Units

Because it harbors the largest genetic and biological collection in the world, Brazil is one of the main countries responsible for the conservation of global biodiversity. The estimated number of Brazilian species yet to be identified is as high as 3 million, an amount 20 times higher than that of already known species. However, until 2000, the country did not have a consolidated rule of law on environmental conservation. The protection system consisted of diverging laws, which did not form at all a logical and effective whole.

After over eight years of debates with different segments of the Brazilian society, the National Congress passed and the President sanctioned the Law 9,985 on 18 July 2000, creating the National System of Conservation Units (SNUC). In addition to defining, unifying and consolidating criteria for the creation and management of protected areas, this new law brought important innovations to how the subject was approached in Brazil.

SNUC's law reclassifies the various categories of con-

servation units (CUs), updating their concepts and objectives and grouping them into 2 categories: sustainable use and integral protected areas. Attuned to the discussions conducted internationally, this new law emphasized the social participation in the creation and management of the CUs.

The traditional populations inhabiting the areas under protection were recognized as being an integral part of the conservation process and thus were given a fair treatment by the law. In addition to that, mechanisms were created to prevent paying millions in indemnities in cases of expropriation for the purposes of land regularization of the units.

New conservation models

SNUC's law is the result of a long and thorough debate which involved the organized Brazilian society for over two decades. The National Congress served as center

SNUC's Objectives:

- To contribute to maintaining the biological diversity and genetic resources;
- To protect endangered species;
- To contribute to the preservation and restoration of the natural ecosystems diversity;
- To promote the sustainable development based on the natural resources;
- To promote the use of principles and practices for the conservation of nature in the process of development;
- To protect the natural landscapes of remarkable scenic beauty which are not very altered by human activities;
- To protect the relevant characteristics of the geological, geomorphological, speleological, archeological, paleontological and cultural nature;
- To protect and restore water and edaphic (soil) resources;
- To recover and restore degraded ecosystems;
- To provide means and incentives for activities of scientific research, studies and environmental monitoring;
- To value the biological diversity both economically and socially;
- To foster conditions and to promote environmental education and interpretation, leisure in contact with nature and ecological tourism;
- To protect the natural resources necessary to the livelihoods of the traditional populations, respecting and valuing their knowledge and culture and promoting them both socially and economically.

stage for the heated - albeit sound - debate on the conservation model to be adopted in Brazil, a polemic which lasted for over eight years. The result was a legislation in agreement with the global trends, which seek to harmonize the environmental preservation interests with the economic and social development of human groups.

Up until the 60s, the CUs were created mainly for aesthetic or political reasons. It was only during the 70s that a true concern over planning the creation of the CUs arose. The first stage of the National System of Conservation Units Plan was published in 1979, and it was complemented in 1982. Following an already worldwide movement, Brazil began to draw up its policy for the creation and management of protected areas.

The seed of what was to become SNUC came to light during the late 80s. In 1988, the Brazilian Institute for Forestry Development (IBDF) commissioned a critical evaluation of the existing CU categories at the time and a draft Law creating the National System of Conservation Units to the Pro-Nature Foundation (Pronatura). Funatura submitted its draft law in 1989, not to IBDF, but to the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA).

The text was submitted to the National Congress in May 1992. The first reporter, Congressman Fábio Feldmann, prepared an extensive legal opinion proposing changes to what he considered a traditionalist approach to the problem. Congressman Fábio Feldmann championed the participation of the traditional populations in the process of defining, creating and managing the CUs, and a greater involvement of society in redefining the national policy on protected areas.

In his elaborate report, Congressman Feldmann stated that the presidential message forwarding the text to the Congress was revealing in terms of the concept of conservation adopted by the project. "The text refers exclusively to the problem of species extinction, of the biodiversity loss in itself. At no point it mentions what this loss means to people's quality of life. And the role of the conservation units in the development process is not the least considered", the reporter declared.

He followed a global trend, divulged in the World Commission on Environment and Development report, which reported the substitution of the historic method

for the creation of national parks - isolated from society - by an ecosystems and species conservation approach based on "anticipating and preventing". He advocated, then, that the development models needed to be changed so as to become compatible with the preservation of the world's biodiversity.

Backed by the theses included in another document published in 1991 by the United Nations Environment Programme (UNEP), which updated the Global Strategy for Conservation, Feldmann also proposed the participation of the society in defining and reviewing the national policy on protected areas, and the effective participation of the local communities in the project, administration and operation of the CUs.

Further on, he mentioned the Global Strategy for Biodiversity (UNEP, 1992) to argue that the management objectives of the protected areas should be harmonized with those of the ecosystems and human communities of the surrounding areas. The strategy considered such measures as increased benefits for the local communities through ecotourism and the sustainable use of forest products to be crucial.

The waived amendment ultimately proposed a radical change in attitude, from a defensive stance - the protection of nature against the repercussions of development - to an active approach aimed at meeting the population's need for biological resources and ensuring the sustainability of the biotic wealth.

Feldmann then added some objectives to SNUC; among them to value the biological diversity both socially and economically, to respect the culture and to further the social and economic situation of the traditional populations, and to protect and value their knowledge of forms of management and sustainable use of the natural resources. The original proposal did not even mention the traditional populations or the conservation in densely occupied areas.

The inclusion of the local communities participation in the creation and management of CUs and the integration of these CUs in the local social and economic dynamics in SNUC's draft law set a clear division between the traditional preservationists and those who advocated a new model of nature conservancy.

The Congressman, however, reconsidered his posi-

Protected Areas

1) Integral Protection

- *Ecological Station*: devoted to the preservation of nature and the development of scientific researches; areas of public domain and ownership;
- *Biological Reserve*: for the integral preservation of the biota and other natural attributes within its limits; public domain and ownership;
- *National Park*: for the preservation of natural ecosystems with great ecological relevance and scenic beauty, devoted to scientific researches, environmental education, leisure and ecological tourism; public domain and ownership;
- *Natural Monument*: devoted to the preservation of rare or distinctive natural sites of great scenic beauty; may include private areas;
- *Wildlife Refuge*: aimed at the protection of natural environments where the conditions for the existence or reproduction of local flora species or communities and migratory or residing fauna are ensured; it may comprise private areas;

2) Sustainable Use

- *Environmental Protection Area (APA)*: extensive area, with some human occupation, endowed with natural or cultural attributes which are significant for the quality of life of the human populations; the objectives are to protect the biological diversity, to discipline the occupation and to ensure the sustainability of the use of natural resources; public or private lands;
- *Relevant Ecological Interest Area (ARIE)*: small-scale area, with little or no human occupation, harboring extraordinary natural characteristics or rare examples of the regional biota, devoted to maintaining the natural ecosystems and to the regulation of admissible use; public or private lands;
- *National Forest (Flona)*: area with a forest cover predominantly native, with the objective of ensuring the sustainable multiple use of the forest resources and the scientific research; public domain and ownership;
- *Extractive Reserve (Resex)*: area used by traditional extractivist populations, whose livelihoods are mainly based on extractivism, with the objective of protecting the culture and livelihoods of these populations and ensuring the sustainable use of the natural resources; public domain area, with use granted to the traditional extractivist populations;
- *Fauna Reserve*: natural area with animal populations of native species, whether terrestrial or aquatic and resident or migratory, suitable for studies on sustainable economic management of faunistic resources; public domain and ownership;
- *Sustainable Development Reserve*: natural area harboring traditional populations, whose existence is based on the sustainable exploitation of natural resources and which perform a fundamental role in protecting the nature and maintaining the biological diversity; public domain;
- *Private Natural Heritage Reserve*: private area, inscribed in perpetuity, with the objective of conserving the biological diversity, where scientific research, tourist visitation, leisure and environmental education activities are allowed.

tion by the end of his term in 1994, taking on a proposal close to the government's original text. The new reporter, Fernando Gabeira, resumed the debate on the bases previously established by Feldmann, and improved it by taking suggestions gathered during public audiences in various Brazilian capitals.

Gabeira proposed a definition for the term *traditional population* and resettlement of these populations in cases where they inhabit integral protected areas. And he took an important step for recognizing the role of private properties in terms of nature conservancy, by raising Private Natural Heritage Reserves to the condition of CU.

From 1997 on, the negotiations for the project involved preservationist and socioenvironmentalist groups, which gathered with the aim of reaching a consensus, and the Federal Government itself, which presented its alternative proposal in June 1998.

In the Senate, some sectors lobbied against the project's provision included with the intent of preventing the government from paying millions in indemnities for the creation of the CUs. Instead, the proposals they tried to pass were aimed at ensuring the land owners the right to these indemnities. But the amendments were rejected and the project was approved by the Senate in the form of the text received by the House of Representatives.

The president had to veto some aspects of the Law when he sanctioned it; among other things, the definition of traditional population: the preservationists, on one hand, considered it too broad, to the point of including the entire Brazilian population; the Amazonian rubber-tappers, on the other hand, complained that the definition was excessively restrictive.

Regulation

As stipulated by Article 58, Law No. 9,985/00 is under regulation. Over 40 non-governmental organizations currently take part on the process, in addition to municipal, state and federal administration agencies.

SNUC's Law regulation actually requires reviewing all technical-administrative proceedings, as well as the limits and possibilities of action related to the creation, implementation, consolidation and management of the

different management categories for the protected areas.

Which means to review the body of decree orders, resolutions, administrative orders and normative proceedings issued by the federal government at different times, for differing categories of management, and which regulates this process.

This entire infra-legal structure should be compiled into a single instrument, reviewed and adapted to the new objectives, principles and guidelines for the conservation of biodiversity and ecosystems imposed by SNUC's Law.

The regulation will be enforced by means of presidential decrees. The work was carried out based on a thematic grouping of the articles that should be regulated, according to the following themes: SNUC's participatory management and coordination; land regulation and creation; Management, research and public use; Economic sustainability.

National Register of CUs

In Article 50, SNUC's Law stipulates the creation of a National Register for Conservation Units by the Ministry of the Environment, comprising the main data for each unit, including information on endangered species, land situation, water resources, climate, soils and anthropologic and sociocultural aspects. The Register's data should be made available to the public.

The Ministry of the Environment's Directorate for Protected Areas has already begun the consultation with the state governments to obtain precise information on each state's conservation units. The form has 43 fields dedicated to the basic information about a conservation unit, and they will be used to build a database accessible to governmental institutions, research centers, students and companies. A code identifying the degree of reliability of the information according to its sources was also created.

From 2002 on, according to a Technical Cooperation Term established between the Ministry of the Environment and IBAMA, the latter will be in charge of managing the National Register for Conservation Units, and the Ministry's Directorate for Protected Areas will be in charge of coordinating the work.

2.2 - New Protected Areas

As of the Rio-92 Conference, the Brazilian Government has been committed with the maintenance of 10% of the National territory under integral protection, that is, to turn such percentage into *Unidades de Conservação* – UCs (Conservation Units) such as the legally entitled Ecological Stations, Biological Reserves, National Parks, Natural Monuments or Sylvan Life Sanctuaries. Nine years after, only 2.98% of our territory is comprised of integral protection Conservation Units.

In the year 2000, this figure corresponded to 2.02% of the entire area. However, the year 2001 has been recognized as the year presenting the decade's highest rate of Conservation Units' registration. Twenty-four conservation units were created this year, being 16 of sustainable use and 8 of integral protection. Among them, the Cerrado's greatest integral protection unit – the Serra Geral do Tocantins Ecological Station with 716 thousand hectares.

Until the end of 1998, nearly 8% of the entire Brazilian territory was comprised of conservation units – being most of them sustainable use ones. In 1999, the Ministry of the Environment created the *Diretoria de Áreas Protegidas* – DAP (Department of Protected Areas) of the Secretariat for Biodiversity and Forests. The DAP is responsible for the National Programme for Protected Areas, whose tasks are to promote the creation, consolidation and management of protected areas and the *Sistema Nacional de Unidades de Conservação* – SNUC (National System of Conservation Units).

DAP's mission is to have 10% of Brazil's biome fully protected. Therefore, it is necessary to guarantee the *in situ* protection of biodiversity as well as the access to genetic resources, water springs, soil and forests conservation in order to guarantee the sustainability of natural resources and a better life quality for the population.

DAP's creation is also in accordance with the *Convenção sobre a Diversidade Biológica* – CDB (Convention on Biological Diversity), to which Brazil is one of the signatories. In addition to exhorting countries to both

establishing and maintaining a Protected Areas System, the CDB defines global and political priorities towards biodiversity's *in situ* conservation.

CDB's signatory Countries are committed with the maintenance of a protected areas system; with the development of studies focused on the selection, creation and management of these areas; with the regulation and management of important biological resources regarding the conservation of biodiversity, through the guarantee of conservation and sustainable use; the promotion of environmental quality and sustainable development towards the areas located nearby the already protected areas, along with an integrated approach; and with the financial support for biodiversity's *in situ* conservation.

The SNUC's Law, passed on July/2000, has provided the Country with the necessary tools for taking further measures towards the creation of conservation units (protected areas). As a developing country with an increasing demand for raw material and inputs for farming and cattle-raising production, it is paramount for Brazil to be provided with a national network of protected areas. It is also necessary to rule soil use and control the pressure over remainder areas in order to guarantee the preservation of significant portions of ecosystems as well as the sustainable development.

In 1999, after a decade of efforts towards the SNUC's Law approval, the Ministry of the Environment extended the Atlantic Forest's remainders protection area, an extremely important area under strong anthropic pressure, located in the Southern region of Bahia State, with the creation of the Pau Brasil¹ National Park, with 11.5 thousand hectares, and the Parque Nacional do Descobrimento with 21.1 thousand hectares. Located in the Caatinga domain (Northern region of Minas Gerais State), the Cavernas do Peruaçu National Park, protects 56.8 hectares.

Besides the above-mentioned 90 thousand hectares, four other sustainable use protected areas (70 thousand hectares), have been created in 1999 as follows: the Contendas do Sincorá (Bahia, Cerrado), Brasília (Federal

¹ Translator's Note; any of several tropical trees of the genus *Caesalpinia*, as *C. echinata*, having wood from which a red dye is obtained (Random House Webster's Unabridged Dictionary)

District, Cerrado) and Ritópolis (Minas Gerais, Cerrado) National Forests and Lago do Cuniã Extractivist Reserve (Roraima State, Amazon region).

In the year 2000, the increase of protected areas was even more significant – nearly 505 thousand hectares, between integral protection and sustainable development units. With 76.4 thousand hectares, the Serra da Bodoquena National Park, in the Pantanal Matogrossense, was the first national park to be created in Mato Grosso do Sul State.

Among the sustainable use units created in the year 2000, we shall highlight the Baleia Franca (Humpback Whale - *Megaptera novaeangliae*) Environmental Protection Area, with its 156 thousand hectares, in Santa Catarina State, and five Extractivist Reserves, among which the largest are: Alto Tarauacá, in Acre State (Amazon region), with 151 thousand hectares and Corumbau in Bahia State (Atlantic Forest) with 89.5 hectares.

However, it was in 2001, upon SNUC's Law approval, that the Brazilian territory has experienced a considerable increase of protected areas; approximately 3.3 million hectares distributed among 23 protected areas until November/2001. The largest of them all, as well as of the entire Cerrado biome, is the Serra Geral do Tocantins Ecological Station, located between the States of Tocantins and Bahia, with 716.3 thousand hectares.

We shall also highlight the Serra da Cutia National Park in Roraima State, at the Amazon region, with 283.7 thousand hectares and the expansion of the Chapada dos Veadeiros National Park (the first one to be extended upon SNUC's Law approval), located in the State of Goiás, in the Cerrado region. This Park, formerly covering an area of 60 thousand hectares, has gained an area equivalent to nearly three times the original one – currently it covers over 236 thousand hectares is integrally protected.

For being located in the Caatinga biome, one of the Country's most degraded biomes, the Aiuba and Castanhão Ecological Stations deserve special attention. Together, they add 24 thousand hectares to the Caatinga integral protection area.

As regards sustainable use protected areas, the expansion occurred between January and November/2001 has reached over 2 million hectares. One Environmental Protection Area, five Extractivist Reserves and 10 National Forests (distributed throughout the Brazilian biomes) have

been created.

Among other factors, such expressive expansion of protected areas, in the year 2001, has occurred thanks to two decisive ones: the extremely favorable conjuncture, which is the result of a process that has ended up with the approval of the SNUC's Law and the carrying-out of seminars aimed at defining Conservation Areas and Priority Actions; and Federal government's political will, which is also expressed in the agreements among the sectors liable for both the Environment and the Agrarian Reform, when jointly searching for an integrated policy when dealing with environmental issues.

In this way, in February/2001, the Ibama's Directorate for Ecosystems has started its mission for expanding and consolidating the federal protected areas. Conducted by the Secretariat for Biodiversity and Forests of the Ministry of the Environment, the seminars on each of the Country's biomes had established the priorities towards the creation of protected areas.

Upon having thoroughly analyzed the priorities and possibilities, the creation of 36 new areas (equivalent to 5 million hectares) had been established.

A huge universe was in front of us. The Directorate for Ecosystems is liable for the so-called Parks of Brazil Programme, included in the Pluriannual Development Plan (PPA-2000/2003). Among others, our tasks include the planning, creation, implementation and management of 9 out of the 12 categories of the SNUC's Federal Protected Areas.

Besides the five categories of integral protection units, the four following sustainable use units are under our responsibility: Environmental Protection Area, Relevant Ecological Interest Area, Fauna Reserve and Private Natural Heritage Reserve. The creation of Extractivist Reserves, National Forests and Sustainable Development Reserves is under the responsibility of other Ibama's sector.

Integral protection areas – Ecological Station, Biological Reserve, National Park, Natural Monuments and Sylvan Life Refugium – are the subjects we are going to discuss herein. They are the focus of the Brazilian government's international commitment to rise to 10%, at least, the preservation area for each of the Country's biome.

Until the year 2000, Brazil had 17,232,186 hectares, distributed over 94 conservation units – being the first one

the Itatiaia National Park, which straddles the Rio de Janeiro and Minas Gerais States – under federal integral protection. This area was equivalent to 2.02 % of the entire National territory, one fifth of the Brazilian conservation goal.

Restructuring the work team was the first step for speeding-up the process and recovering the time wasted. Following, we searched for partnerships with NGOs, Universities and other institutions interested in presenting proposals for the creation of protected areas.

This environmental compensation – provided by Article 36 of the SNUC's Law – represented, in addition to budgetary amounts and partnership projects, a new source of resources for protected areas. The Law establishes that high environmental impact enterprises shall be charged at 0.5% of the enterprise's value in order to support and maintain integral protection areas.

This measure has enabled the allocation of resources for activities aimed at creating protected areas such as land expropriation, elaboration of management and implementation plans among other actions. The ways for utilizing such mechanisms shall be more accurately defined by the Decree that will rule Article 36, which is currently being elaborated.

Thanks to the demand-pull along with planning and availability of resources, eight protected areas have been created in 2001. Moreover, five processes are ready to be forwarded to the Ministry of the Environment and a number of others are about to be concluded. Until late 2001, 17 out of the 36 proposed protected areas will have been created.

While we may not achieve our goal in terms of numbers, we might do overcome it in terms of areas encompassed by the new integral protected areas. By the end of 2001 we might have achieved an increase of 8.1 million hectares – 62% over the previously established 5 million hectares and a figure equivalent to 47% of the whole area under environmental protection until the year 2000. Within less than a year we might have leapfrogged from 2.02% to 2.98% of the National territory area under integral protection.

It is crystal-clear that we might strongly endeavor in order for us to achieve at least 10% of our biomes integrally protected – which stands for nearly 85 million hectares. With the maintenance of 2001's pace as well as counting on the effective participation of States and Municipali-

ties in the implementation of other units, at least five years of restless work and a great amount of investments might be required.

In this way, in addition to the limited budgetary resources we are continuously searching for both internal and external mechanisms that may defray the creation of new protected areas as well as the implementation of those already created. Therefore, land use regulation is one of the most important actions for consolidating the protected areas conservation system in areas under Ibama's management. This is such an old demand – just to have an idea of how much it represents, it is estimated that R\$ 750 million are required for purchasing the nearly 2.5 million hectares already established as protected areas.

Ibama's annual budget for purchasing lands has increased significantly – reaching R\$ 45 million in 2001. On the other hand, due to Ibama's collection problems, only R\$ 1 million have been used to actually purchase lands in protected areas.

For example, the requirement for other financing sources made us seek for mechanisms to establishing partnerships aimed managing the system through the outsourcing of some activities. The SNUC's Law, in its Article 30, leaves room for the protected areas to be managed – through covenants with agencies liable for the area's management – by civil society organizations whose objectives are similar to those of the protected areas.

Dealing with both local and regional aspects, Ibama is bound to have a more systematic view of the units. In 2002, the intention is to attract volunteer work to the units and at the same time seek for ways of integrating those public policies that deal with conservation-relevant aspects.

We expect to have the Decree creating the greatest protected area in the Pantanal Matogrossense – the Nabileque Biological Reserve, with 580 thousand hectares – promulgated soon. We are forwarding a proposal for creating the world's greatest park to protect a tropical forest – the Tumucumaque Mountains National Park, located in a public uninhabited area, in the Amapá State, Amazon region, with nearly 3.8 million hectares of virgin land.

In addition to other actions developed in 2001, the creation of this park may be deemed as a satisfactory response to the international community's exhortation towards a more comprehensive planning of conservation in Brazil.

Protected Areas created from 1999 through 2000

Integral Protection Areas

Protected Area	Category	Creation	Seat Municipality	FU	Use	Predominant Biome	Area (ha)
Pau Brasil	NATIONAL PARK	1999	Porto Seguro	BA	Integral	Atlantic Forest	11,538
Descobrimento	NATIONAL PARK	1999	Prado	BA	Integral	Atlantic Forest/ Southern Fields	21,129
Cavernas do Peruaçu	NATIONAL PARK	1999	Peruaçu	MG	Integral	Caatinga (Semiarid Northeast)	56,800
Serra da Bodoquena	NATIONAL PARK	2000	Bonito	MS	Integral	Pantanal (Brazilian Central Swamps)	76,481
Jutai-Solimões	ECOLOGICAL STATION	2001	Jutai	AM	Integral	Amazon	288,187
Aiuaba	ECOLOGICAL STATION	2001	Aiuaba	CE	Integral	Caatinga	11,525
Saint-Hilaire/ Lange	PARQUE NACIONAL	2001	Matinhos	PR	Integral	Atlantic Forest/ Southern Fields	25,000
Serra da Cuba	NATIONAL PARK	2001	Guajará-Mirim	RO	Integral	Amazon	283,611
Castanhão	ECOLOGICAL STATION	2001	Jaguaribara	CE	Integral	Caatinga	12,579
Cuniã	ECOLOGICAL STATION	2001	Porto Velho	RO	Integral	Amazon	53,221
Murici	ECOLOGICAL STATION	2001	Murici	AL	Integral	Atlantic Forest	6,116
Serra Geral de Tocantins	ECOLOGICAL STATION	2001	Ponte Alta do Tocantins	TO	Integral	Cerrado (Central Brazilian Savannahs)	716,306
Jericoacoara	NATIONAL PARK	2002	Jericoacoara	CE	Integral	Coastal/Marine Zones	8,416
Nascentes do Rio Parnaíba	NATIONAL PARK	2002	Alto Parnaíba	PI/ MA/ BA/ TO	Integral	Cerrado (Centra Brazilian Savannahs)	729,000
Mico-Leão-Preto	ECOLOGICAL STATION	2002	Teodoro Sampaio	SP	Integral	Atlantic Forest	5,500
Tumucumaque	NATIONAL PARK	2002	Serra do Navio	AP	Integral	Amazon	3,877,393
Total							6,182,802

Sustainable Use Protected Areas

Protected Area	Category	Creation	Seat Municipality	FU	Use	Predominant Biome	Area (ha)
Contendas do Sincorá	NATIONAL FOREST	1999	Contendas do Sincorá	BA	Sustainable	Caatinga	11,034
Brasília	NATIONAL FOREST	1999	Brasília	DF	Sustainable	Cerrado	3,353
Ritápolis	FLORESTA NACIONAL	1999	Ritápolis	MG	Sustainable	Cerrado	90
Alto Tarauacá	EXTRACTIVIST RESERVE	2000	Jordão	AC	Sustainable	Amazon	151,199
Corumbau	EXTRACTIVIST RESERVE	2000	Porto Seguro	BA	Sustainable	Atlantic Forest	89,500
Baía do Iguape	EXTRACTIVIST RESERVE	2000	Maragogipe	BA	Sustainable	Atlantic Forest/ Southern Fields	8,117
Delta do Parnaíba	EXTRACTIVIST RESERVE	2000	Ilha Grande de Santa Isabel	MA	Sustainable	Atlantic Forest/ Southern Fields	27,021
Lago do Cuniã	EXTRACTIVIST RESERVE	2000	Porto Velho	RO	Sustainable	Amazon	55,850
Baleia Franca	ENVIRONMENTAL PROTECTION AREA	2000	Imbituba	SC	Sustainable	Coastal/Marine Zones	156,100
Lagoa de Jequiá	EXTRACTIVIST RESERVE	2001	Diário Oficial da União	AL	Sustainable	Coastal/Marine Zones	10,204
Sobral	NATIONAL FOREST	2001	Sobral	CE	Sustainable	Caatinga	598
Marinha de Soure	EXTRACTIVIST RESERVE	2001	Soure	PA	Sustainable	Amazon	27,463
Nascentes do Rio Vermelho	ENVIRONMENTAL PROTECTION AREA	2001	Mambáí	GO	Sustainable	Cerrado	176,159
Planalto Central	ENVIRONMENTAL PROTECTION AREA	2002	Brasília	DF	Sustainable	Cerrado	504,608
Bacia do Rio São João/Mico-Leão-Dourado	ENVIRONMENTAL PROTECTION AREA	2002	Middle-eastern region of Rio de Janeiro State	RJ	Sustainable	Atlantic Forest	150,700
Rio Jutai	EXTRACTIVIST RESERVE	2002	Jutai	AM	Sustainable	Amazon	275,000
Total							1,496,296

Note: 153 Private Natural Heritage Reserves (RPPNs) have been created from 1999 through 2000, totaling 64,371.82 ha

2.3 - Ramsar Convention on Wetlands of International Importance, 1971

Brazil is one of the signatory countries of the Convention on Wetlands, also known as the Ramsar Convention, named after the Iranian city in which the Convention was signed, in 1971. It is an international treaty for the conservation and wise use of the wetlands, long recognized for their hydrological, ecological, biological, economic, cultural, scientific and recreational values. The Convention's main objective is to prevent the loss of the wetlands and to promote its conservation.

Considered the fourth country in the world in terms of protected areas already designated in the Ramsar List of Wetlands of International Importance, Brazil ratified the Convention in 1993. There are seven Brazilian wetlands recognized as Ramsar Sites – five were designated in 1993 and two in 2000.

The inclusion of Brazilian sites in the Ramsar List increases the possibilities of international negotiations directed at developing researches, obtaining financing and creating a broader scenario for intergovernmental cooperation.

The Convention's signatory countries are committed to promoting the sustainable use of wetlands in their territories, by adopting adequate laws and policies and promoting activities of training, research and actions aimed at building an awareness of the importance of these areas.

According to the Ramsar Convention, wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salty, including areas of marine water the depth of which at low tide does not exceed six meters.

The wetlands may include riparian and coastal zones adjacent to the wetlands, and bodies of marine water. Thus, the Convention extends over a wide variety of aquatic ecosystems, including rivers and artificial wetlands, such as ponds, weirs and dams.

These areas are considered natural reservoirs of biological diversity and they have, among other functions, an important role for the climate stability. The use of the natural resources of these areas also plays a fundamental role in the economic livelihoods of thousands of communities, whether traditional or not, who subsist on the use of its products.

In Brazil, the Convention is administered by the Department of Protected Areas within the Ministry of the Environment's Secretariat for Biodiversity and Forests, and it began being implemented in 1996, after Decree Order No. 1,905 from 16 May 1996 was published, establishing the Brazilian commitment to promote the conservation and wise use of the country's wetlands.

One of the Ministry of the Environment's first steps was to carry out an awareness raising campaign about the Ramsar Convention, involving 300 universities, 250 non-governmental organizations, 27 environmental state agencies and 27 state representations of the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA).

In April 2001, the *1st Seminar on the Ramsar Convention and its Applications in Brazil* was carried out. Representatives of all Ministries, financing agencies and non-governmental organizations attended the Seminar.

In partnership with the Federal University of Bahia, the Ministry of the Environment promoted the course *Scientific and Instrumental Basis for the Management of Brazilian Wetlands*, in May 2001. A few months later, between June and November, the Ministry also promoted the course *Brazilian coral reefs: introduction to geographical information systems and remote sensing mapping techniques*, in partnership with the National Institute for Spatial Research (INPE) and the Coastal Reefs Project.

In addition to continually building the capacity of

managers for Brazilian Ramsar sites, one of Brazil's aims in the Convention is to increase the number of wetlands in the country. With this purpose, proposals to designate more Ramsar Sites of International Importance are being studied.

Brazil has already seven Ramsar Sites of International Importance designated, coinciding with conservation units and totaling an area of approximately 6.7 million hectares. Below, the most important characteristics of each site.

Lagoa do Peixe National Park (State of Rio Grande do Sul)

Designated in 1993, it covers a 34,000 hectares area and it includes the biomes of coastal and marine zones, and the following ecosystems: beaches, marine pastures, estuary, marshes, lakes and lagoons. It was included in the Ramsar list, among other reasons, because it harbors a population of over 20,000 water birds. The main threat to the conservation of this site is the illegal and uncontrolled shrimp harvesting, and of other fishery resources.

Its management plan was concluded in December 2000. It has seven scientific research projects under development. Among the environmental education activities, it held the II Brazilian Festival of Migratory Birds, whose objective was to encourage the bird-watching ecotourism.

Pantanal Matogrossense National Park (State of Mato Grosso)

It comprehends the Cerrado and Pantanal biomes and its ecosystems include seasonally flooded forests, seasonable rivers and permanent and seasonal ponds. Designated in 1993, it occupies an area of 135,000 hectares. Fundamental criteria for its inclusion in the list were its important hydrological, biological and ecosystemic role and the region's genetic and ecological diversity, in addition to a great diversity of waterfowl and fish. One of the main threats to its conservation is the construction of the Paraná-Paraguay waterway, already projected but recently suspended.

Its emergency action plan was concluded in 1996,

and the management plan is under development. The National Park's management is based on the participation of the surrounding communities. It was considered a 'sibling park' to the Everglades National Park, in the United States, which motivated the current discussion about a training project for Brazilian students in both parks.

Araguaia National Park (State of Tocantins)

The park's 562,000 hectares comprehend the Amazon Forest and the Cerrado biomes, and ecosystems including permanent and seasonal ponds and rivers and fresh water marshes. It was designated a Ramsar Site in 1993 due, among other things, to its important hydrological, biological and ecosystemic role and to its genetic and ecological diversity, and also to the wide diversity of waterfowl and fish it harbors.

The main challenge in managing this site is to harmonize the conservation interests with those of the indigenous community. The negotiations are conducted by IBAMA, the Ministry of the Environment, the National Foundation for Indians (FUNAI) and non-governmental organizations, seeking the best conservation procedures, maintaining the customs and the sustainability of the indigenous communities.

A series of projects and programmes was already implemented in this site. Among them, the management and wise use of fishery resources programme and the management and wise use of the wildlife programme. Each of these programmes involves specific projects dealing with different issues.

The following programmes were also implemented: inspection and protection of the natural resources; education in the indigenous communities; increase in low-impact ecotourism; increase in agricultural production and tropical fruticulture in the indigenous communities.

Reentrâncias Maranhenses Environmental Protection Area

Designated a Ramsar site in 1993, it comprehends the coastal and marine zone biomes in 2.6 million hectares, including beaches, coral reefs, estuary, mangroves,

marshes, lakes, permanent and seasonal rivers. It stands out for its significant ecosystemic structure, and also because of the representativeness of vulnerable and endangered fauna and flora species, in addition to the abundance and diversity of fish and birds.

The increased crustacean culture, the irregular occupation, the harvest of migratory bird eggs and gold mining activities threaten the mangrove swamps with destruction. In addition to that, there is pressure over the site to become a touristic region.

Mamirauá Sustainable Development Reserve (State of Amazonas)

Designated in 1993, it covers 1.1 million hectares of the Amazon Forest, with flooded forests, permanent lakes and rivers, floodplains and fresh water marshes. It is important because it represents the biogeographical region, and also due to the maintenance of endangered and vulnerable fauna and flora species, the presence of endemic species, the protection of a critical period of the species' biological cycle, the richness and abundance of birds and fish. It is threatened by illegal and predatory fishing (decreasing after the reserve was created) and selective logging of timber species.

It has a management plan since 1996, emphasizing the partnership with the local traditional population. There are 6,300 inhabitants within the reserve's limits and another 5,000 in the surrounding areas, taking part in the experimental sustainable development system.

It comprises a scientific research programme financed with resources from both national and international sources, including social, conservational, biological and ecological studies, in addition to a social extension research.

Its environmental education programme comprised the support to 1.800 children from 54 schools and training to 80 teachers. In addition to that, 150 healthcare agents were trained and over 4,000 people were attended; over 100 volunteers were also trained for inspection activities.

Parcel Manuel Luiz State Marine Park (State of Maranhão)

Designated a Ramsar Site of International Importance during the Ministry of the Environment's current administration, the park comprehends coral banks and underwater rock formations in its 45,000 hectares of coastal and marine zones. It was designated in 2000, due to its representativeness as a reef environment with endemic species of fish, its rare biogeographical region formation and due to the fact that it is a feeding and spawning area for the marine fauna. The main threats to this site are illegal fishing, anchorage, coral harvesting and tourism.

Baixada Maranhense State Environmental Protection Area (State of Maranhão)

Included in the Ramsar List in 2000, this Environmental Protection Area extends over 1.7 million hectares of coastal and marine zones, including estuaries, mangrove swamps, marshes, permanent and seasonal rivers and permanent and seasonal lakes. It has a significant ecosystemic structure, representativeness of endangered and vulnerable fauna and flora species and abundance and diversity of fish and birds. The irregular occupation, buffalo ranching, predatory hunting and fishing are currently the main threats to the site.

Capacity-Building

The Protected Areas Advisory of the Biodiversity and Forest Secretariat of the Ministry of the Environment includes among its projects the qualification of human resources, which is essential for the management of the protected areas. The programme foresees, among other goals, the national uniformity of conceptual and language bases, a general background and specific qualification of the professionals managing the National System of Conservation Units (SNUC) for the successful implementation of the Protected Areas Policy.

Aiming at the implementation of the said Policy, the workshop *Brazilian Coral Reefs: introduction to mapping techniques by means of remote sensing and geographic information*, coordinated by the Protected Areas Advisory, was carried out from June 18 to June 22, 2001, in São José dos Campos (SP).

The workshop is part of the project *Studies on Brazilian Coral Reefs: training and application of remote sensing techniques*, co-developed in a partnership with the National Institute for Space Research (INPE) and the Coral Coast Project, supported by Wetlands For the Future/ Ramsar Convention.

14 managers and technicians of 8 conservation units - Parcel Manoel Luís State Marine Park, Atol das Rocas Biological Reserve, Fernando de Noronha National Marine Park, EPA of Costa dos Corais, Recife de Fora Municipal Marine Park, Corumbau Marine Extraction Reserve, Abrolhos National Marine Park, and EPA of Ponta da Baleia - were qualified.

The managers and technicians had access to remote sensing techniques in order to map the protected areas that were established in the coral ecosystems and the surroundings, in such a way to improve the management of these areas.

The Protected Areas Advisory was also in charge of coordinating the course *Scientific and Instrumental Grounds for Managing the Brazilian Damp Zones*, co-developed in a partnership with the Federal

University of Bahia, supported by Wetlands For the Future/ Ramsar Convention. The course was held in Salvador, Bahia, from May 7 to May 18, 2001, and qualified 23 managers and technicians of 14 institutions from all over the country, including Conservation Units and Ramsar Sites managers.

The two-week course was divided in two stages. The first one was set to theoretical lessons about several aspects of neotropical damp zones, since its classification to use and management instruments. The second stage involved practical activities in coastal and marine ecosystems, such as mangroves, lakes, and flooded plains, among others.

Different trips were taken to the several types of damp zones, namely, fresh water, brackish water and saline water, in the Protected Area in the North Coastline of Bahia, including the *in loco* analysis of the theoretical principles showed in the first week.

A third activity aiming at qualifying human resources supported by the Advisory was the course on *Integrated Coastal Management*, given to managers of coastal and marine conservation units of the State of Santa Catarina. The course was carried out from May 21 to May 30, 2000, in Florianópolis (SC), as part of the *Train Sea Coast Programme*.

In Brazil, the *Train Sea Coast Programme*, is the result of the cooperation among the Universidade do Rio Grande Foundation, the Interministerial Committee on Marine Resources, the Marine Affairs Division, and the UN Marine Law Convention.

During the course, the main problems of the marine coast were focused, and environmental managing models for an integrated approach were presented.

The result was the qualification of seven managers and technicians of six conservation units – Arvoredo Biological Reserve, Carijós Environmental Institute, EPA of Anhatomirim, EPA of Baleia Franca, Pirajubé Marine Extraction Reserve, and Serra do Tabuleiro State Park.

The Brazilian Antarctic Programme

Brazil signed the Antarctic Treaty in 1975, an agreement which was supplemented in 1991 by the Madrid Protocol, in which the member countries commit themselves to ensuring the protection of the Antarctic environment and its dependent and associated ecosystems. The Antarctic was then designated a natural reserve devoted to peace and science. To sign the Protocol meant to agree that the frozen continent will forever be used exclusively for peaceful purposes, and not become the scene or object of international discord.

The Antarctic is the least known region in the planet and it harbors an immeasurable natural wealth in its 14 million square kilometers and surrounding waters. Situated 550 miles to the south of South America, the Antarctic is also the continent least altered by man.

The Antarctic region has a unique importance for scientific research. The study of its characteristics and of the natural phenomena observed there helps elucidate matters of regional relevance, such as the feasibility of the sustainable exploitation of marine living resources, or of global relevance, such as climate changes.

Brazil has been developing researches in the Antarctic since 1982, when the Brazilian Antarctic Programme (ProAntar) was launched. The first Brazilian expedition to the Antarctic accorded the country an international recognition of our participation as Consultative Party in the Treaty. Currently, Brazil has a station, three research refuges and encampments. The results obtained are technologic and scientific development, in addition to political gains in the international scenario.

The research conducted by Brazilians has been giving prominence to the country in the scientific community. In addition to that, it brings us essential knowledge on natural phenomena which affects the

Brazilian population directly or indirectly and which are originated in the polar regions.

An example is the Brazilian climate, influenced by cold air masses which are formed in the Antarctica. The meteorological researches permit a more reliable and advanced forecast, and a better comprehension of the climate variations in Brazil that may have consequences in agriculture and in the reservoirs of hydroelectric power plants.

Problems such as the draught in the Northeast region or the floods in the South of the country may be explained and even foreseen based on studies carried out in the Antarctic. An example of this situation is the finding that the variations in the Antarctic precipitation are related to the El Niño and La Niña episodes. Thus, climate oscillations observed in Brazil may be a response to the climate changes detected in advance in the Antarctic region.

Brazil is also involved in researches dealing with issues of global interest. It is the case of the greenhouse effect, the hole in the ozone layer and the increase in the ocean level.

The studies also make possible the reconstitution of the planet's climatic history, for the polar ice is the best 'archive' on the evolution of climate and of the atmosphere. Investigation of the ice enables to observe, throughout thousand of years, the variation in the concentration of greenhouse effect gases, as well as the atmospheric temperature, desertification processes, global pollution, alterations in the patterns of oceanic and atmospheric circulation and abrupt climatic changes.

Half of the research carried out by Brazilian scientists in the Antarctic is related to biology or biological oceanography, and it has contributed to the confirmation of the fragility of the arctic environment against the global environmental changes.

ProAntar has also been studying the sustainable

use of the region's living resources. As for non-living resources, it is also believed that there are rocks and sediments – important energetic and mineral resources, such as oil and gas – under the ice. However, under the Madrid Protocol, the activities of economic nature associated with the search for mineral resources are prohibited in the Antarctic until the year 2047.

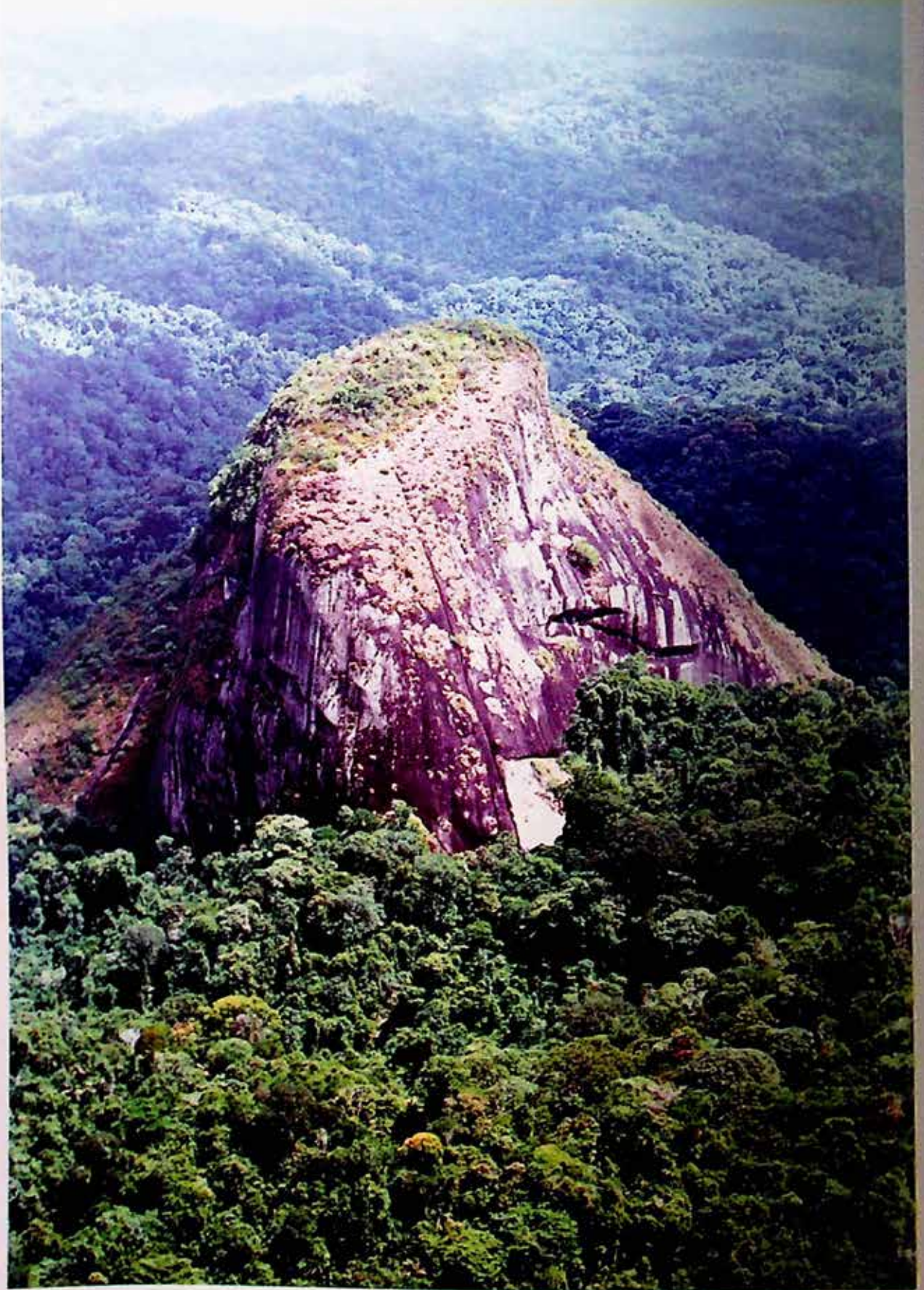
The Brazilian Antarctic Programme is interinstitutional and it is under the responsibility of the Interministerial Commission for Sea Resources – CIRM. The Programme's execution is thus divided: Environmental Aspects – Ministry of the Environment; Scientific Research – CNPq (National Council for Scientific and Technological Development) /Ministry of Science and Technology; Operational Activities and Logistics –CIRM's Secretariat (Navy, Ministry of Defense); Political Aspects– Ministry of Foreign Affairs. There are also 14 Brazilian universities and research institutes and over 220 researchers involved in Antarctic research.

Because it is the agency in charge of environmental conservation policies and guidelines, the Ministry of the Environment is responsible for coordinating ProAntar's Environmental Assessment Group, which is in charge of assessing the impact of the Brazilian activities in the Antarctic environment, making sure the country complies with the directives established by the Madrid Protocol.

The Madrid Protocol established various proceedings to be followed in the execution of the scientific researches and in the logistic support to the Antarctic stations, aimed at protecting the region's flora and fauna. Brazil is adapting its activities to the regulations of the Madrid Protocol, being at the forefront for its exemplary environmental management in the Antarctic Station "Comandante Ferraz".

The activities carried out by the Ministry of the Environment in the Antarctica are coordinated by the Department of Protected Areas within the Secretariat for Biodiversity and Forests.

Tumucumaque Mountains National Park



The Tumucumaque Mountains National Park's area encompasses a wide region distributed over the Brazilian North frontier, in the State of Amapá and a small portion of the State of Pará, in the right bank of Jari River.

The region presents hot and humid climate and dominance of dense tropical rain forest. In the Park's Middle-North portion, the forest presents high trees with uniform canopy and sparse patches of emergent trees. Dominant species are maçaranduba, maparajuba, cupiúba, jarana, mandioqueira, louros, acapu, acariquara, matamatás, faveiras, abioranas, tauari and tachi.

In the Lombarda Mountains range region, in the Park's East portion, the forest is exuberant and rich in the residual relief areas, presenting high canopies and emergent species. The matamatás, breus, abioranas, cupiúba, jarana, acariquara and maçaranduba are characteristic vegetation species of the area. Some species constitute gregarious groups such as acapu, apazeiro, cedrorana, pracachi, piquiá, tauari and others.

In the Park's West portion, the dense forest with emergent trees prevails in the most irregular areas of the local relief (the Tumucumaque Mountains range). It varies from high canopy forest, with predominance of angelim-pedra, maçaranduba and sorva to low canopy forest where faveiras, quarubas and matamatás abound. In dissected relief areas, the high canopy dense forest, with emergent trees, is characterized by maçaranduba, maparajuba, tauaris, faveiras and some angelins. In the valleys, the açai, the anani and uccubas prevail and in poorer or shallower soils, the low forest prevails.

Nearby Jari River, there are patches of alluvial forests where ingá and faveiras occupy the platforms located in the swelling terrain forest. Rocky outcroppings along with shrubby and grassy vegetation are also observed. In sugarloaf-like hills, vegeta-

tion is sparse with predominance of bromeliaceous and cactaceous.

The Tumucumaque Mountains present spectacular species of mammals such as big carnivores, the jaguar (*Panthera onca*) and sussuarana (*Puma concolor*) and rare primates, such as the cuxiu (*Chiropotes satanas*), whose populations are extremely reduced in other regions. Birds such as macaws (*Ara chloroptera* and *Ara macao*), marianinhas (*Pionites melanocephala*), jacus (*Penelope marail*), multi-colored hummingbirds such as the beija-flor-brilho-de-fogo (*Topaza pella*) and big frugivore birds that live in crown canopies such as the anambé-militar (*Haemotoderus militaris*), the pássaro-boi (*Perissocephalus tricolor*) and the gainambé (*Procnias alba*) abound in the region's most preserved forests.

The heads of the Oiapoque, Jari and the Araguari, Amapá State's main rivers, are located in the region. With a rectilinear drawing that flows through an extensive tectonic fracture, the Oiapoque River is the borderline between Brazil and the French Guiana. In its turn, the Jari River is the borderline between the States of Amapá and Pará. Two watersheds feature in the Park's area: the Tumucumaque Mountains range, locally called as *Uassipem* and the Lombarda Mountains. Residual sugar-loaf like hills (inselbergs) are highlighted in the Park's west landscape. Predominant soils have low fertility.

The National Park's lands are public areas already registered by the National Institute of Colonization and Agrarian Reform – INCRA. The total area, covering 3,877,393 ha, is located in a totally unpopulated region and makes up Brazil's and South America's largest park (larger than Jaú National Park, in Brazil, with 2,272,000 ha and the Kaalya National Park, in Bolivia, with 3,441,115 ha). It is also the world's greatest tropical rain forest park – the Salonga National Park, in the Democratic Republic of Congo (former

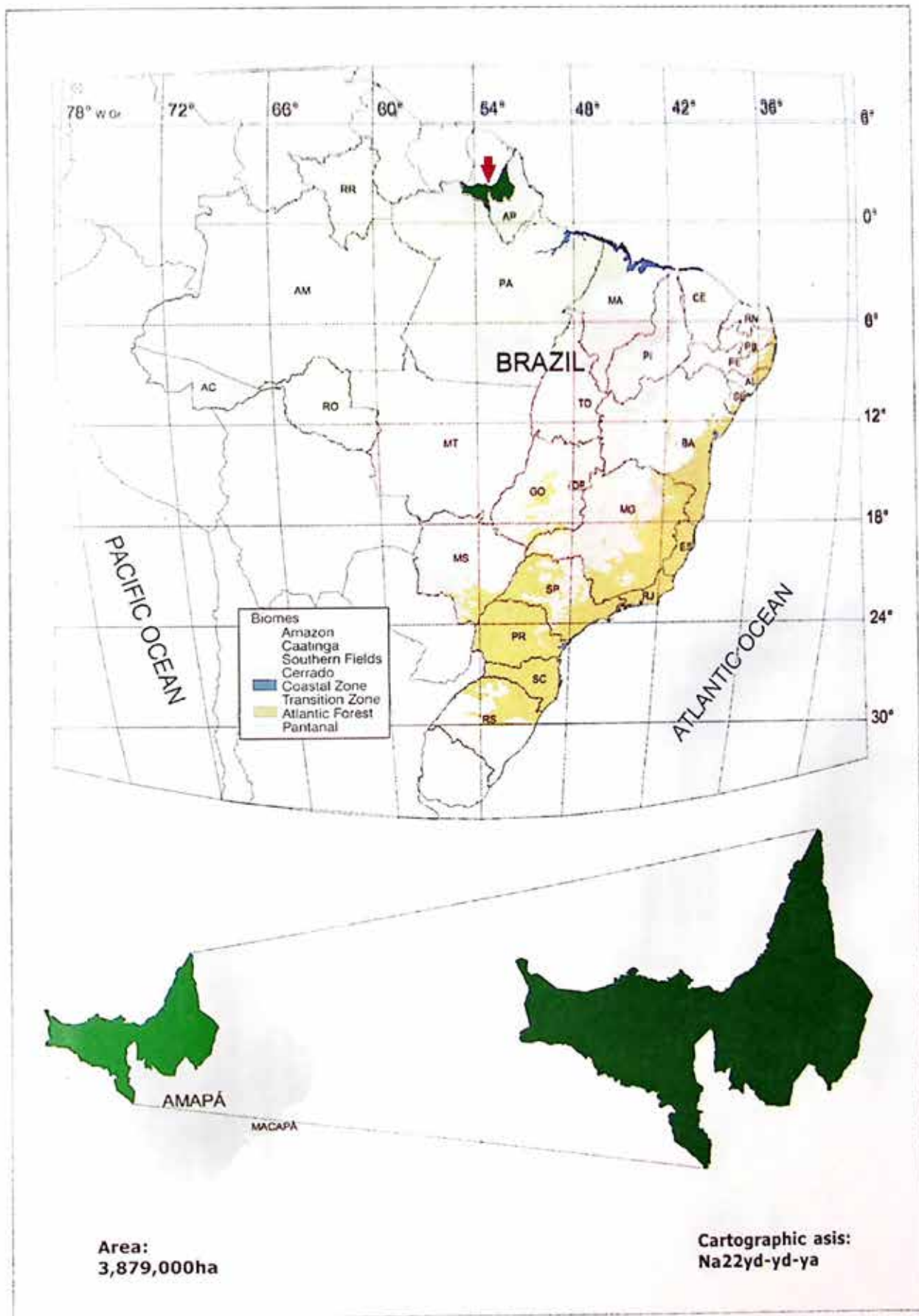
Zaire) covers nearly 3.6 million ha.

According to the Workshop on "The Identification of Priority Areas for the Conservation, Sustainable Use and Partition of the Benefits of the Brazilian Amazon", held in the scope of the Conservation and Sustainable Use Project for the Brazilian Biological Diversity – PROBIO, of the Ministry of the Environment, the Tumucumaque Mountains National Park is located in a region classified as high to extreme biological importance.

The creation of this new National Park occurred thanks to the cooperation and goodwill of the National

Institute of Colonization and Agrarian Reform – INCRA and the Ministry of Agrarian Development, which had provided the lands and information for the elaboration of the Park's proposal. Conceived by the Brazilian Government, the Park's creation meant an important and significant step towards the accomplishment of this purpose – that is, to protect 10% of the Brazilian Amazon as integral conservation units, through the "Protected Areas in the Amazon Project" (prepared by the Brazilian Government, the World Bank, the German KfW Bank and Global Environmental Facility - GEF).

Tumucumaque Mountains National Park



Protected Areas



3.1 - National Forest Programme

In harmony with the environment international agenda, the Brazilian Government, through Decree no. 3,420, has created the National Forest Programme (PNF) in April 2000, aiming to promote sustainable forest development. As a conciliatory and effort-concentration agent, the programme has helped this industry in the search of viable alternatives to forest-related activities in the country.

Being responsible for 4% of the Gross Domestic Product (GDP) as well as for 8% of Brazilian exports, forestry is essential for the country's economic growth. This alone is enough to explain the need to make it sustainable, conciliating ecosystems exploitation and protection.

This argument is reinforced with the typically Brazilian dimensions: 5.5 million square kilometers of our territory are covered with native forests, and two-thirds of it are equivalent to the Amazon Rain Forest. Not only the economy, but also the very life of Brazilian people is deeply associated with the conservation and the sustainable use of forest resources.

Under the economy point of view, forestry supplies some important items on the Brazilian export list. Paper and short fiber cellulose are the most significant products, but there are also furniture, processed wood, sawn wood, and refined wood panels. This industry accounts for over 2 million direct jobs.

But the history of economic exploitation of Brazilian forests does not provide many examples of environmentally ideal behavior. The use of inadequate technologies and failures in the forest management process caused the degeneration of Brazilian ecosystems. The way natural resources have been used in Brazil dramatically imperiled the Atlantic Forest, which has been reduced to 7% of its original area, and also threatens the Caatinga, the Cerrado, and the Amazon Rain Forest.

The combination of ecological and economical aspects in the elaboration of public policies for the industry is essential to promote the sustainable use of natural resources. It is important to remember the fact that Brazil has an indisputable forestry talent, as well as a leading

position related to the technological knowledge for the formation and management of fast-growing forests. Nevertheless, it is necessary to make investments in the implementation and management of native and planted forests, regulation of the hydrological system, climate moderation, soil conservation, and protection of biodiversity.

Investment opportunities have been increasing gradually. The lack of resources scenario registered in the last decades changed significantly when Brazil reached economic stability associated to the economy globalization. The country started attracting external capital and adopting new technologies from the forest-based industries, increasing the demand for raw materials from the forests.

Brazil is the greatest producer and also the greatest consumer of tropical timber in the world. The Amazon centralizes the production of native forests, while the plantations are located in the Southern and Southeastern regions. They have supplied forest raw material for furniture, iron metallurgy, as well as timber and cellulose paper processing industries.

In some cases, such as in the Amazon, the environment pays a disastrous price for this production, repeating the predatory use model applied to Paraná pine forests and the Atlantic Forest. Being responsible for over 30 million cubic meters of logs – 85% of native forests annual production, the timber exploitation in the Amazon also accounts for an unacceptable rate of waste, due to the inefficient model adopted for the processing and refining of logs, which allows only 35% of the removed stock to be used.

In the Caatinga, the firewood production accounts for 35% of the Northeastern region energy matrix, and it is an important job-generation factor, especially during drought periods. But most of firewood production is done without the appropriate management, even if there are reports describing successful sustainable management experiences indicating that the system is capable of continuously maintaining the use of the forests, and to contribute towards quality of life improvement and the con-

servation of water resources.

The creation of the National Forest Programme stands out in this context. Its mission is to promote the sustainable use of native and planted forests, encourage reforestation activities, restore permanent preservation areas, legal reserve areas, and altered areas, give support to economic and social initiatives by traditional and indigenous peoples living in the forests, prohibit illegal deforestation and predatory extraction of forest products and subproducts, and also prevent and restrain forest fires.

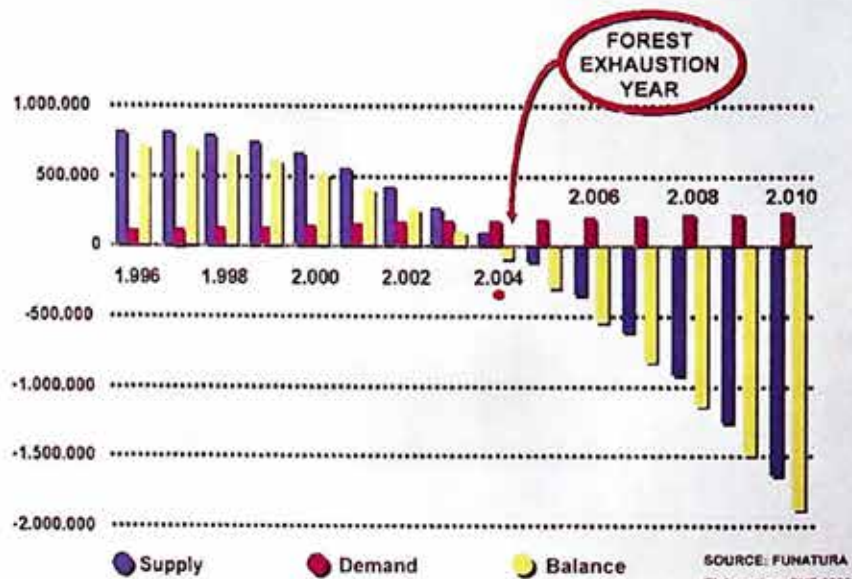
PNF also intends to promote the sustainable use of production forests, give support to the development of forest-based industries, extend domestic and international markets for products and subproducts, attach greater importance to environmental, social, and economical aspects of the services and advantages offered by public and private forests, as well as encourage the protection of biodiversity and ecosystems.

For that purpose, the programme was created in the

form of thematic lines, based on a wide process of consultation with the society and in accordance with the projects and activities provided in the Multi-Year Plan – PPA/2000-2003. The Secretariat for Biodiversity and Forests within the Ministry of the Environment has already registered the first results of PNF implementation in 2001, and has identified a series of challenges to be overcome in the next few years.

Expansion of planted forest base

The investments in forest planting in Brazil, mostly by the production sectors and some states, have been proving to be insufficient related to the demand. In accordance with surveys by the Brazilian Silviculture Society (SBS) and industry associations, there is an imbalance between supply and demand of the necessary timber to meet the growth projections of the forest-based industries (see graph below).



Deficit Indication for Planted Forests

The paper and cellulose industry projections indicate high growth rates, and this process will accelerate in the next few years with the installation or expansion of production units. For this industry, PNF's goal is 170 thousand hectares/year.

In the regions where there are scarce native forests with sawn wood production, the gradual replacement of

raw material from primitive forests with the raw material produced from reforestation is expected. PNF's goal for the solid timber industry is 130 thousand hectares/year.

This trend towards an increasing demand for raw material from planted forests, as opposed to native forests, is also confirmed in the production of charcoal and firewood. Charcoal was a distinct item in PNF goal defini-

tions: 250 thousand hectares/year. For the firewood production, the goal is 80 thousand hectares/year.

In its first year after the implementation, PNF reached a total of 7,300 hectares of planted forests, thanks to agreements between the Ministry of the Environment and the States of Santa Catarina, Goiás, Minas Gerais, and Espírito Santo. The successful experiences in the states will be a model to be adopted in other states with similar characteristics in the next few years.

Among the results registered for the first year of the programme, we can also include the definition of the macrozoning as an instrument for the identification of priority areas for forest planting, in accordance with the production sectors, in a way to make financial mechanisms feasible for such activities in small- and medium-sized rural properties. Based on such instrument, it was possible to schedule the allocation of resources from *Programa Florestar*, of PPA/2000-2003, to the charcoal production sites.

The Ministry of the Environment has completed the surveys on the allocation of resources from forest restoration and the development of a special financing line from *Pronaf – Programa Nacional de Agricultura Familiar* (National Programme for the Familiar Agriculture) for planting forests in agrarian reform settlements.

Aiming to promote the adoption of reforestation techniques by family farmers within a consortium system, the Ministry established partnerships with non-governmental organizations and state governments and reduced bureaucratic obstacles, exempting small rural producers, in some areas, from presenting a project and requesting technical inspection in case of forest planting of native or exotic species for cutting.

Another measure to simplify bureaucracy was the adoption of *Simples Florestal* programme, which attaches great importance to the sustainable management at all levels, especially at community level, making the control of illegal and predatory activities more efficient.

In parallel to the actions aiming to engage small rural producers in the reforestation efforts, the Brazilian Agricultural Research Corporation (Embrapa) was responsible for the development of a number of researches to meet the needs of timber production agents. Among the themes developed in 25 projects and 101 subprojects on

research & development and technology transfer, we can find subjects from conservation and management to transformation and use of forests and agroforests.

The main challenges for the PNF are the technical support and the development of financing conditions for small and medium rural producers to plant forests. One of the successful experiences was the *Programa Florestal Catarinense* (Santa Catarina State's Forestry Programme), which in 2000 granted support to over 5,000 producers and planting of 4,800 hectares of production forests in 293 municipalities. The challenge now is to expand the programme to other states.

Management of native forests in public areas

Most of the 373 million hectares representing the production potential in native forest areas belongs to the private sector. One of PNF's main objectives is to extend and consolidate the base of managed forests in public areas and improve the management system adopted for the sustainable use units.

Such inversion would offer a number of advantages, both in forest exploitation sustainability and the economy. Firstly, it would make the supply of raw material for the logging industry permanent, continuous, regular, and balanced, in accordance with market needs. Furthermore, it would allow a greater value addition and exploitation profitability, as forest use in public areas would not require the private sector to fix capital in land. Other advantages would be the reduction of certification costs and the greater accessibility to forest resources by the communities.

One of the programme's goals for 2010 is to extend national forests (Flonas), state forests, and municipal forests of Legal Amazon by 50 million hectares – at least 10 million hectares by 2003. This year, PNF's proposition is that Flonas can supply at least 10% of the demand for timber from the Amazon.

Flonas represent 1.6% of Legal Amazon territory, which is enough to supply only 11% of the demand for timber in the Amazon, even if planned. To meet the current demand of the industry, it would be necessary to increase Flonas' presence in the Amazon to 14%. In countries with a strong forest-related participation in the

economy, that rate reaches 8% (United States), 14% (Malaysia), and even 27% (Indonesia).

In the Northeastern region, the areas of national, state, and municipal forests must be extended to 1.5 million hectares until 2010 to meet the demand for firewood, non-timber products, and rural goods in the region.

The projections consider that 50% of the area in a national forest, on average, can be used for timber exploitation, and the remaining territory is reserved for permanent preservation areas, areas for community use, and zones without economic value.

The legislation that establishes the *Sistema Nacional de Unidades de Conservação* (National System of Conservation Units – SNUC) designates national, state, and municipal forests, extractive and sustainable development reserves to actions aiming to harmonize nature conservation and the wise use of part of its natural resources.

As the first results of the effort towards expansion and consolidation of native forest management in public areas, PNF created five national forests in the Northern Region, which extended the existing area to 16.7 million hectares. For the Northeastern Region, studies were developed aiming at the extension of Flonas' areas by 45,000 hectares.

The first step was to carry out a large survey on potential areas for the creation of national forests all over the Northern Region – past studies were limited to the State of Pará. Other surveys were commissioned to the Pro-Cerrado Foundation, which will research the legal instruments for forest use in public areas, and adopt the concession system for the sustainable exploitation of Flonas.

Furthermore, when editing the Presidential Provisional Act number. 2166/66, the government included forest management in legal reserves and in indigenous reserve areas, and exploitation by the community in a sustainable use system. With such actions, the government expects to extend forest production areas in a way to reach the goal of meeting 10% of the demand for timber from the Amazon by 2003.

Representatives of the logging industry, environmentalists, self-employed people, and forestry researchers took part in a large consultation to raise concerns and suggestions for the creation of a public forest network in the Amazon. The result will be the document *“As Florestas Nacionais na Amazônia – Uma Consulta a*

Empresários Madeireiros e Atores Afins à Política Florestal” (National Forests in the Amazon – Consultation with Logging Businesses and Agents Associated with Forest Policy), to be published soon.

Other instruments were adopted to subsidize management actions in public land, such as a series of complementary studies on themes related to logging commercial exploitation in national forests in the Amazon, and a productive model proposal to ensure sustainability in agrarian reform settlements. Furthermore, several lectures on themes alike took place in regional seminars where environmental management ways and sustainable development in the Northeastern Region were discussed.

There are still important challenges to be overcome in the next few years. One of them is the extension of studies on potential areas for the creation of sustainable use units in the Northeastern and Mid-Western Regions.

It is also necessary to build up the knowledge on public land management and forest concession, through consultation with the production sector, governmental and non-governmental institutions, and community leaderships.

Native forest management in private areas

The exploitation of forest resources in the Amazon is highlighted by a paradox born of the forest's very greatness: the abundance of resources and the easy access to them end up becoming obstacles for the adoption of sustainable management practices in native forests. Hence the need of intensifying property control by the government, through the creation of new sustainable use units. It would be an attempt to discipline the behavior of the economic agents, avoiding waste and building people's awareness of the need to adopt a sustainable model for the use of resources.

The itinerant exploitation, the lack of concern with sustainability, the waste, market characteristics, and the prices traded in the region, which do not offer a payment that is compatible with the economic potential of forest-based activities, are other factors that reinforce the control intensification idea.

The evolution of deforestation is associated with such

factors as the high concentration of private properties and low levels of agricultural and cattle-ranching productivity, which make pressure to open new frontier areas. The scenario is aggravated by social inequality, that creates excess labor, and by the practice of outrageous prices for standing wood. The result is a picture of unfair competition between the supply of forest raw material from deforestation and the one originated from the sustainable management.

To reduce the operational costs of management, making it economically more attractive than soil alternative uses, is one of the ways to improve the social and environmental quality of native forest production systems in private properties. It is necessary to promote the sustainable development of forest-related activities, not only ecologically, but also socially and economically, making management competitive.

PNF's goal in this context is that, by 2010, an area with 20 million hectares in private properties with native vegetation in the Amazon and 560,000 hectares in the Northeastern Region are incorporated to the sustainable production system.

The *Projeto Piloto de Apoio a Pequenos Produtores* (Support to Small Producers Pilot Plan) for the sustainable use of forest resources in 100,000 hectares was one of the results obtained in PNF's first stage. The project was accomplished in partnership with the *Associação de Apoio às Comunidades do Campo* – AACC (Rural Communities Support Association) and was made feasible due to the R\$500,000 support from the *Fundo Nacional do Meio Ambiente* – FNMA (National Fund for the Environment), aiming to share experiences and divulge sustainable forest practices specifically for the Northeastern Region.

The *Parcerias Empreendedoras* (Enterprising Partnerships) executive project was implemented in the same region, in partnership with Banco do Nordeste, aiming to improve the use of forest resources in the *Polo Gesseiro de Pernambuco* (Pernambuco State Plaster Pole) and to publish technical-educational booklets and manuals for extension work.

To optimize the sustainable use of forest resources in the Northeastern Region, legislation changes have been made, simplifying and unifying technical and administrative procedures. This work also involved the mobilization of municipal communities in the State of Pernambuco

to discuss how important it is to adopt sustainable management and forestry in rural properties.

In the Northern Region, among the first results there is the final report of the Regional Workshop on the Definition of Criteria and Indicators for Sustainability of Amazonian Forests in the context of Tarapoto process. Furthermore, the definition of strategic and financial instruments to extend areas of sustainable production; and the dissemination of alternative techniques for sustainable management, through Production Units and Pilot-Units for the restoration of degraded areas.

The Cerrado was also an object of studies and projects aiming to create units of alternative production, protection, and restoration of degraded areas, sustainable use, and management. One of the projects is about the Sustainable Use of Cerrado in Acaba Vida Settlement, in the State of Goiás.

To extend the scope of *Parcerias Empreendedoras* project is one of the challenges for the next year. Likewise, the promotion of community and business management and the incorporation of management techniques developed for the Cerrado in degraded areas within Guariroba production pilot-units, in the Northeastern Region.

It is also necessary to negotiate R\$5 million in funds for the conservation and management of the Cerrado, as well as to introduce alternative techniques to improve extractive productivity and to commission new strategic studies for other areas affecting forest management.

Monitoring and Control

The monitoring and control programme is specially aimed at forest integrity maintenance, through the reduction of illegal deforestation, accidental fires, and forest fires. For that purpose, the decentralization of monitoring, control, and inspection activities is essential, through the development of specific action plans for each biome.

During its first year, PNF could start the adoption of control and inspection regional plans while developing the Amazônia Figue Legal programme. The elaboration of other plans for the Mid-Western, Northern, and Northeastern regions is being carried out through a partnership with the *Fundação de Empreendimentos Científicos e Tecnológicos* (Foundation for Scientific and Technologic

Projects – Finatec).

The environmental police forces in the States of Espírito Santo, Minas Gerais, São Paulo, and Rio de Janeiro, and also the Ibama inspectors of those states were offered qualification and training courses, which may be extended to a greater number of police officers. Ibama and the states need to be prepared to assess and monitor the georeferenced management system, and to strengthen their defense mechanisms for the wise use of Conservation Units.

Traditional and indigenous populations

The adoption of a new sustainable forest development model, specially in the Amazon, requires emergency actions related to land regulation, strengthening of community organizations, and guaranteed income for traditional and indigenous populations, that must be incorporated to the productive process, in order to make forest exploitation sustainable.

It is crucial to harmonize community interests and environmental conservation, mainly due to the deep knowledge these populations have, with a view to the forest production potential of their land. The technical support combined with the sustainable management, the multiple use of native forests, and the empirical knowledge is essential to improve life conditions in those communities.

The participation of the Ministry of the Environment in this type of actions was through an agreement with the *Conselho Nacional de Seringueiros – CNS* (National Council of Rubber Tappers) for the organization of a national seminar when guidelines and joint action lines were elaborated. The Ministry of the Environment also took part in the activities through consultancy related to discussions on the Forest Code and the creation of national forests.

It is also necessary to make agreements for the definition of PNF guidelines in relation to traditional populations and indigenous reserves, as well as fund raising for projects by these communities. In this context, PNF works together with Ibama, the Secretariat for the Coordination of Amazon Affairs, and non-governmental organizations.

Forest Education, Science, and Technology

Forest education is an essential instrument to improve productivity, reduce waste, and add value on the products obtained from the exploitation of natural resources. The low productivity is predominant both in plantation areas and in native forest management areas.

One of PNF's objectives is to promote technical and upper forest studies, with a view to improve productivity, reduce waste, and add value on the products, as well as to enhance sustainable use practices. The expected result is the extension of managed areas and recovery and restoration of permanent preservation areas, legal reserves, and degraded areas.

As a consequence of the wide PNF dissemination in events and the media, the Ministry of the Environment obtained the regional diagnose from the main agroforest system initiatives, aiming to increase the productivity of small- and medium-sized rural properties

Through the promotion of seminars and congresses, the Ministry of the Environment disseminated information on the restoration of degraded areas and general direction for activities. Using resources from FNMA and with the support from the Federal University of Minas Gerais, the Ministry implemented a project for the development of mixed plantation of eucalyptus and caatinga tree species, aiming at the sustainable timber supply for *Jaíba-Florestas de Produção* project. In Brinco de Ouro settlement, located in João Câmara (State of Rio Grande do Norte), the result from educational actions was the increase in productivity, raising producers' income by 30%.

The universe of the population involved in forest-related activities must be extended, especially in relation to technological support to traditional and indigenous populations. Simultaneously, it is necessary to keep improving FNMA financing system and coordinating efforts with the *Programa Nacional de Educação Ambiental* (National Programme for Environmental Education).

Environmental services of the forests

Carbon fixation, the protection of water springs, the

conservation of waterway banks, and the preservation of biodiversity are some of the environmental services performed by the forests. The indirect financial return from these services may be obtained, for example, through the application of part of water rates on the restoration of permanent preservation areas in hydrographic basins.

To establish a value for the environmental services performed by the forests is essential. Furthermore, it consists in one of the main tools to encourage resource conservation and provide particularly land owners with the necessary means to make decisions on forest resource alternative uses.

The United Nations Framework Convention on Climate Change establishes the Clean Development Mechanism – MDL (*Mecanismo de Desenvolvimento Limpo*) as one of the instruments for valuing environmental services. The Ministry of the Environment has been taking active part in government forums to define the legal payment mark for forest environmental services. It also works towards the inclusion of degraded areas restoration in the financing mechanisms of the *Fundo Constitucional do Centro-Oeste – FCO* (Mid-West Constitutional Fund). In the case of land settlement programmes supported by Banco da Terra, the Ministry works to disseminate conservation and restoration of Permanent Preservation Areas, for the benefit of 58,000 families.

To reach the goal of restoring 100,000 hectares/year of permanent preservation forests in priority areas of hydrographic basins, it is necessary to edit new normative tools create new financing mechanisms, and encourage projects that use resources from FCO, in addition to the development of new studies on strategies and criteria that meet the clean development mechanisms, and the improvement of Banco da Terra rules in relation to forest-related activities.

Institutional strengthening and forest extension

In order to achieve PNF goals, institutional management decentralization is necessary, simplifying bureaucracy and making the process more efficient. One of the programme's goals is to give flexibility to forest resources management as a way to strengthen the institutions that

dedicate themselves to such task.

During PNF's first year, it was possible to note a greater interaction of the programme with non-governmental organizations and state and municipal environmental institutions, in addition to the strengthening of support Units.

The Ministry of the Environment gave technical support to the *Consórcio Intermunicipal da Bacia Hidrográfica do rio Itapemirim* (Intermunicipal Consortium of Itapemirim River Hydrographic Basin), through a 30-thousand-copy reprint of the booklet "*Vamos cuidar dos nossos rios*" (Let's Take Care of Our Rivers), used as support material in technical-educational actions. It promoted a series of activities in partnership with the government of the State of Espírito Santo and also in the State of Pernambuco. Furthermore, it published the public notice of the *Rede Nacional de Sementes* through the *Fundo Nacional do Meio Ambiente* (National Fund for the Environment), supporting the forestry project in small- and medium-sized rural properties.

The next expected actions include the availability of new professional recycling courses in the Northeastern states, in partnership with non-governmental organizations. Also, the publication of an atlas on the biodiversity in the Northeastern states, following the example of the State of Pernambuco.

Modernization of forest-based industries

The technological excellence may offer forest-based industries an increase in productivity, quality improvement of products, and environment management, resulting in greater competitiveness in the global market. Through labor qualification it is also possible to reduce waste and add value on products.

One of PNF's proposals is to provide objective conditions for this to happen. The programme also intends to encourage the processing of species that are less known in the market and seek efficiency in the processing of non-timber products.

The goal for 2003 is to improve efficiency in timber processing in the Legal Amazon from the current 35%-40% to 50%-60%. It is also intended to increase the value

addition on processed timber products from 25% to 40%.

One of the problems PNF worked on in its first year was the intensity of the use of firewood and charcoal from the Caatinga when composing the energy matrix for North-eastern Region industries, where these products are an important power source for the population and the other economy sectors.

The legal prohibition against the use of oil products in the structural ceramics production increases the demand for firewood as fuel. PNF presented the businessmen in this sector a series of alternatives to improve power efficiency and to reduce pressure on native forest resources from the Caatinga.

Firewood and charcoal represent 30% and 50%, respectively, of primary energy generated in the region. In the State of Paraíba, both products overcome electricity and oil-derived products as energy sources, accounting for 41% of the energy matrix. In the States of Rio Grande do Norte, Paraíba, Pernambuco, and Ceará, the biomass accounts for 35% of the energy used by the industries.

The environmental impacts caused by the demand for firewood and charcoal are massive, specially neighboring ceramics poles. Seridó pole, in the State of Rio Grande do Norte, is one of the desertification zones in Brazil.

In order to alter such a devastating picture, PNF negotiated a specific credit line with Banco do Nordeste to help small rural producers in the development of agroforestry, specially in agrarian reform settlements, in such a way that firewood and charcoal are produced from Caatinga management and reforestation with exotic species.

In the Competitiveness Forum of the sector, promoted by the Ministry of Development, PNF suggested the elaboration of design projects, restructuring of forest industry, and the adoption of product certification according to the quality and productivity programme.

For the next few years, a greater challenge is to ratio-

nalize the use of resources in the Caatinga, through actions that reduce industry consumption of firewood, replacing it with fossil fuels and optimizing their use when necessary.

Market and commercialization of forest products

The demand for timber continues to increase, requiring environmental quality and a higher added value on the products. In a context of demand sophistication by a more and more selective consumer in relation to the product origin, a consumer who prefers products derived from forest management, there is an increasingly strong need for the private sector to invest in the modernization of its industries, perfecting labor and reducing waste.

One of PNF's goals is the increase in the participation of Brazilian forest sector in domestic and international markets, extending its presence in the tropical timber world market from 4% to 10% by 2010, and increasing exports of sustainable origin from less than 5% to at least 30% in the same period.

In its first year, PNF developed some important activities in this context, reactivating or beginning its participation in forums about the subject, supporting discussions for the certification of forest management, taking part in the definition of the International Certification Process, following processes of forest certification of Amazon logging industries, and tackling conflicts among agents in this sector.

For the next year, there is the challenge of improving the forest certification system, in partnership with the private sector, in accordance with international standards and the Brazilian circumstances. Furthermore, it is necessary to encourage the sector to modernize the productive process and seek alternatives for product diversification.

3.2 - Forest Code

The need and the desire for a Code determining the wise use of our forests is over a hundred years old, dating back to the end of the 19th Century. It was materialized in 1934, with the publication of the "Brazilian Forest Code".

At that time, scientists and farmers joined forces around the need to protect water springs, the stability of rivers, hillsides and the environmental balance. After all, to protect the fertility of the soil, the productivity of the rivers and the

biodiversity is more than a sensible task – it means ensuring our own survival and national sovereignty.

The Forest Code of 1934, which had to wait more than 30 years to be enforced, was considerably modern for the time. It already introduced the concept that every forest in the country is an “asset of common interest to every Brazilian citizen”. It became of great importance for maintaining nature’s vital strength and balance and established the concept of permanent preservation area, creating the obligation to conserve critical areas, to ensure the stability of the soil and quality of water springs. It expressed the need to protect the marsh areas and established the concept of Legal Reserve, where each property is required to keep a percentage of forested area, according to the biome it is situated in, in order to ensure the stability of the natural system. This Reserve is devoted to the protection of the biodiversity and, at the same time, it can be managed so as to supply the property with the timber necessary for its activities.

In 1965, the Code was amended by Law No. 4771, which provided a series of alterations and adjustments inherent to the country’s new demands. Ever since, countless challenges have been added to already existing ones in conserving and restoring the environment in Brazil. A different framework for the use of forest resources was outlined, in view of new demands for forest-derived products, both nationally and internationally.

In 1995/96, with the expansion of the agricultural frontier in the Amazon, there was an increase in the number of deforestations and forest fires in the region, which accelerated considerably the destruction of the forest. In order to put a stop to this, the Federal Government established the Presidential Provisional Act No. 1511, published in June 1996, establishing a new parameter for the concept of Legal Reserve in the Amazon, dealing with the need to restore used, underused and abandoned areas. It brought new elements for public debate on subjects such as management, alternative use of forest lands and ordering of rural property use.

During the past few years, the process to enact the Presidential Provisional Act has been widely discussed in the National Congress, so as to foster various changes in forest management instruments. Consequently, it was necessary to reedit the Presidential Provisional Act, which

considered, among other subjects: the support to the definition of the state forest codes; alteration of forest management instruments; advances in knowledge and rules relating to the access to the biological diversity; strengthening of mechanisms of deforestation command and control; the need to restore the base for forest production; the importance of planted forest for the economy and employment generation.

These and other changes resulted in the interest in a complete modernization of the Forest Code, attuning it to the current need to simplify the legal norms so that they can be part of day-to-day relationship of man and forest.

Simultaneously, in order to consolidate these measures, the National Council for the Environment (Conama) created, in the beginning of 1999, a Technical Chamber to Update the Forest Code aimed at meeting this specific demand. This Chamber worked in partnership with representative entities of the society, state governments, environmentalists and economic sectors.

Six seminars were initially carried out, in which managerial, environmental, legal and economical issues were discussed, as well as international commitments. The idea was to create a conceptual basis for the general debate.

The mobilization around the Technical Chamber’s debate resulted in a wide public consultation. There were five regional and 21 state sessions, in addition to 73 sectorial meetings, directly involving 7,800 people representing 890 organizations. The process resulted in over 500 proposals presented in writing.

The main objective of the National Council for the Environment with this process is to promote a change in the paradigms so as to reach a scenario of forest sustainability, and it counts on the Ministry of the Environment’s support in this. For that, the government maintained its political decision not to allow the conversion of forest areas into agricultural or cattle-ranching areas.

The document assembling Conama’s suggestions for the reform of the Forest Code was submitted to the Congress’ Mixed Commission in March 2000. It served as a basis for the Presidential Provisional Act No. 2166-67, whose content the Mixed Commission intends to change.

The year of 2001 was especially devoted to regulating the concept and limits of the Permanent Preservation

Areas, which required some 30 meetings, seminars and consultations with the most varied specialists and sectors of society.

The process of public consultation also gave Conama the certainty that it is necessary to maintain the technological advances achieved in the forestry sector, so as to generate positive outcomes for the Brazilian economy, in addition to environmental impacts equally efficient as a stimulus for the restoration of Legal Reserves.

For a better understanding of the framework outlined by Conama in the document submitted to the National Congress for the reform of the Forest Code, below we examine some concepts and proposals which are crucial to the new model of sustainable use of Brazilian forests.

Legal Reserve

The idea is to ensure that the concept established is maintained, along with the advances related to the social and environmental services. Conama's proposition is to harmonize the interests of the land owner with the collective benefits derived from its use when defining a Legal Reserve. This can be made possible through mechanisms that are in compliance with the property's assets as well as contribute to the conservation of the landscape.

According to Presidential Provisional Act No. 2166-67, a Legal Reserve is the rural property area necessary for the *sustainable use of natural resources*, the conservation and restoration of ecological processes, the conservation of biodiversity and for the refuge and protection of native fauna and flora. In these areas, the vegetation cannot be removed, but it can be used under the sustainable management system.

The property area characterized as a Legal Reserve should be physically connected with other areas such as permanent preservation areas, for example, on a permanent basis, so as to allow the genic flow of animals and plants. It is permitted to establish a legal reserve under the system of joint ownership between more than one property.

In the economic aspect, in addition to the sustainable exploitation, it is necessary to create compensation mechanisms for land owners who ensure their reserves or who restore areas previously deforested – which can be made possible through public services of technical assis-

tance, and issuing of Legal Reserve compensation securities for properties within Conservation Units.

Permanent Preservation Areas

The concept of Permanent Preservation Area should be ensured as an untouchable space with a permanent environmental function.

The Permanent Preservation Area is defined by the Presidential Provisional Act No. 2166-67 as a protected area, whether covered or not by native vegetation, with the environmental role of preserving the water resources, the landscape, the geological stability, the biodiversity and the genic flow of fauna and flora in addition to protecting the soil and ensuring the well-being of human populations.

However, in order to improve the control over the Permanent Preservation Areas, it is necessary to redefine the dubious interpretation of vegetation versus area. The Ministry of the Environment's suggestion is a characterization per area, comprehending the space, whether covered or not by any form of native vegetation.

In this case, the limits defined by the current Forest Code for the Permanent Preservation Areas would be maintained, ensuring their environmental function. In addition to those, other limits could be defined according to the need to protect water springs, streamlets, rivers and geographic features.

The access to the Permanent Preservation Areas should be exclusively for water collection, with no risk of alteration to its characteristics. Removal of vegetation for construction purposes should also occur exclusively in the case of traditional populations whose occupation consists of personal dwellings, without constructions of collective interest.

Removal of vegetation in Permanent Preservation Areas is only allowed in case of public utility or social interest, and it depends on an authorization issued by the proper environmental agency, which should stipulate the compensatory measures to be adopted by the person or company in charge of the undertaking.

Environmental Easement

The idea is to establish compensatory mechanisms

for owners of properties within Conservation Units who voluntarily devote part of their property – other than the legal reserve – to serve the collective interest, or transform it into Private Natural Heritage Reserves. Later, the easement can be included in the context of environmental commodities and securities market, capitalized by society's interest in conserving the forests.

In the areas under forest easement, the use of vegetation should follow the same limits imposed for the legal reserve. The services could be certified with Forest Reserve Quota Securities (CRF), provided by environmentalist or ruralist organizations.

Sustained Management

The adoption of sustainable management systems for the use of forest resources meets the need to preserve the biodiversity characteristics and dimension and it should be the only form of access to the forest remnants, particularly in the Amazon region. This way it is possible to maintain the forest's structure and to satisfy the social and economic interests with the least environmental impact possible.

Sustainable agroforest management activities carried out in small farms, without decharacterizing the vegetal coverage or damaging the area's environmental function, are considered of social interest.

Incentives

In order to change the notion of obligation into encouraging mechanisms for rural owners to establish and maintain legal reserves and Permanent Preservation Areas, the idea is to create incentives, such as offering certification, technical assistance and even public securities enabling resources procurement for forest maintenance.

There are countless themes and sub-themes which should be reviewed while updating the Brazilian Forest Code, among them land ruling mechanisms, for urban spaces also, such as municipal master plans, ecological corridors, hydrographic planning and ecological and economic zoning.

The final decision is in the hands of the National Congress, where the Conversion Plan for the Presidential Provisional Act No. 2166-67 is to be voted. The text approved by the Mixed Commission, which was substantially changed in relation to Conama's proposal, could still be restored in the Congress. However, if the negotiations involving the Code's Reform fail to indicate the enactment of the Presidential Provisional Act as the best solution, another option is to introduce changes to the Code by means of ordinary laws, which involve simpler procedures. Either way, Conama is in charge of regulating the articles, and it is already working on the development of each theme.

3.3 - Atlantic Forest and Caatinga Programmes

1) Caatinga

In accordance with the objectives established by the Conference of the Parties on Desertification (COP III, June 1999) and the guidelines of the National Forest Programme (PNF), the Ministry of the Environment developed a project specially destined to the Caatinga, one of the five Brazilian biomes, representing almost one-fifth of national territory.

The project's total estimated cost is US\$ 110 million, and it is intended to develop, in three stages during

eight years, actions with three primary objectives: conservation and sustainable use of biological diversity and equal allotment of the benefits provided by the use of biodiversity; reduction of liquid emissions and increase in the storage of greenhouse gases in terrestrial and aquatic ecosystems, as well as conservation and sustainable use of water bodies and hydrographic basins.

The greatest challenge of the Caatinga integrated

management programme is to demonstrate a model of integrated development that is sound in a global point of view, by means of alternatives, which compensate the effects of the pressure on natural resources and increase forest cover, reducing desertification risks in the Brazilian Northeastern Region.

The actions will be developed in areas defined as priority for the conservation of biodiversity and for forest development in the Northeastern Region. They were identified, with the participation of representatives from all States, as areas that suffer high pressure for natural resources and need intervention towards a sustainable development model.

In the 14 priority areas chosen as the programme's action focus, a landscape approach will be adopted, emphasizing two problems identified as the main threats to the biome: the degeneration of the Caatinga and the poor management of protected areas to ensure the conservation of biodiversity. There are also selected hydrographic basins among the planning units for intervention at the landscape scale.

The Caatinga is a unique ecoregion among the Brazilian forests. It represents 18% of the country's surface (858,000 square kilometers) and includes nine Brazilian States. The so-called semi-arid region, concentrated in the Northeastern Region (States of Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, and Bahia), goes down to the North of the State of Minas Gerais, in the Southeastern Region.

The Caatinga includes unique characteristics, found only in Brazil. The heterogeneity of microhabitats existing in the region stimulates biological diversity in adverse climate conditions. The natural adaptations registered in the region attach an important biological and economic value to the biome, suggesting that the Caatinga can be a genome repository adapted to deep climate changes.

It is estimated that the Caatinga vegetation is composed of over 20,000 plants, at least 180 of which have been identified as endemic. In relation to the fauna, although there are still little information on Caatinga's exclusive species, 17 amphibian, 44 reptile, 270 bird, and 83 mammal species have already been discovered.

In addition to its biological importance, the Caatinga is considered a carbon pool, due to its enormous capacity

to store this element. The region's native vegetation is also essential to control soil erosion, which can lead to a general degeneration of the land. Its preservation and reposition becomes even more necessary in view of the 181,000 square kilometers of Caatinga area identified as having a high risk of desertification.

The forest offers the Northeastern Region population an easy and inexpensive energy source: the firewood, that accounts for one-third of the energy matrix in the region. The firewood is used in small- and medium-sized rural properties, and intensively used by industries, replacing oil-derived products, as a way to make costs cheaper and products competitive.

Rural owners consume, on average, 80% of the Caatinga resources within their own property (60% in the form of firewood). The commercialization of the remaining resources composes up to 15% of their total income. In spite of that, the forest resources exploitation in the region is considered only a way to mitigate the costs of land preparation for cattle-ranching – which is considered the main economic activity.

The result is that over 50% of Caatinga's original cover has already been transformed by human activity, making this one of the most threatened biomes in Brazil. Deforestation and degeneration have accelerated in the last two decades.

The protection of the Caatinga is one of the three main objectives of the programme and it is directly related to the necessity to strengthen the Conservation Units in the biome. The number of existing units in the region is considered insufficient, and does not include all categories necessary to ensure the protection of the biome. Many of the created units proved to be small for the adequate protection of local biodiversity, specially the protection of animals requiring large territory extensions.

The management of the existing Conservation Units is poor and cannot count on an adequate financing system. In addition to the low technical qualification of human resources, the lack of basic equipment and of a minimum work infrastructure, there is still the issue of units location, usually in very isolated and inhospitable areas. The existing mechanisms for the long-term maintenance of resources and the income or funds generation are incipient and little efficient.

With the support from the Global Environment Facility (GEF), the Brazilian public power, at federal and state levels, together with non-governmental organizations, will be able to optimize efforts to implement the existing Conservation Units and other units as necessary.

One of the proposals is to create new Conservation Units, both in public and private areas, from studies on the biodiversity of potential areas and on the diagnosis of hydrographic basins in the priority areas. These operations must be naturally related to the search for new financing strategies and to campaigns to raise people's awareness of the importance of the Caatinga.

It is also necessary to organize the already existing Conservation Units, through its technical and operational apparatus, a diagnosis of its status, the technical capacity of the owners and those in charge of the management, financial support, and the elaboration of Management Plans.

Together with the creation and implementation of Conservation Units, the project turns to another issue: the sustainable use. Today in the semi-arid region, there are an endless number of non-sustainable practices of natural resources, such as overgrazing, the uncontrolled use of fire, the low cut for firewood and charcoal extraction, habitat destruction, predatory hunting, and destructive harvesting. Such practices significantly imperil the biome's resistance, directly affect its vast biodiversity, and put economic sustainability in jeopardy.

There is low efficiency in the transformation and final use of forest products associated to predatory practices, causing wastes that lead to a greater consumption of biomass. In spite of the availability of technological knowledge to improve production, transportation, and use of firewood and charcoal, for example, the inefficiency to disseminate such techniques, and the absence of financing lines for those interested in adopting them have harmed the implementation of appropriate alternatives.

The possibility of sustainable use of forest resources must also be considered in the agrarian reform human settlement model adopted by government agents and technical assistance organizations. The resources that could represent a crucial factor in rural families subsistence, providing them with constant income, are currently being irrationally exploited, which contributes for land degeneration and causes the marginalization of these families.

In the context of the project *Manejo Integrado de Ecossistema e de Bacia Hidrográfica na Caatinga* (Ecosystem and Hydrographic Basin Integrated Management in the Caatinga), the Ministry of the Environment proposes to carry out, through consortiums, a series of actions that are appropriate to revert the degeneration scenario. The idea is to create alternatives to restore degraded areas with native species and sustainable forest management, in order to reduce desertification risk.

Firstly, it is necessary to demonstrate the feasibility of sustainable practices of natural resources use. The hydrographic basin – selected with the participation of local agents – will be the activities planning and management unit. In each basin, a plan for integrated and participatory management of natural resources should be developed, with the implementation of demonstration units of technical alternatives and organization for sustainable management. The project *Demonstrações de Manejo Integrado de Ecossistema e de Bacia Hidrográfica na Caatinga* (Demonstrations of Ecosystem and Hydrographic Basin Integrated Management in the Caatinga) has already been approved by the Secretariat of International Affairs – SEAIN and the Foreign Financing Committee – COFIEX, and submitted to the GEF, with a budget of US\$ 20 million.

Activities destined to the incorporation of sustainable practices of natural resources use in agrarian reform settlements are also planned. A number of partnerships among the institutions involved in the process can lead to the adoption of basic concepts of sustainable management in settlement projects.

The Multiple and Sustainable Use of Natural/Forest Resources in Agrarian Reform Settlement Projects (*Utilização Múltipla e Sustentáveis dos Recursos Naturais/Florestais em Projetos de Assentamento de Reforma Agrária*) was presented before the Ministry of Development and Agrarian Reform. The project plans to insert the environmental/forest variable into the settlements' productive system, ensuring sustainability in 33 reference units that will function as disseminators of a rural extension programme for forest resources valuation in family economy.

Another alternative project proposal plans to include the economic potential of forest resources in a settlement

area located at Serra das Abelhas Ranch, Araripe region, State of Ceará, where the largest plaster pole in Latin America is located.

A series of activities was planned towards efficiency increase in use, transformation, and final use of forest products from the Caatinga. For that purpose, investments will be made in the qualification and training of local teams, a diagnosis of the use of timber and non-timber products, demonstration units of efficient use of energy forest resources and sustainable management of non-timber resources, dissemination of alternatives and maintenance of funds specifically destined to the technological development of Caatinga products.

In the energy sector, the project Alternatives to Reduce the Energy Consumption by the Red Ceramics Industry in the Northeastern Region was selected by the Ministry of Science and Technology/Financing Agency for Research and Projects – FINEP to take part in Energia Brasil Demonstration of Innovative Products and Services for micro, small, and medium-sized businesses, which will take place in 10 Brazilian state capitals.

There are also initiatives towards institutional strengthening, which is the case of the proposed Project of Technical Assistance to the National Forest Programme in the Northeastern Region, a partnership with the United Nations Food and Agricultural Organization – FAO and Italian Cooperation. This project aims at the qualification

2) Atlantic Forest

The Atlantic Forest, one of the five Brazilian biomes, is considered one of the richest groups of ecosystems in the world in terms of biological diversity. In spite of its importance, and the immense degeneration it has suffered since the discovery of Brazil, until the late 90s it did not earn the same institutional attention devoted to the Amazon Forest – which is the main target of the Pilot Programme to Conserve the Brazilian Rainforest (PPG7).

In October 1999, after a series of studies on the biome carried out by experts at the request of the Ministry of the Environment, PPG7 participants approved the Action Plan for the Atlantic Forest, which was converted into subsidies for the development of the Atlantic Forest Subprogramme within PPG7.

of States, Municipalities, and Ibama in the forest technical field. In partnership with Araripe Foundation, a plan for ordering the use of forest resources will be developed.

A Technical Cooperation Term was also signed with seven of the nine states in the Northeastern Region and with Banco do Nordeste, aimed at undertaking actions leading to the development of the forest sector, to institutional strengthening and to the qualification and dissemination of information and technical experiments in the sustainable use and exploitation of the forest resources in the Northeastern region.

The attachment of economic, social, cultural and ecological value to the products and services offered by the Caatinga underpins all of this work. For that reason, it requires – in addition to the activities already described – the identification of the economic, social and cultural value of these products and services, the evaluation of current and potential markets for them, investment in research and development aimed at raising their value, the concession of financial and tax incentives, and an improved inspection of the transportation, commercialization and use of forest products.

These tasks will require reviewing forest-related laws in the states composing the Brazilian semiarid region, so as to update the legislation and adapt it to the new demands for a harmonious relation of man with the Caatinga. For the survival of both.

The PPG7 is a Brazilian government programme that was developed due to the encouragement and a proposal of the Group of Seven (G7), which comprises the world's most industrialized countries. It originated from a proposal of the German government, approved in 1990, demonstrating the feasibility of harmonizing the economic development with the environment protection of the rain forests.

PPG7's objectives are to contribute to the conservation of the rainforests' genetic resources, to reduce the contribution of the Brazilian forests in carbon global emissions and to provide an example of cooperation between developed and developing countries in global environmental issues.

Because of its expressive dimension and world im-

portance, the Amazon Forest has been the focus of PPG7's efforts since the beginning, resulting in an allotment of rather shy investments to the Atlantic Forest. The attention devoted to the Atlantic Forest is reduced to 37 demonstrative projects – PDAs, one of PPG7's five lines of action – implemented in nine Brazilian states. The PDAs concentrate in the areas of Environmental Preservation Systems, Forest Management Systems and Agroforest Systems and Environmental Restoration.

In accordance with the bilateral projects stipulated by the PPG7 – which are developed directly by donor countries and Brazilian institutions -, the Atlantic Forest benefited from a cooperation with Germany and France, which support activities in the states of São Paulo and Paraná, and negotiate projects with the states of Minas Gerais, Rio de Janeiro, Santa Catarina and Rio Grande do Sul. Furthermore, the Ecological Corridors project is under appreciation and it is to be implemented initially in the states of Bahia and Espírito Santo.

The development of the Atlantic Forest Subprogramme within the PPG7, under the responsibility of the Brazilian Ministry of the Environment, was underpinned by the Guidelines for the Conservation and Sustainable Development of the Atlantic Forest Policy, approved by the National Council for the Environment (Conama) in December 1998. The proposal was later discussed in three seminars carried out between July and September 2000.

The Atlantic Forest, which is now reduced to 7.6% of its original cover, is also very fragmented - it is distributed along the Brazilian coastland by continuous stretches from the state of Rio Grande do Norte, in the Northeastern region, to the state of Rio Grande do Sul, in the South. The forest's presence is more expressive in the Southeastern and Southern regions, but there are also significant forest patches in the Northeastern and Mid-western regions.

In its current 95,000 square kilometers, the Atlantic Forest harbors a series of quite varied phytophysiognomies, which confers a significant environmental diversification to it, and consequently the presence of an extremely rich vegetal and animal biotic complex.

Human activity is the main threat to the Atlantic Forest. According to studies carried out by the SOS Atlantic Forest Foundation and published in 1998, between the years of 1990 and 1995 over half a million hectares of

forests were destroyed in nine states of the Southern, Southeastern and Mid-western regions, which concentrate about 90% of what is left of the biome. In other words, it is as if 714,000 soccer fields crammed with forests had been wiped out from earth in only five years, at the rate of a soccer field every four minutes. A destruction rate proportionally three times as higher as the Amazon Forest during the same period.

Nevertheless, even if reduced and fragmented, the Atlantic Forest still has a major importance, thanks to the direct influence it exerts on the lives of 80% of the Brazilian population. In the cities, rural areas, indigenous and fishing communities comprehended by it, the Forest regulates the flow of the water streams, ensures the fertility of the soil, controls the climate and protects mountain range escarpments and hillsides. In addition to that, it preserves an immense historic and cultural heritage and it harbors landscapes which are genuine tropical paradises, and whose protection is crucial for the development of ecotourism.

Some of the projects developed in the last few years were specifically directed at the need to harmonize the exploitation and conservation of the biome, the survival of which human life itself depends upon.

Ecotourism is just one of the areas for which the preservation, restoration and sustainable use of the Atlantic Forest can provide good business and investment opportunities. In a seminar on the subject, this and other sustainable economic alternatives for non-timber exploitation of the forests were discussed. The goal is to reach Zero Deforestation in the Atlantic Forest by 2005.

In accordance with the priority lines of action, the Water and Forests Project was implemented in partnership with the National Council for the Atlantic Forest Biosphere Reserve and the SOS Atlantic Forest Foundation. The project's objective is to restore the use of and comprehension over the strategic role of the forests as water producers, particularly in the areas of direct influence for water supply systems.

Other projects were developed aiming at the creation of tools for the biome's defense, assessment and information, with an emphasis on: the identification of financing alternatives, both public and private; an enhanced monitoring for the biome, in partnership with non-governmental organizations, in order to control illegal defor-

estation; and mapping of the biome's remnants and associated ecosystems in the states of Rio Grande do Norte and Paraíba.

There are also two important projects under development in partnership with the Atlantic Forest NGOs network. The first, *Participative Monitoring*, is carried out by the Socioenvironmental Institute and it already qualified 17 institutions in georeferencing systems and it pro-

duced the Atlantic Forest Dossier.

The other, *Who does what for the Atlantic Forest*, counts on the partnership of the Atlantic Forest Network with the Atlantic Forest Biosphere Reserve, the Socioenvironmental Institute, and the World Wildlife Fund (WWF). Through this joint action, about 900 projects were registered in the areas of Atlantic Forest conservation, restoration and sustainable use.

Integrated Strategy for the Cerrado and Pantanal Regions

In August 1999, the Ministry of the Environment, along with the Secretariat for Biodiversity and Forests, created a workgroup to carry out the elaboration and implementation of an integrated action plan for the biomes Cerrado and Pantanal. The group's first step was to establish the conceptual grounds on which to base the proposals and guidelines of the preservation policy and sustainable use of the biomes, as well as the strategy proposal, with its goals, actors, and implementation instruments.

The group has conducted the harmonization of guidelines and goals that reflect the priorities and opportunities at federal, state and municipal levels from the map of Priority Actions for the Preservation of the Biodiversity of Cerrado e Pantanal and the Brazilian Agenda 21, among other documents.

Besides assuring the protection of 10% of the Cerrado/Pantanal region, the group was particularly concerned about engaging all sectors of the society in the efforts to preserve the biological diversity, keeping economic and cultural interests a fortiori. It takes more than legal hindrance and penalties to perpetrators to make the model successful. It is necessary to convince people that the future use of land should be taken into consideration when deciding the present use.

In a region as large as the Cerrado/Pantanal, putting in tune nature preservation and economic development is a much complex challenge, especially if the understanding of the existing interdependence

among preservation, welfare, progress, and socioeconomic development is taken into account.

The most common threats to the Cerrado/Pantanal region are: uncontrolled burning, constant fire, difficulty in protecting springs, water resources, and forest galleries, soil exhaustion due to silting, predatory tourism, and substitution of native vegetal cover with consequent loss of habitats and biodiversity.

The workgroup finds the strategy of relating nature preservation to a human need paramount for the success of the plan. Therefore, the plan approaches several action fronts: environmental education and awareness, law enforcement, promotion of sustainable use practices, maintenance of the ecosystem function, consolidation and expansion of protected areas, preservation of endangered species and of genetic resources in their critical habitat, among other lines of action.

Some of the main guidelines established for the Cerrado/Pantanal region are:

- To promote an arrangement for the use of soil by means of instruments such as the economic-ecological zoning;
- To preserve, value and recover both the national heritage and the built patrimony;
- To reduce the socioeconomic unbalances and improve the life standards of the population, ensuring the sustainable use and preservation of natural resources;
- To recognize the ethnical and cultural diversity,

the value of traditional knowledge, and the rights of traditional indigenous tribes;

- To foster the use of environmentally adequate technologies, strengthen family farming and re-incorporate degraded areas;
- To promote the environmental recover of areas damaged by mining;
- To encourage economic activities based on the sustainable use of the biodiversity;
- To harmonize the planning and construction of transport and power infrastructures in the region;
- To furnish soil management and preservation practices;
- To adopt a set of measures designed to preserve and monitor the use of water resources;
- To promote preventive actions to combat fire and

reduce slash and burning;

- To broaden the protected areas in order to have a better representation of the ecosystem;
- To foment the use of new environmentally correct technologies and furnish the lines of scientific and technological research, which are essential to the Cerrado/Pantanal region;
- To integrate and match sectorial policies for the benefit of sustainable development;

Each guideline unfolds a number of specific goals, with set purpose and deadline. Depending on the complexity of the action, the goals can be extended for five years or more. However, a good deal of them allows for the attainment of results in a shorter term, especially if there is the indispensable participation of the community.



Santa Catarina State's Forestry Programme – Employment and Income Generation

Launched by the State Government and counting on the support of the Ministry of the Environment as well as with the participation of small farmers, the Income and Labor Generation Forestry Programme in Santa Catarina State has overcome all expectations. As an integrating part of the Santa Catarina State's Forestry Programme, this project associates the recovering of forest areas with labor and income generation for small farmers who were about to leave their lands due to the lack of conditions to produce. After one and a half year of its beginning, over R\$ 7 million were allocated, 4,794 hectares of forests were planted in 215 municipalities and 5,036 families benefit from the project.

The project, an income subsidy programme, works as follows: small family farmers, with family income below the minimum wage level, with no harvest conditions, and, therefore, impelled to leave their lands and search for work in urban areas, are now receiving 50% of the minimum wage – during four years – as an income in advance, with a ten-year grace period. In exchange, they commit themselves to harvest two hectares of forest (half hectare a year).

The project's goals are not modest at all: that is, the purpose is to benefit 40 thousand families until 2006, when 112 million trees shall be planted in 80 thousand hectares. Besides direct benefit to the families of the regions, the expectation is that along with income, immediate employment, future income and timber stocks generation, 20 thousand new employments will be created in the forestry productive chain.

The gross income of these 40 thousand families shall be reaching R\$ 1.68 billion in the next 20 years only with the sale of forest raw material. The production of such raw material, through reforestation, shall prevent 480 thousand native trees from being fall in Santa Catarina State – a state with strong timber tradition.

The project becomes even more outstanding if

we consider the State's forestry vocation and the agricultural production model, which is based on small and medium properties. Considered one of the world's greatest forestry producers, Santa Catarina had half of its lands abandoned since they were no longer able for both agricultural and cattle-raising activities. However, reforestation in these areas, especially when fostered, is an activity that may reach high levels of competitiveness.

In addition to generating income and employment for small rural proprietors (who are about to migrate to urban areas in search of better life conditions) by providing alternative economic investments to make them stay in the rural area, the project contributes to the preservation of native forests and expands the State's forestry basis in order to meet the increasing demand for forestry raw material of good quality.

In June/2002, one year after the establishment of the covenant between the Ministry of the Environment – MMA and the State Government, the results obtained from the inspection carried out by MMA's technicians were amazing. During the inspection, they found a number of properties where two hectares of forests have been planted instead of the required half-hectare for that year.

The problems that occurred during the project's implementation – related to the quality of seedlings, pest control and technical assistance – have been quickly solved and businessmen from the timber sector promptly have proposed the establishment of purchasing contracts in advance.

Resources for the project are obtained through amendments proposed to the Federal Government General Budget by the Santa Catarina State parliamentary block at the National Congress. For the years 2001 and 2002, the MMA allocated a total amount over R\$ 7 million – approximately R\$ 2 million in 2001 and R\$ 5 million in 2002.

Cerrado's Agroecological Development Center

The *Centro de Desenvolvimento Agroecológico do Cerrado - CEDAC* (Cerrado's Agroecological Development Center) is a sustainable rural development initiative supported by the Secretariat for Biodiversity and Forests of the Ministry of the Environment, which works with farmers and extractivist farmers in the State of Goiás, aiming to insert them in sustainable projects that grant them social-economical and cultural values.

Through an agreement signed in 2000 by the Ministry of the Environment and Cedac, 166 hectares of agroforest systems were implemented with family farmers, involving 62 families in five municipalities. Twenty-four forest species were cultivated, combined with 16 agricultural species, and their production was already traded in the first year.

The Project includes the construction of a community seedbed for the production of native species in São Sebastião da Garganta settlement, located in Silvânia, State of Goiás. At that place, 55 thousand shoots were produced in plastic bags.

The initial results encouraged its continuity. In 2001, the Ministry of the Environment gave support to the development of over 50 hectares of agroforest systems with 35 families, and the implementation of four demonstration units of totally ecological agroforest systems.

A new seedbed was constructed in Boa Esperança Small Producers Association, located in Caldazinha, State of Goiás, with a production capacity of 110 thousand shoots of Cerrado native species in seedling tubes. This seedbed represents the possibility of increasing Goiás State forest base, in agroforest systems, and at the same time it offers an improvement of family farm-

ers' income and quality of life through production controlling and the multiple use of forests.

Within this context, one of the projects that received support was Baru (*Dypterix alata*) sustainable management, developed by Cedac. In 2000, this project involved 40 families that carried out the ecological collection of 700 bags, or 19 thousand kilos of fruits. In 2001, 25 thousand more kilos were picked with the participation of 112 families from seven municipalities.

The collection and commercialization work helped to improve the family income of 750 people. It also resulted in the appreciation and conservation of the Cerrado, and lead those families to remain in the rural region.

With Baru, it is intended to encourage the use of Cerrado potential by local farmers and extractivist farmers. One of the project's rules allows only 90% of the fruits on the ground to be picked.

Baru pulp is employed in cattle feeding as complementary source of energy. Its wood can be used for making fence posts, stakes, posts, floor beams, and also for both building construction and ship building.

During baru collection, the families received R\$ 3 per fruit bag, as an advance payment for its trade. For the joint commercialization of nuts, a processing unit was constructed in Caldazinha. The products are sold with the Empório do Cerrado logo.

This work originated the *Rede de Comercialização Solidária de Agricultores Familiares e Extrativistas do Cerrado* (Joint Trade Network of Cerrado Extractivist and Family Farmers), comprised by 331 families from 10 municipalities.



World Natural Heritage Sites

To protect the natural and cultural monuments of relevant interest for the Earth and Mankind's history is such a world concern that has been granted the status of International Convention by gathering and integrating actions from several countries. Such effort has been strengthened after the movement towards the salvation of important Egyptian monuments that were about to be flooded by the construction of the Assuan Dam, occurred in the 50's and 60's. About ten years later, upon the establishment of the UNESCO's Convention on the World Heritage, in 1972, 529 Cultural

Sites, 138 Natural Sites, 23 Mixed Sites and 16 Cultural Landscapes have been submitted to the World Heritage List.

The strong interest of the countries in inscribing new sites makes this an evergrowing list. Until 1998, however, Brazil had only one representative area out of the 138 areas representing nature's utmost features – this was the Iguacu National Park, in Paraná State, with extremely valuable remainders of the Interior Atlantic Forest as well as a magnificent waterfall complex attracting tourists from all over the world.

World Natural Heritage Site Iguacu National Park - PR



Joint-Programmes with UNESCO

On the other hand, between 1999 and 2000, in addition to Cataratas do Iguacu (Iguacu Waterfalls) the Brazilian List of natural sites submitted to the World Heritage gained four new members. They are: the Costa do Descobrimento (Discovery Coast), in the States of Bahia and Espírito Santo; the Atlantic Forest Reserves, in São Paulo and Paraná State's coastal zone; the Pantanal (Central Swamps) Complex, in the States of Mato Grosso and Mato Grosso do Sul; and the Jaú National Park in the State of Amazonas.

Until the middle of 2002, the proceedings of two new sites (which are currently in process) shall be concluded. They are: The Cerrado (Central Brazilian Savannas) – Protected Areas Series, in Goiás and Mato Grosso do Sul States and the Brazilian Atlantic Areas, comprised of Fernando de Noronha and Atol das Rocas Archipelagoes, in Pernambuco and Rio Grande do Norte, respectively. New proposals are being prepared for the years to come.

The extremely rigid yearly selection, a process submitted by the country where the natural site is located, is carried out each year by the World Heritage Committee. The dossier includes a comprehensive report with accurate information, maps, slides and other documents. As regards natural sites, not only the exceptional beauty is taken into consideration, but also their geological and biological significance. Among the landscapes protected by UNESCO there are the fabulous Grand Canyon's mountain complex, which is run through by the not less monumental Colorado River, in the United States, and the Australia's Great Coral Barrier.

Many advantages are given to the Community earning the seal of the UNESCO's World Heritage. Among them, to function as an appeal to the Ecotourism industry – one of the world's fastest growing industries – and the possibility of being the focus of investments and financial support. However, more than being a prize to the nominated country, it is a nation's commitment.

Each country, upon having one of their sites in-

scribed in the list, shall undertake the task of looking after the nominated sites and preserving their integrity. When, due to mismanagement, invasions, earthquakes or even war, the site happens to be the focus of any sort of endangerment, it can be enrolled in the Endangered World Heritage List and, consequently, be entitled to require priority of analysis, follow-up and resources from the World Heritage Fund in order to fulfill its primary needs.

The purpose of the nomination by UNESCO is also to have these sites managed, and kept in accordance with the best techniques, both by the government and the community, which will make them the country's paradigm in terms of management for the whole System of Protected Areas.

The first Brazilian Sites inscribed in the World Heritage in the 80's, have been classified as Cultural Sites that were chosen among the most representative human creation. Therefore, just as the Great Wall of China and the Egypt's Great Pyramids, the Brazilian Urban Ensembles of Ouro Preto and Olinda, the Congonhas do Campo Shrine, the Jesuitical Missions and the Pelourinho, in Salvador (Bahia State's capital city) are currently integrating the Cultural World Heritage List. Afterwards, São Luís do Maranhão (Maranhão State's capital city), Diamantina and Brasília have been included in the list.

Thanks to the archaeological remainders and the remarkable rupestral paintings, the Serra da Capivara National Park has been nominated Cultural World Heritage. However, because of its nature's exuberance, the Brazilian government is considering to request the changing of the classification to Mixed Site (both Cultural and Natural).

Upon having taking over office, the Minister José Sarney Filho and his team opted for a course of action that, in addition to increasing the Brazilian participation in the UNESCO's World Heritage Convention, should be focused on the achievement of the nomination of at least one expressive site of each one of the main Brazilian biomes.

Discovery Coast - Atlantic Forest Reserves

In December 1999, during the Committee's yearly meeting, UNESCO recognized the Discovery Coast – a complex of eight protected areas located in the Southern region of Bahia State and Northern region of Espírito Santo State, with an area of 111,930 hectares of Atlantic Forest – as Natural World Heritage. The Una Biological Reserve, in

Bahia State, home to the golden-headed lion tamarin (*Leontopithecus chrysomelas*), is one of the areas comprised by the complex.

Land tenure and the small size of the area (only 11 thousand hectares, which needs to be enlarged) are the major difficulty for preserving this area. In Monte Pascoal National Park, another Discovery Coast's area, the Pataxó Indians issue deserves attention.

As it is located in a region with relative demographic density, the preservation of the Discovery Coast requires special attention as regards both the use of these protected areas' surroundings and the Forestry Management Plans developed therein.

The Work Group created with the purpose of dealing with these sorts of problems has already solved the trash issue in most of the surrounding municipalities. It has also been successful in its attempts to enroll the whole site in the First Segment of the PPG-7's Ecological Corridor Programme that will allocate US\$ 12 million for the conservation and sustainable use of the region's natural resources.

**World Natural Heritage Site
Discovery Coast
Atlantic Forest Reserves
Bahia and Espírito Santo States**



Atlantic Forest - Southeast Reserves

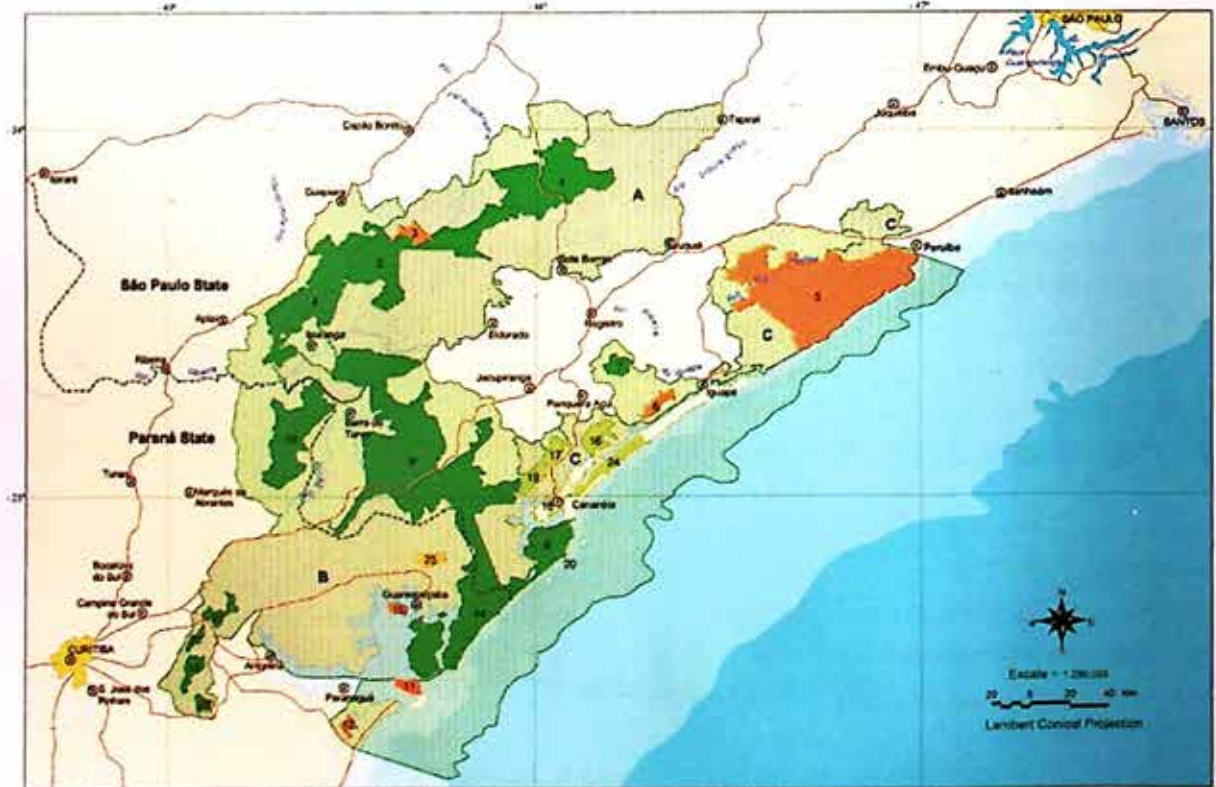
Also in 1999, the World Heritage Committee nominated another Brazilian site comprised of 25 protected areas, located between the Southern region of São Paulo State and Northern coastal zone of Paraná State – the so-called Atlantic Forest – Southeastern Reserves.

Encompassing, among others, the Intervales and Jacupiranga Parks, the Juréia and Ilha do Mel Ecological Stations, the Marshland Permanent Preservation Areas and the Superagui National Park, the whole area covers 468,193 hectares. This site represents the very heart of the Atlantic Forest's most preserved area, which, in addition to its biological riches, presents landscapes of impressive beauty.

As in other sites, this area's preservation is not an easy task. Among the area's major problems, there are the occupation of Superagui and Ilha do Cardoso Parks by the Guarani Indians and the difficulty of implementing the Jacupiranga State Park. The high intensity of the economic and tourist activity in the region is also a problem. There is still the need of adopting a suitable production system for this Eco-tourism pole, despite the increasing of experiences with sustainable use.

In December 2000, the World Heritage Committee enrolled two other Brazilian sites in the UNESCO's List – the Pantanal Mato-grossense Protected Areas Complex and the Jaú National Park in the Amazonas State.

World Heritage Site Atlantic Forest Southeastern Reserves - São Paulo State and Southeastern Region



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| <ul style="list-style-type: none"> National and State Parks Ecological Station Sylvan Life Zone Private Reserve Buffer Zone Buffer Zone A - Serra do Mar EPA B - Guarapicaba EPA C - Caniçã Iguape Peruipe | <p>Protected Areas</p> <ul style="list-style-type: none"> 1 - Carlos Botelho State Park 2 - Intervales State Park 3 - Xaú Ecological Station 4 - Alto Ribeira State Park 5 - Juréia Itaipava Ecological Station 6 - Chauli Ecological Station 7 - Panqueira Abaixo State Park 8 - Ilha do Cardoso State Park 9 - Jacupiranga State Park 10 - Lauratubas State Park 11 - Ilha do Mel Ecological Station 12 - Guarapicaba Ecological Station 13 - Pico do Marumbi State Park 14 - Superagui National Park 15 - Guarapicaba Ecological Station 16 - Serras do Corvo Sylvan Life Zone 17 - Serras do Arrepado Sylvan Life Zone 18 - Mangues Sylvan Life Zone 19 - Serra do Itapitangu Sylvan Life Zone 20 - Ilhas Oceânicas Sylvan Life Zone 21 - Roberto E. Lange State Park 22 - Serra da Graciosa State Park 23 - Pau Doco State Park 24 - Ilha Comprida Sylvan Life Zone 25 - Salto Morato Private Reserve |
|--|--|

Pantanal Complex

The Pantanal (Central Swamps) Complex, an area covering 187,818 hectares, comprises the Pantanal Mato-Grossense National Park and three adjacent Private Natural Heritage Reserves. The contrast between the Pantaneira lowlands and some mountains close to the Bolivian border makes this an area of great scenic beauty. Considered the heart of the Pantanal, the region gathers samples of ecosystems found in the Pantaneira Lowlands.

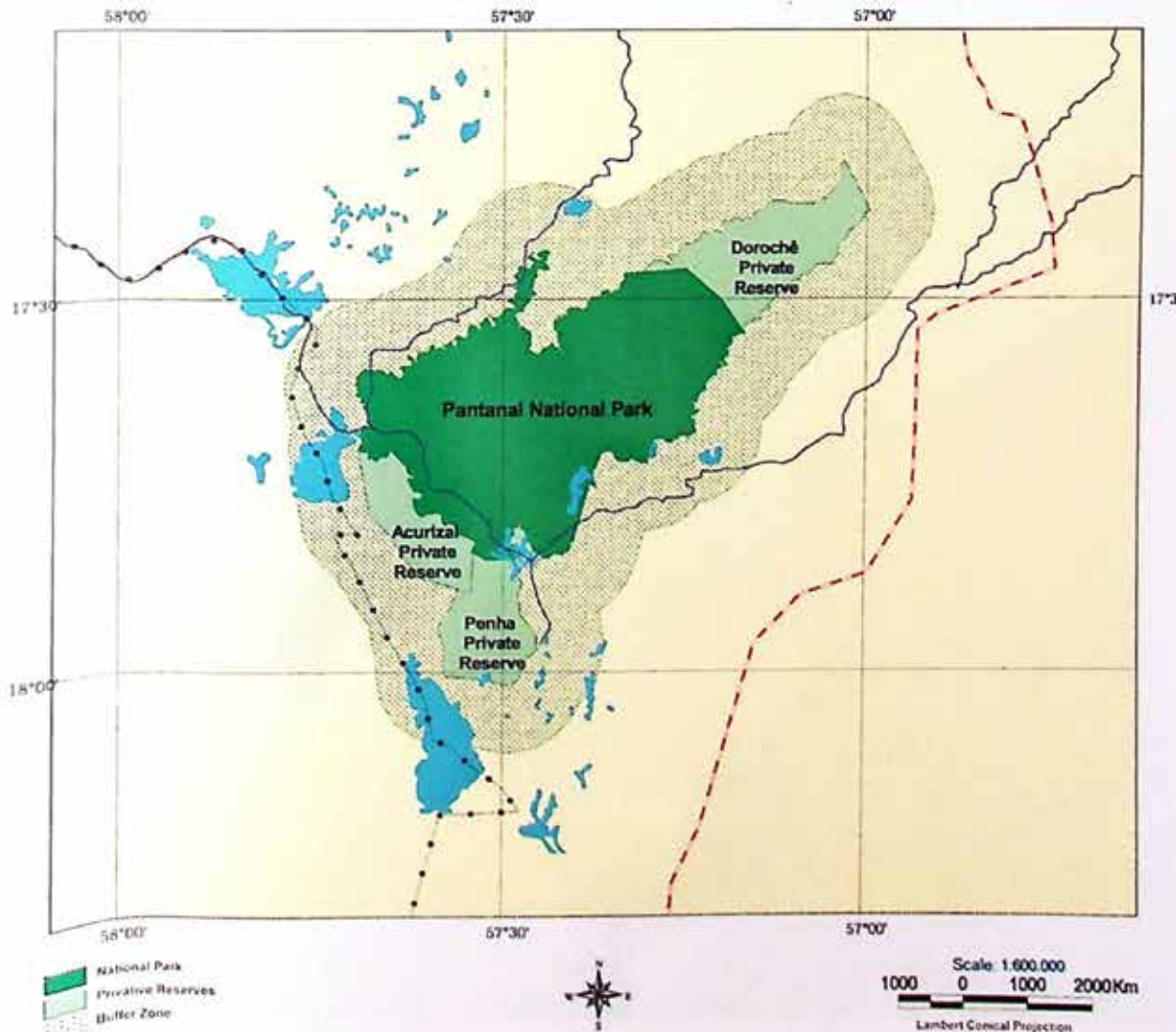
As in other places with the occurrence of long drought periods each year, the site's main problem is fire threatening. Ibama (Brazilian Institute for the Environment and Renewable Natural Resources), through the "Prev-Fogo" Programme², trained an emergency brigade. According to NGOs acting in the region, there is also the

uncontrolled increase of boats traffic in the neighbor Paraguay River. The Ministry of the Environment is also concerned with the possibility of hydrological changes that may silt up many of the region's waterways.

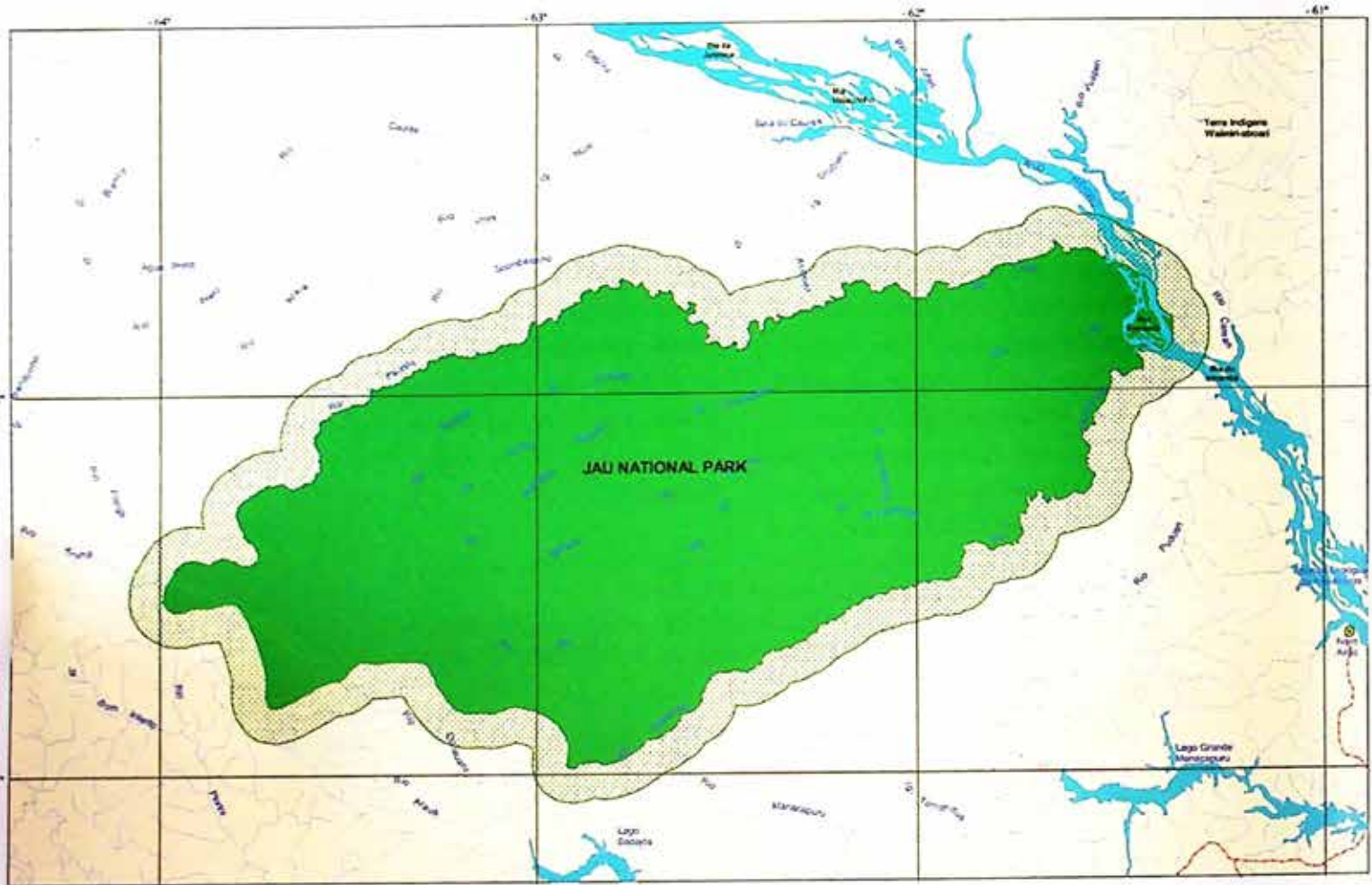
A joint-effort on the part of State Governments, the Ministry of the Environment and the Inter-American Development Bank – IDB, the Pantanal project allocates US\$ 400 million for conservation actions and sustainable use activities for the entire Pantanal region. The actions foreseen to the Upper Paraguay River Basin shall directly benefit the nominated area; however, there are also specific resources in the project to this World Heritage Site.

² Translator's Note: A fire prevention programme

**World Heritage Site Pantanal Conservation Complex
Mato Grosso and Mato Grosso do Sul States – 2000**



World Heritage Site Jaú National Park Amazonas State



Buffer Zone
National Park



Scale 1:1 250 000
0 20 40 km

Spheric Lambert Conical
Projection: IUGG - 67
Sources: IBGE, IBAMA

Jaú National Park

Located in Amazonas State, Jaú National Park's behemoth dimension is both a merit and a major problem. To safeguard the 2,272,000 hectares of the largest Brazilian park – also the world's largest park comprising a rain forest – is such an imperative task. This park is home to important samples of the Central Amazon's characteristic forest. The Committee has praised its recognition as World Heritage Site as a paramount contribution to the International List.

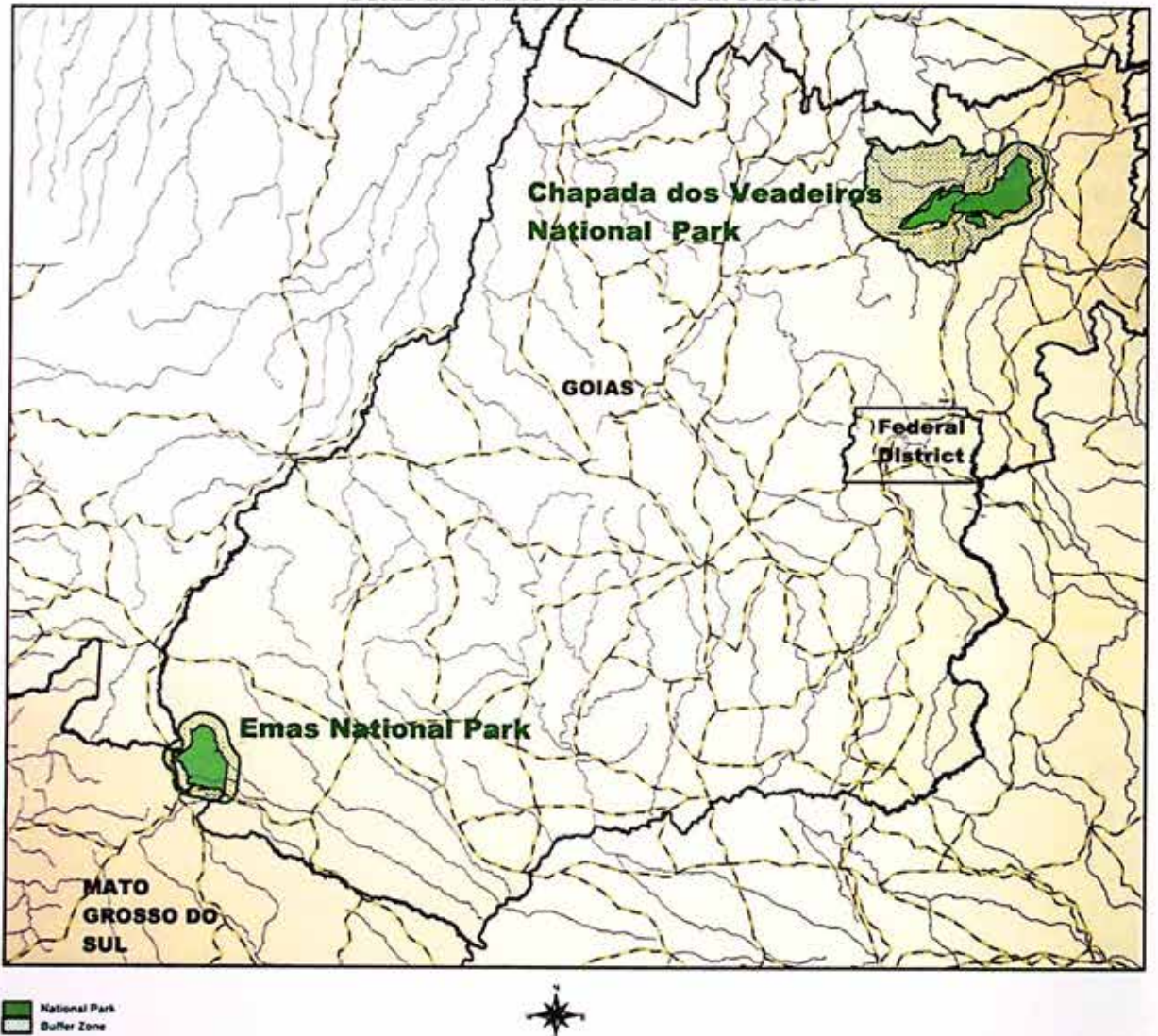
The Park's low populational density – only a few tens of families live in the area – decreases considerably the potential of conflicts in the area. However, the need for

seeking after an ecological and suitable solution must not be left off. Such task is Ibama's liability as well as the supervision of the Jau's immensity. Therefore, one of the areas deserving attention is the mouth of Unini River, located nearby Negro River, where Ibama has already arranged the establishment of a floating station.

As the Discovery Coast, the Jaú Park is located in the core of an ecological corridor, the Central Amazon's, which is supported by the PPG-7. The Park benefits both directly and indirectly from the US\$ 13 million allocated for this programme – concerning the implementation of the corridor at issue.



**World Heritage Site Cerrado's Protected Areas
Goiás and Mato Grosso do Sul States**



Cerrado Protected Areas

The Chapada dos Veadeiros National Park was created by the then President Juscelino Kubitscheck de Oliveira, in 1960. Afterwards, the Park's area was reduced in two occasions, until reaching 65,000 ha. Studies carried out by the Biodiversity Protection Project – PROBIO, pointed the need of extending the area with the inclusion of the *Campos de Altitude* (Altitude Fields) located in the Park's Northern region.

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In September/2001, the President Fernando Henrique Cardoso signed a Decree extending the Park's area to 235,000 ha. The Park, encompassed by the Pouso Alto Environmental Protection Area (created in 2001 by

the Government of Goiás State), is part of the Cerrado Biosphere Reserve's Core Zone.

Created in 1961, also during President Juscelino Kubitscheck's term, the Emas National Park (covering nearly 133,000 ha), protects a significant portion of this biome and accomplishes an important role regarding the protection of the Cerrado's fauna.

Besides the Rhea³ (*Rhea americana americana*), the bird that gives the Park its name, the Park presents an abundant avifauna such as partridges, seriemas, codornas, curicaca and caninde-macaw among others.

The Park is also home to endangered species such as the pampas deer, cervo-do-pantanal, great anteater, guará-wolf, puma, jaguar, toucans, curassows and the ocelot. Being part of Taquari River's heads, the most important tributary of the Upper Paraguay Basin, the Parks is also the core zone of the Pantanal Biosphere.

³ Translator's note: Ema (*Rhea americana americana*), Brazilian name to Rhea



Brazilian Atlantic Islands

The World Heritage Committee has also approved the proposal concerning the Brazilian Atlantic Islands, which encompasses the Fernando de Noronha Marine National Park and the Atoll das Rocas Biological Reserve. These two

areas are strategically important for the conservation of the marine biodiversity in the Brazilian coast. Located in the same mountainous marine chain, these conservation units harbor endemic species with planetary significance.



Location Map / Atlantic Islands



Encompassed by the Fernando de Noronha Environmental Protection Area (created in 1986, with an area of 93,000 ha), the Fernando de Noronha Marine National Park was created in 1988 with an area covering 11,270 ha. The presence of spinner dolphins (*Stenella longirostris*) in the Dolphin Bay shall be stressed.

The sole atoll in the South Atlantic Ocean, the Rocas

Atoll was nominated Biological Reserve in 1965 and protects an area of 36,249 ha. Home to Brazil's largest colony of marine birds, it is the place where 23 species from the North Hemisphere seek for shelter and food during their migratory routes. It is also the green turtle's (*Chelonia mydas*) nesting area and the hawksbill turtle's (*Eretmochelys imbricate*) feeding area.

Atol das Rocas Biological Reserve Rio Grande do Norte State



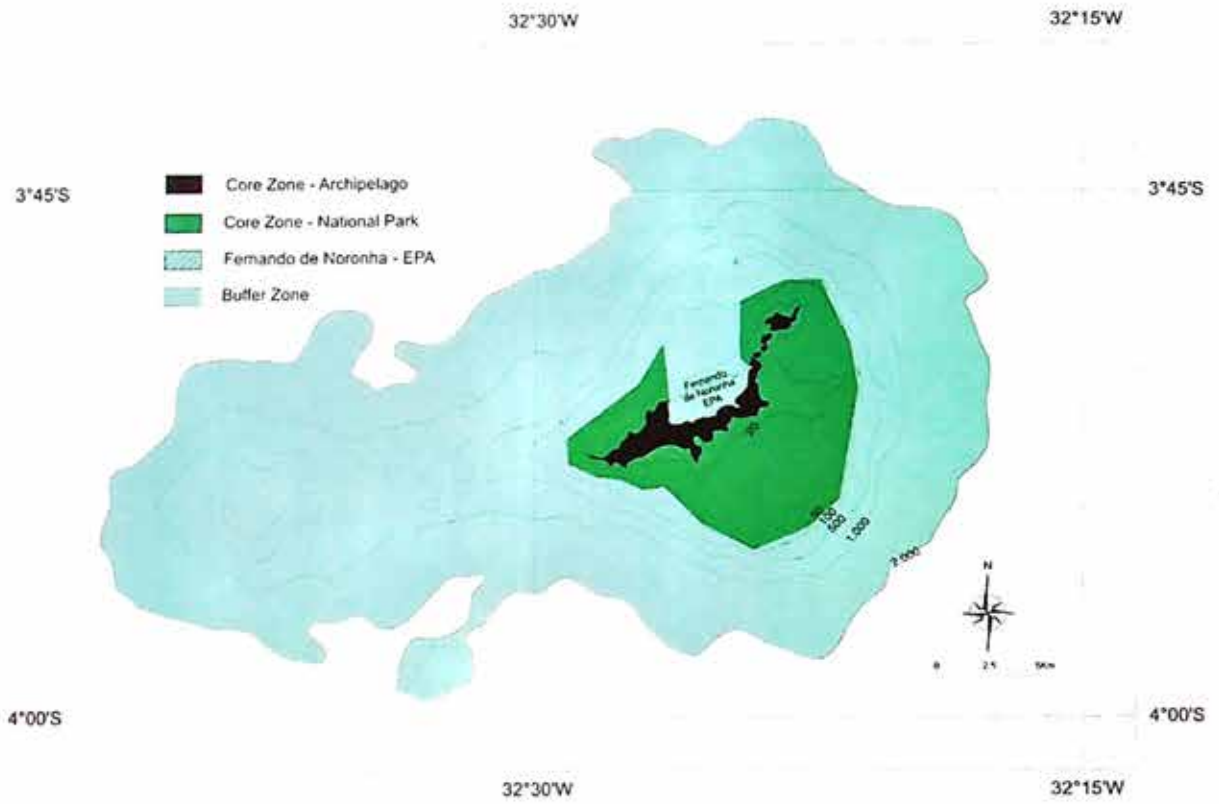
In 2000, the Brazilian Government presented a third proposal to the World Heritage Center concerning the inscription of the Serra do Divisor National Park, in the State of Acre. Such proposal, however, has been withdrawn for further analysis. Probably presenting the greatest riches among all Brazilian protected areas, this Park is one of the most important preservation areas worldwide.

In February 2002, the following proposals have been presented to the World Heritage: the Rio de Janeiro's Cultural Landscape, encompassing the Tijuca National Park, the Botanic Garden, the Sugar Loaf and the Urca Hill; and

the Lençóis Maranhenses National Park and Surrounding Mangrove Swamps, a coastal area with magnificent aesthetical and biological riches.

For the years to come, the Ministry of the Environment's purposes are to present proposals including three other sites: the Caatinga, Protected Areas Series, in the States of Bahia, Ceará and Piauí, which, if approved, would turn Brazil into a country with one representative of its biomes inscribed in the World Heritage List; the Araucária Forest, between the States of Santa Catarina and Rio Grande do Sul; and the Estrada do Ouro and Parati, which is part of the Bocaina Mountains.

Fernando de Noronha Archipelago Pernambuco State



In order to capacitate those who are devoted to conservation work and promotion of these area's sustainable use, the Ministry of the Environment's Secretariat for Biodiversity and Forests promoted, in October/2000, the first Management Course for World Natural Heritage Sites. In addition to Brazilian Sites Managers, the course, carried out in Foz do Iguaçu, counted with participants from Argentina, Uruguay, Paraguay

and Chile. Courses like this shall be periodically promoted.

Currently, we are finishing the proposal of a US\$ 5 million-project, already settled with the United Nations Foundations and several NGOs, and specifically focused on the Brazilian World Natural Heritage Sites. A comprehensive and important workshop on such programme was held on November/2001.

Rio de Janeiro's landscape as World Heritage

The Secretariat for Biodiversity and Forests has been coordinating the presentation to UNESCO of the proposal for the nomination of "Rio's landscapes: Pão-de-Açúcar (Sugar Loaf), Botanic Garden and Tijuca National Park" as World Heritage Site. A workgroup comprised of representatives of the Ministries of Culture and Environment has been created for that purpose. According to the World Heritage Center's expectations, the approval shall occur on June/2003.

Biosphere Reserves

Biosphere reserves are the brand new areas in the environmental battle. They are areas – chosen by the country and approved by UNESCO – whose biomes present typical collections of their biological diversity. In these areas, models of sustainable regional development shall be introduced, experimented and improved. Furthermore, a new ingredient shall be introduced in addition to biodiversity protection: the maintenance of the region's cultural values.

The idea of creating a world network aimed at protecting expressive biosphere areas came up in 1968 during the UNESCO's Conference on Conservation and Rational Use of Biosphere Resources. Three years later, in 1971, the Man and the Biosphere Programme – MaB was launched. This Programme's primary purpose is to conceive and to permanently improve an international plan towards the conservation and rational use of natural resources. One of such task's most palpable outcomes – which demand the improvement of global relations between man and the environment – is the development of strategies that ensure a better life quality to the planet's inhabitants.

The biosphere reserves have been designed to facing of one of the contemporaneous world's greatest challenges: that is, to promote the indispensable development in accordance with human needs and, simultaneously, to conserve the diversity of our biosphere's plants, animals and microorganisms.

The human dimension is such a paramount differential for biosphere reserves. The management of a biosphere reserve works as a pact between the government (in its different levels of decision) and the local society, which seeks for the harmonic cohabitation between man and nature. The management shall be open, dynamic and flexible. This is such an essential model to provide the local populations with reliable responses to external pressures – political, economic and social – that may jeopardize the region's cultural and natural values.

The Board of the Management System is liable for bringing different interests together as well as for the planning and coordination of the activities to be developed in

the region. These actions work as development models for the entire region under the reserve's influence. The implementation is both followed-up and supported by the Biosphere Reserve's State Committees.

There are two strategies as follows: (i) by means of delving into directed scientific research it is possible to accurately detect the causes of the progressive environmental degradation and, (ii) simultaneously, through the elaboration of a new planning tool in order to fight the effects from such processes, through the strengthening of citizenship towards the management's full achievement and through professional capacity-building for its implementation.

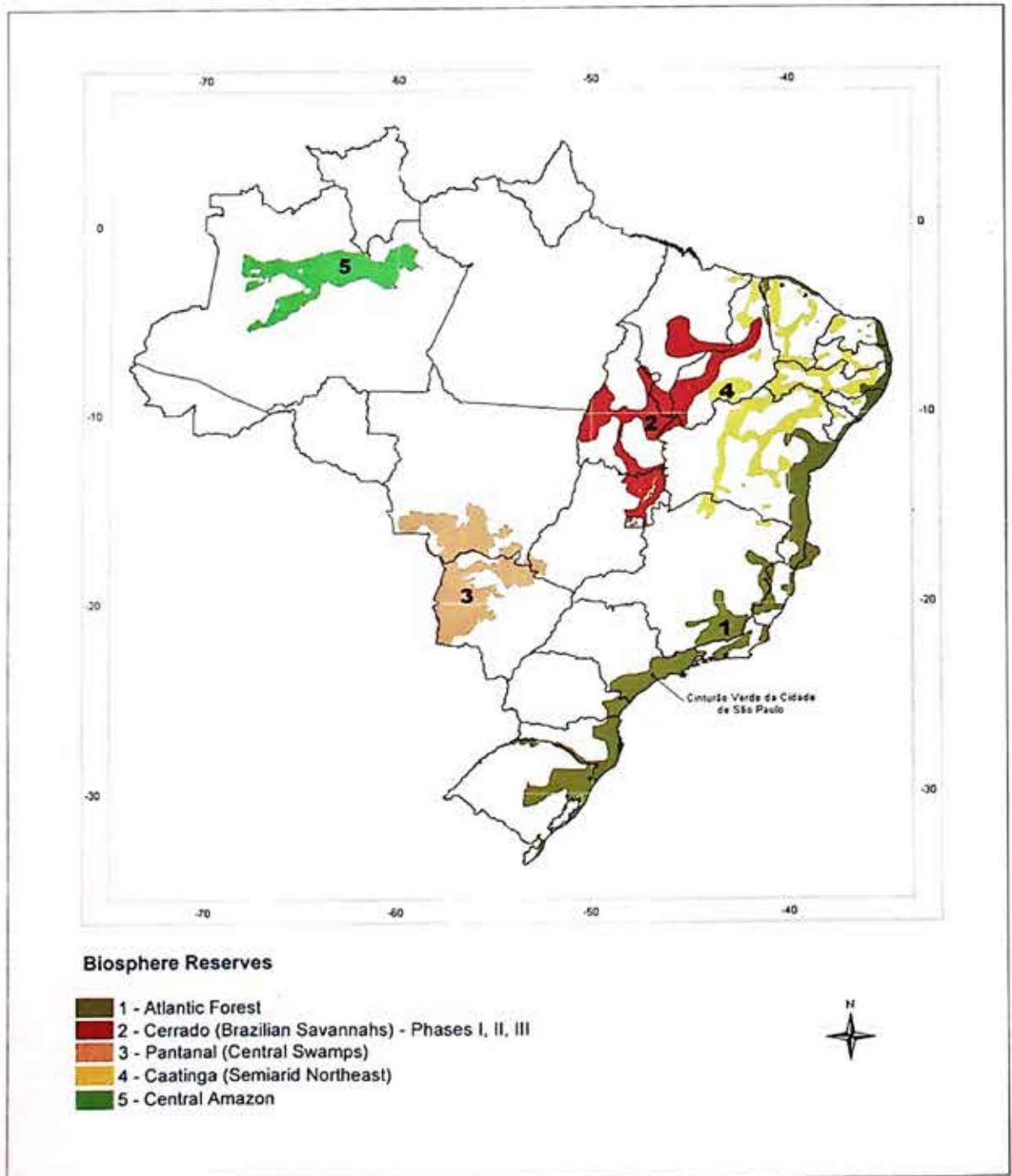
As an instrument for regional territorial planning, the effectiveness of a biosphere reserve should be measured through its ability to provide positive responses to the challenge of conserving both the region's biodiversity and traditional culture by promoting the sustainability of the economic initiatives developed therein.

In addition to conserving biodiversity and promoting human and economic development in an ecological and culturally sustainable way, a biosphere reserve supports researches aiming at delving into the scientific knowledge of the biome it is located.

The conservation of a biosphere reserve is planned according to a very specific zoning that has the purpose of defining soil use and characteristics of occupation. The Core Zones are comprised of integral protection areas (public areas - chiefly). They are: Ecological Stations, National Parks, Natural Monuments and Sylvan Life Refugia. There is also the Private Natural Heritage Reserves, which are private units focused on nature conservation. The focus in these zones is the conservation and recovering of altered areas. Scientific research and controlled and low impact-visits (including Eco and Adventure-Tourisms) are among the few activities allowed.

The Buffer Zones, comprised of sustainable use units and of a great number of private rural properties, surround the Core Zones. Among others, sustainable use units are the Environmental Protection Areas, the Relevant Ecological Interest Areas, the National Forests and

Brazilian Biosphere Reserves



the Fauna and Sustainable Development Extractivist Areas. The protection of the Core Zone's integrity is one of its noblest functions.

Geographically-specific researches on economic initiatives concerning the sustainable development of the Biosphere Reserve's regions and the experimentation and recognition of models for recovering degraded are carried out therein.

In the Buffer Zones, models of low-impact farming and cattle-raising or other low-impact activities are being adopted. Rural-Tourism is another activity expected for these areas, where there is an attempt to transform the region's inhabitants into an important ally for the conservation of the Core Zone's natural resources.

Surrounding the Buffer Zones there are the so-called Transition or Cooperation Zones, which are geographic spaces with a vocation for exchanging knowledge and experiences between sustainable and traditional developments (according to enterprising initiatives tested out in the Buffer Zones). In these regions we can find human settlements (towns) and farming and industrial activities, which should be developed through an integrated planning aimed at both the economic production and the community's welfare sustainability.

According to the International Conference on Biosphere Reserves held in Sevilla, in 1995, the primary function of the *quasi* 400 nominated biosphere reserves is to create opportunities for the populations living within,

or in the outskirts, of these reserves to develop a balanced relation with nature and, in the meantime, to provide to the entire society with the means towards a sustainable future.

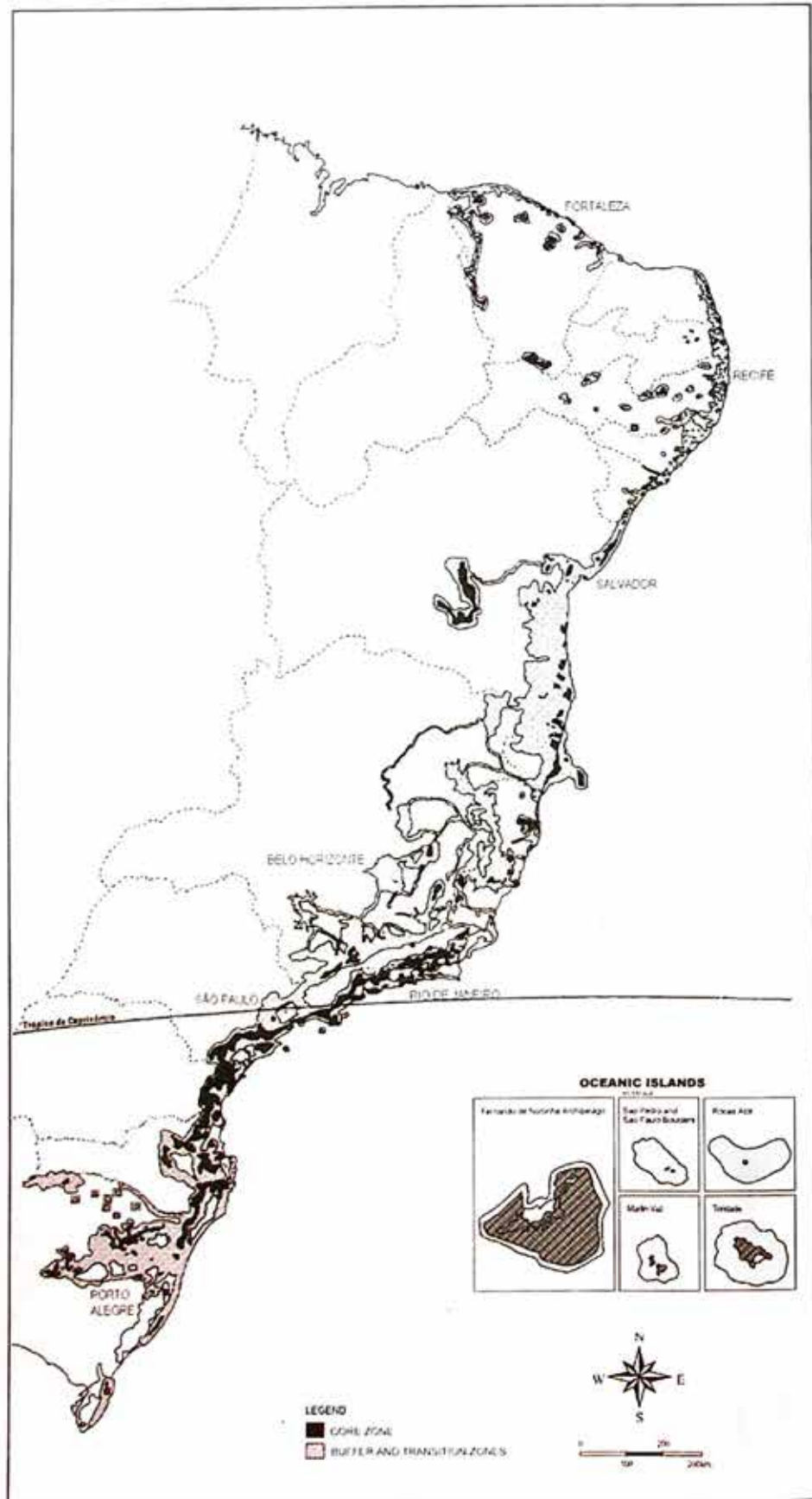
Brazil has five biosphere reserves, which are linked to the Brazilian Committee of the MaB Programme – Cobramab. Since 1999, the collegiate is coordinated by the Ministry of the Environment – which is responsible for the implementation of that programme in Brazil.

As the country with the planet's both greatest biological diversity and hydrographic network, Brazil has biosphere reserves in the five different biomes as follows: Amazonia, Atlantic Forest, Caatinga (Semi-arid Northeast), Cerrado (Central Brazilian Savannahs) and Pantanal (Central Swamps). Furthermore, there is the São Paulo City's Green Belt Biosphere Reserve, which is integrated with the Atlantic Forest Biosphere Reserve.

Because they have international support and visibility, the biosphere reserves leverage the governmental initiatives towards the sustainable development in many Brazilian regions by acting as facilitators in the search for international resources to foster the government's initiatives.

Brazil's newest conquests in the scope of the MaB Programme are the recognition from UNESCO of Cerrado – Phase 2 and the Pantanal Mato-Grossense as biosphere reserves in October/2000 and Central Amazon, Caatinga and Cerrado – Phase 3 in September 2001.

Atlantic Forest Biosphere Reserve



The Atlantic Forest

The first Brazilian biosphere reserve to be recognized (1991), the Atlantic Forest covers important portions of 14 states – being 13 coastal ones (from Ceará to Rio Grande do Sul) plus Minas Gerais State. Covering approximately 290 thousand square kilometers of the Brazilian national territory, it comprises nearly one thousand municipalities and covers 5 thousand kilometers of the Brazilian 8 thousand-kilometer coast.

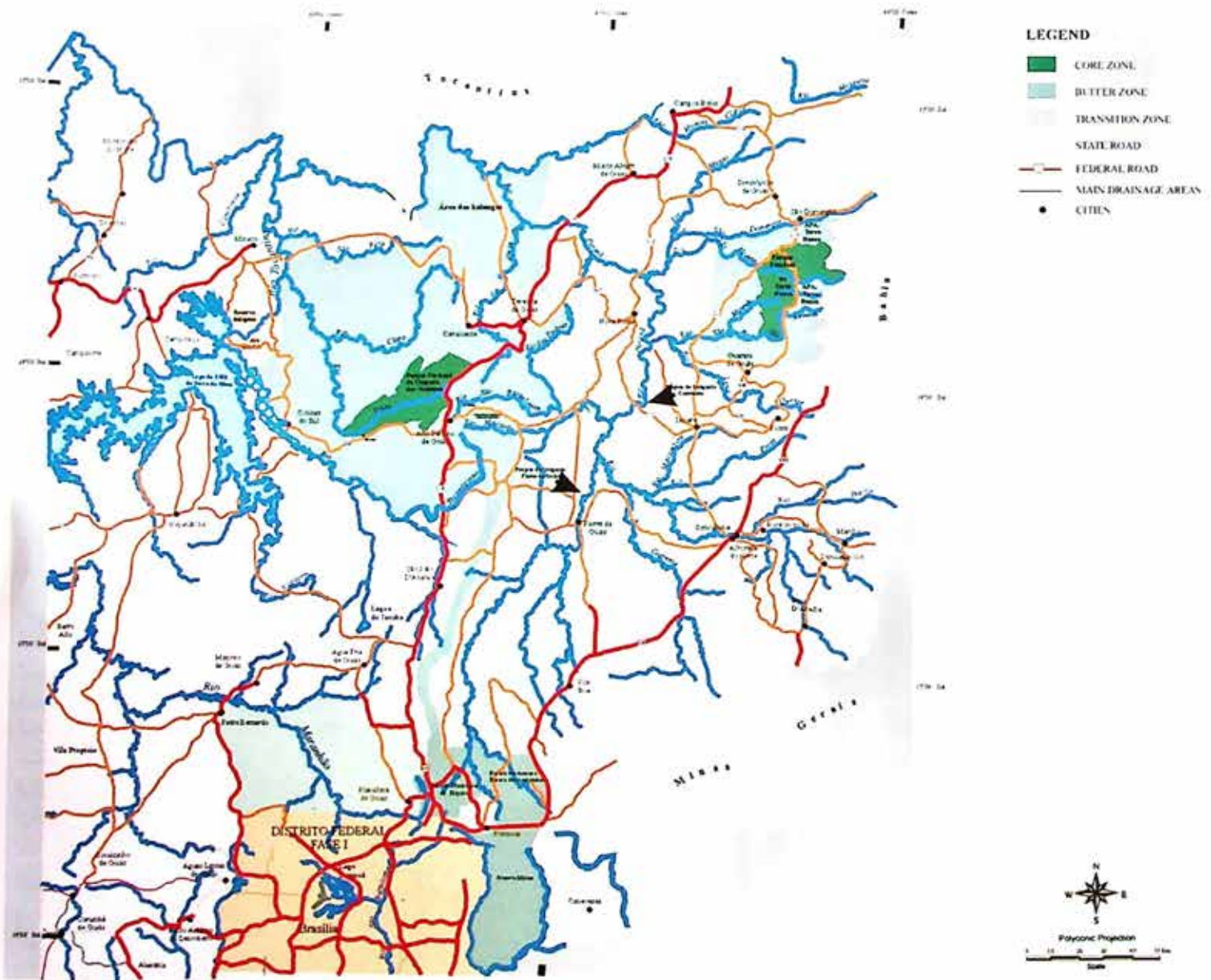
The most important remainders of the Atlantic Forest, the world's most endangered tropical forest (with only 7% of conserved areas remaining out of its original 1.36 million square kilometers) can be found in this reserve. The focus of this reserve is to conserve and recover significant and strategic portions of these remainders through the establishment of ecological corridors aimed at preserving its fauna and flora as well as protecting, through these corridors, its water springs for human consumption.

To bring the conservation of such Atlantic Forest remainders and the region's development (with 60% of the country's entire population and the country's most intense economic production) together is this reserve's greatest challenge. Approximately US\$ 90 million in resources have already been applied through state committees established in most of the states comprised by the Reserve.

Recognized by UNESCO in 1993, and responsible for the metropolis' life-quality, the São Paulo City's Green Belt comprises portion of the Municipality of São Paulo and other 72 surrounding municipalities. The city's supplying springs and riverheads tributaries of rivers crossing the urban area are located in the area. The Youth Programme, focused on teenagers' environmental awareness and their consequent insertion in the eco-labor market (by means of eco-professionalization courses), is this reserve's primary action.



Cerrado - Biological Reserve - Phase II



Cerrado (Central Brazilian Savannahs)

So far, the three phases already defined for this reserve are located in the regions of the Federal District, Goiás, Tocantins, Maranhão and Piauí States. Due to the region's high-impacting forms of farming and cattle-raising activities, the Cerrado biome presents great losses of its extremely rich biodiversity. In addition to implementing the sustainable development, this reserve promotes the conservation of Cerrado's still-untouched remainders as well as the recovering of altered areas.

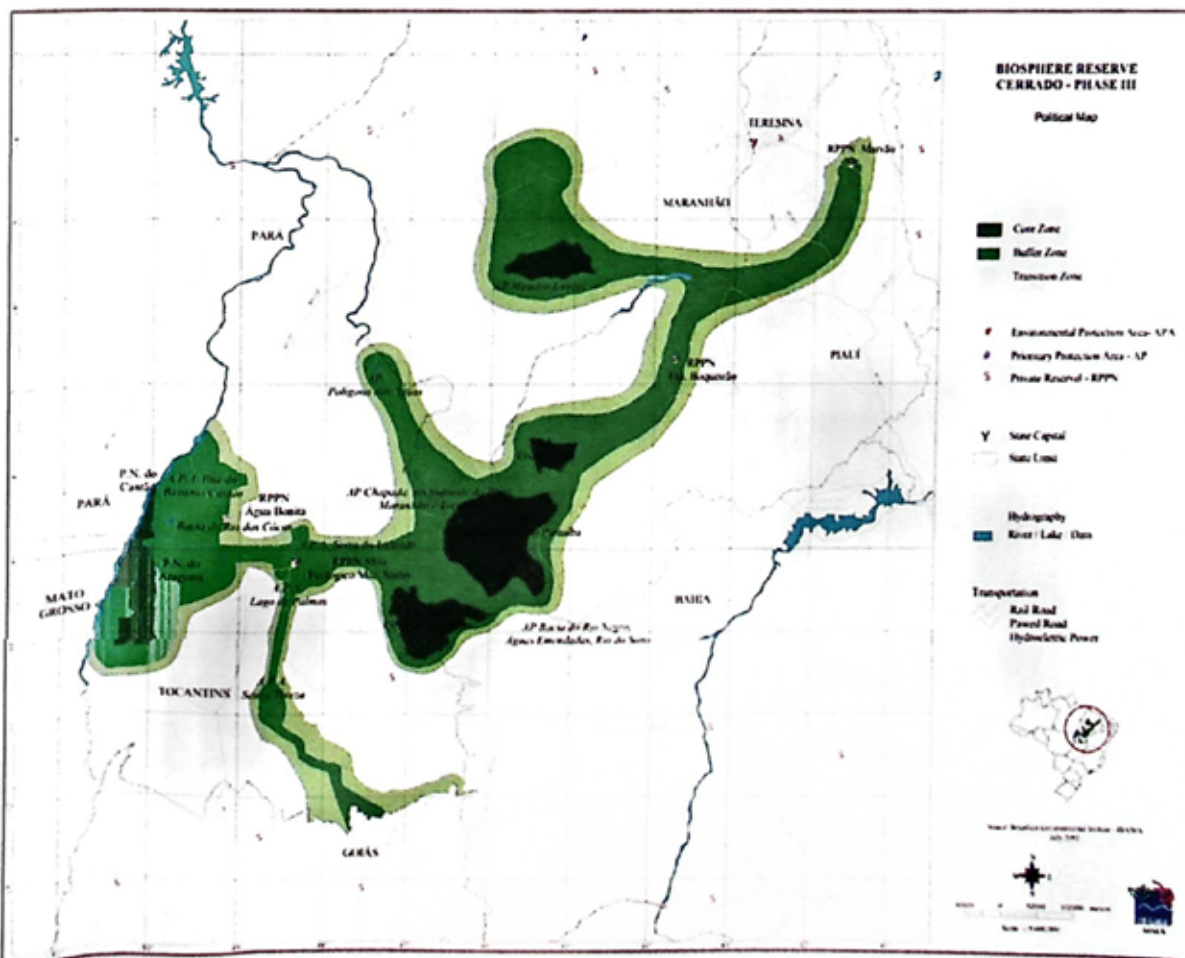
Scattered over 2 million square kilometers, the savannah-like Cerrado biome ecosystem has become, in addition to the extensive cattle-raising activity, an area whose agricultural frontier – aimed at the export grain produc-

tion – undergoes permanent expansion. The electric power generation in the Xingu, Araguaia and Tocantins Basins – which is environmental hazardous – is another challenge to the region's sustainability.

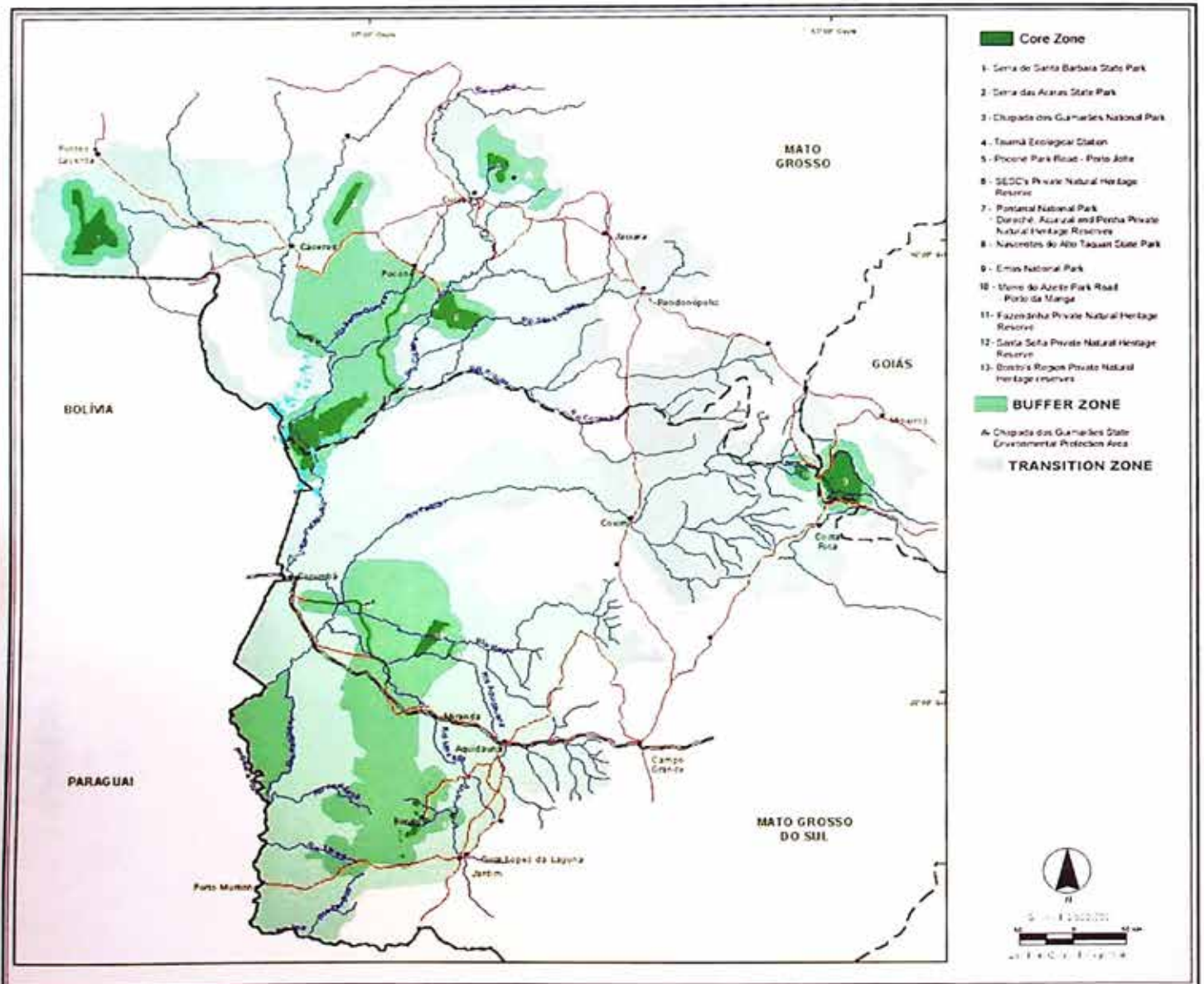
As occurs in the Atlantic Forest Biosphere Reserve, there is an attempt to recover the ecological corridors, which have been either jeopardized or completely destroyed during its economic occupation.

The declaration of the Reserve's phase 1 occurred in 1994. The following phases 2 and 3 have been recognized in the years 2000 and 2001, respectively, and launched the process that established the Biosphere Reserve Council, supported by Cobramab.

Cerrado Biosphere Reserve - Phase III



Pantanal Biosphere Reserve



Pantanal (Central Swamps)

Comprising territories in the States of Mato Grosso, Mato Grosso do Sul and a small portion of Goiás State, it covers the Pantanal Mato-Grossense region and areas influenced by the heads of rivers that make up the Pantaneira Plain's Water System. The proposal aims at guaranteeing the sustainability of the cattle-raising activity, practiced in the region since the 18th Century, as well as to leverage the region's sustainable development through the Eco-tour-

ism and non-industrial fishing.

The Pantanal is the planet's largest fresh-water perennial flooded plain. It constitutes a link among the Cerrado, the Amazon and the Bolivia and Paraguay's Chaco Plain. The flooding period (November to March) makes this a huge water reservoir. It has been declared a biosphere reserve in October/2000. This Reserve's Council is already established.





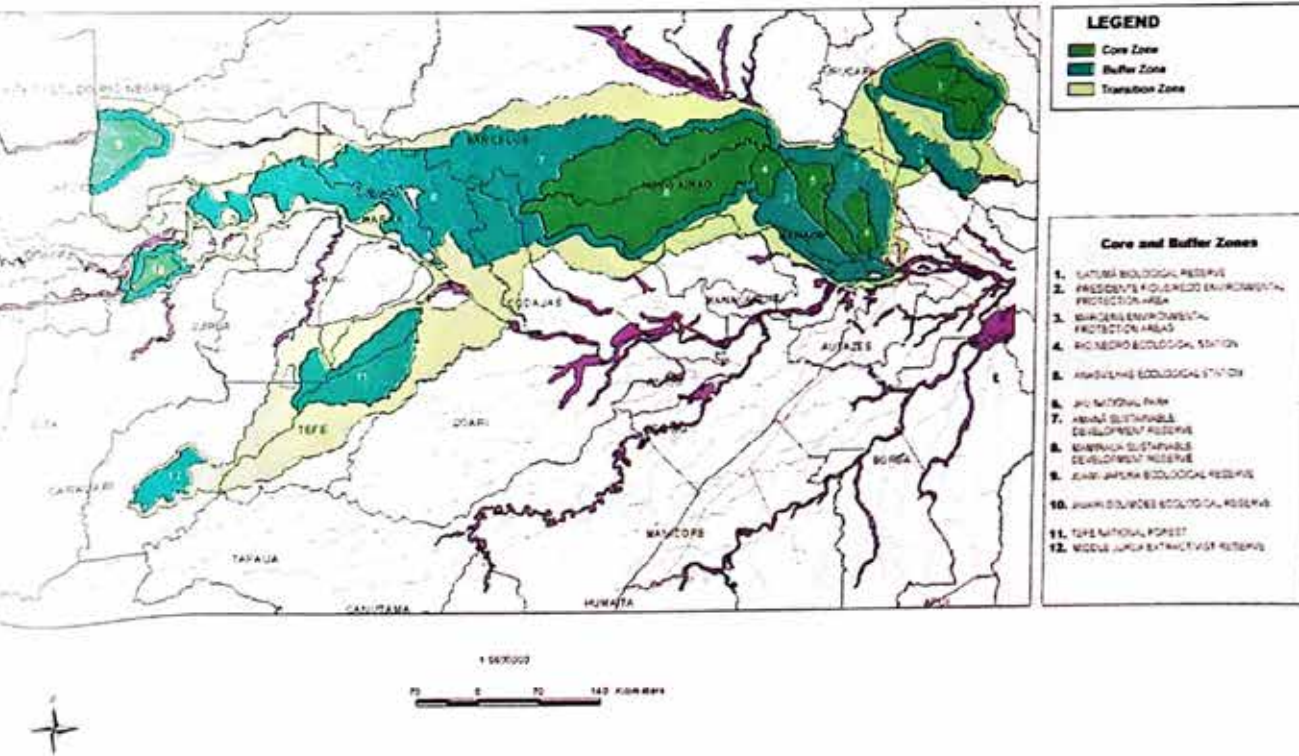
Central Amazon

A biome covering two fifths of South America's territory, this biosphere reserve – the Earth's greatest genetic bank – is located in the Central Amazon Ecological Corridor. The sustainability within its 3.7 million square kilometers is contradictory. As regards the economic initiatives for the exploitation of its products, as well as in order to guarantee its perennality, both use and conservation

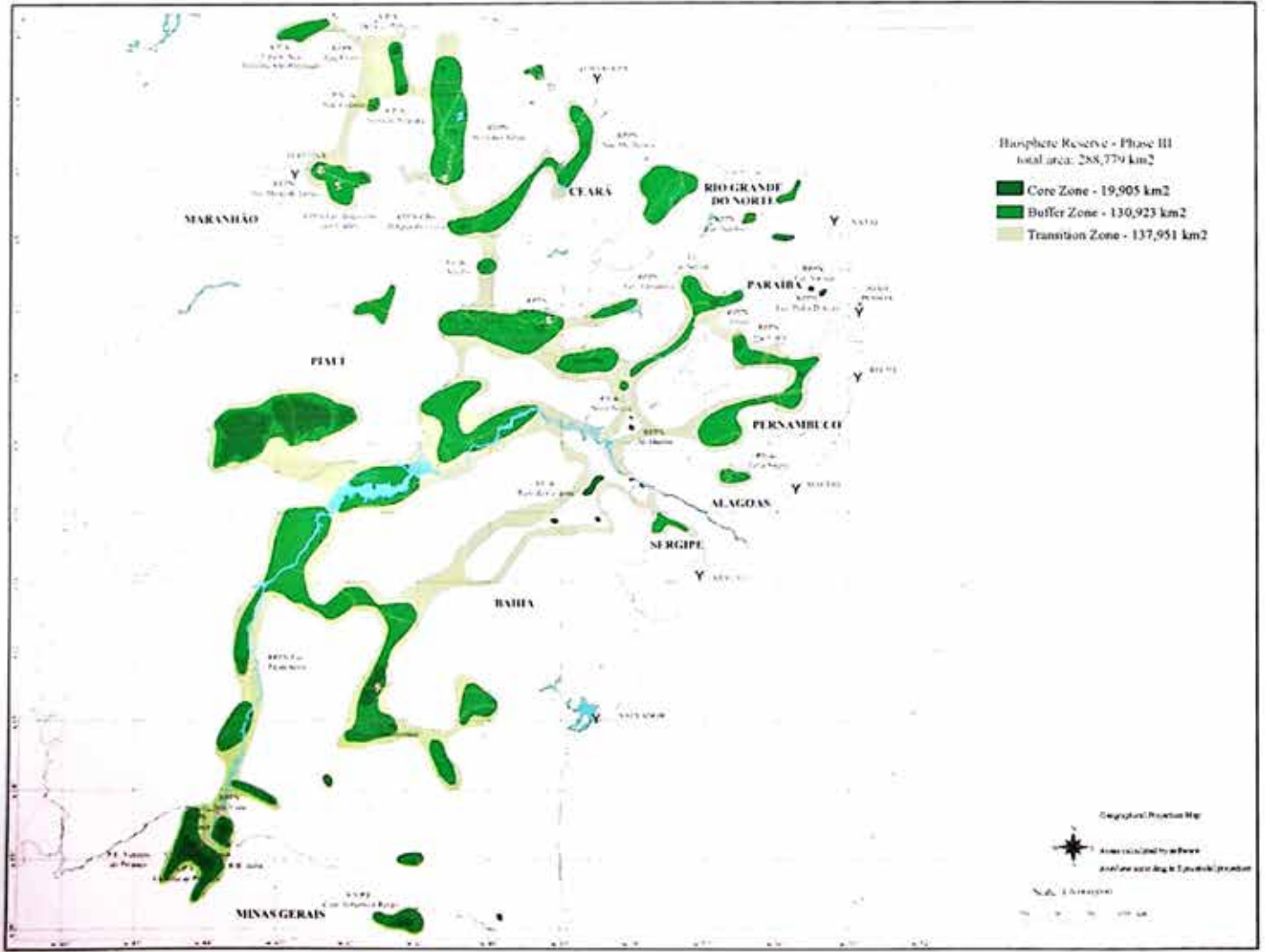
must be brought together. There is also the expansion of the farming and cattle-raising frontier, which provokes deforestation and endogenous migrations.

Recognized in 2001, one of this Reserve's main focus is to achieve the acknowledgment of the popular wisdom's strategic importance for the therapeutic use of its biological diversity.

Central Amazon Biosphere Reserve



Caatinga Biosphere Reserve



Caatinga (Semiarid Northeast)

The Caatinga biome – with periodical drought seasons and its dry and prickly vegetation – coincides with the semiarid climate areas of Minas Gerais States and North-eastern States. Besides combating the desertification and establishing environmental parameters for irrigation projects, one of this Biosphere Reserve's main purposes is to support the efforts towards the environmental recovering of the São Francisco River's Hydrographic Basin.

Upon its recognition in October/2001, the objective is to protect the Caatinga's biodiversity as well as to raise

the extremely low levels of human development in the region – the worst in the Country.

On December/2001 the Brazilian Commission for the 'Man and the Biosphere Programme' authorized the studies on the phase V of the Atlantic Forest Biosphere Reserve (encompassing portions of Espírito santo, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul States) and phase IV of the Cerrado Biosphere Reserve (Bahia, Minas Gerais, São Paulo, Paraná, Goiás, Mato Grosso and Mato Grosso do Sul States).



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MAPS

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